

**FORMER JAMAICA GAS LIGHT COMPANY MANUFACTURED GAS PLANT
SITE
QUEENS COUNTY
JAMAICA, NEW YORK**

INTERIM SITE MANAGEMENT PLAN

NYSDEC Site Number: 241063

USEPA ID # Not Applicable

Prepared for:

The Brooklyn Union Gas Company d/b/a
National Grid NY
One MetroTech Center
Brooklyn, New York 11201

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Revisions to Final Approved Interim Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
01	11/11/2020	Appendix E (Health and Safety Plan) updated	
02	7/12/2021	Sect. 1.3, Appendices C (List of Site Contacts), D (Excavation Work Plan), E (Health and Safety Plan) and F (Community Air Monitoring Plan) updated.	
03	9/19/2022	Updated to 2022 SMP template.	

SEPTEMBER 2022



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

CERTIFICATION STATEMENT

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

Michael J Gardner

P.E.

9/19/2022

DATE





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List of Acronyms

AWQSGV	Ambient Water Quality Standards and Guidelines Values
bgs	Below ground surface
BUG	Brooklyn Union Gas
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CP	Commissioner Policy
CUNY	City University of New York
DASNY	Dormitory Authority of the State of New York
DER	Division of Environmental Remediation
DER-10	NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
EWP	Excavation Work Plan
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IC	Institutional Control
ISMP	Interim Site Management Plan
Kg	Kilograms
LIRR	Long Island Rail Road
mg	Milligrams
MGP	Manufactured Gas Plant
NAPL	Non-Aqueous Phase Liquid
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
P.E. or PE	Professional Engineer
PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
PPE	Personnel Protective Equipment
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation



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ROD	Record of Decision
RSO	Remedial System Optimization
SC	Site Characterization
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
Site	Former Jamaica Gas Light Company Manufactured Gas Plant
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Interim Site Management Plan (ISMP):

Site Identification:

New York State Department of Environmental Conservation (NYSDEC) Site No. 241063
Former Jamaica Gas Light Company Manufactured Gas Plant (MGP) Site
158-18 Beaver Road, Jamaica, NY 11433

Interim Institutional Controls:	<ol style="list-style-type: none"> 1. The property may be used for commercial use. 2. Institutional Controls (ICs) <ul style="list-style-type: none"> • The Site has been zoned for restricted residential use; however, the current use of the Site is and will remain commercial; • Property owner(s) or their representatives must notify National Grid and NYSDEC prior to any surface-intrusive work at the Site; • Activities that will disturb exposed soils or soils under paved areas must be conducted in accordance with this ISMP and in consultation with and approval from National Grid and NYSDEC; • All surface-intrusive work will be performed in compliance with 29 Code of Federal Regulations (CFR) 1910.120; • The contractor/property owner representative shall use an Occupational Safety and Health Administration (OSHA)-trained Site Supervisor and Hazardous Waste Operations and Emergency Response (HAZWOPER)-trained workers to complete surface-intrusive work, and shall implement a site-specific Health and Safety Plan (HASP); • Access to the Site must be provided to NYSDEC with reasonable prior notice to the property owner to assure compliance with the restrictions identified by an access agreement between the current property owners and National Grid; • The potential for vapor intrusion must be evaluated for any buildings developed in the area
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Site Identification:

New York State Department of Environmental Conservation (NYSDEC) Site No. 241063
Former Jamaica Gas Light Company Manufactured Gas Plant (MGP) Site
158-18 Beaver Road, Jamaica, NY 11433

	<p>within the IC boundaries, and any potential impacts must be monitored or mitigated; and</p> <ul style="list-style-type: none"> Vegetable gardens and farming on the Site are prohibited.
	All ECs must be inspected at a frequency and in a manner defined in the ISMP.
Interim Engineering Controls:	Cover system comprised of concrete-, asphalt-, and grass-covered ground surfaces. The site is secured with an existing fence.
Inspections:	Frequency
1. Site-wide Inspection	Annually
2. Emergency Inspection	As needed
Monitoring:	
	NA
Maintenance:	Frequency
Cover system & perimeter fence	As needed
Reporting:	Frequency
Site-Wide Inspection Summary	Annually
Periodic Review Report	NA

Further descriptions of the above requirements are provided in detail in the latter sections of this Interim Site Management Plan.

A Periodic Review Report is not required until after remedy completion, if necessary. A summary report/letter may be required when intrusive activities dictate environmental oversight. Periodic reporting may be requested by the Department at any time.



The property owner is required to comply with this ISMP including all notifications to National Grid. National Grid is only responsible for the costs associated with MGP-related impacts. Further descriptions of the above requirements are provided in detail in the latter sections of this ISMP. Until the final Site Management Plan (SMP), this ISMP will be considered the Institutional Control (IC) and will be incorporated into Site operations to control exposure to subsurface impacts to ensure protection of public health and the environment.

1.0 INTRODUCTION

1.1 General

This Interim Site Management Plan (ISMP) is a required element of the remedial program for the Former Jamaica Gas Light Company Manufactured Gas Plant (MGP) Site located in Queens, New York (hereinafter referred to as the “Site”). See Figure 1-1. The Site is currently in the New York State (NYS) superfund program, Site No. 241063, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

National Grid entered into an Order on Consent and Administrative Settlement (OCAS) (Index No. A2-0552-0606 [NYSDEC, 2007], as The Brooklyn Union Gas Company [BUG], now d/b/a National Grid) in March 2007 with the NYSDEC to remediate the site. A figure showing the site location and boundaries of this site is provided in Figure 1-2.

This ISMP has been prepared to alert the Dormitory Authority of the State of New York (DASNY, as property owner), site workers and construction, utility, and maintenance crews, and their contractors (“Construction Workers”) of the environmental conditions at the Site. These conditions may impact surface-intrusive activities and present a hazard to the public and environment. This ISMP will be provided to the current Site property owner by National Grid. This plan is also on-file with the NYSDEC. Any revisions to this ISMP shall be provided to the current Site property owner and the file maintained by the NYSDEC.

It is important to note that:

- This ISMP was prepared to manage the MGP-related impacts at the Site in accordance with NYS Environmental Conservation Law (ECL) Article 71, Title 36, or until this ISMP is superseded by another Site Management Plan (SMP) approved by the NYSDEC.

- Failure to comply with this ISMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the Order on Consent (Index #A2-0552-0606; Site No. 241063 for the site, and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the site is provided in Appendix A of this ISMP.

This ISMP was prepared by AECOM, on behalf of National Grid, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER)-10 ("Technical Guidance for Site Investigation and Remediation"), dated June 2010 (NYSDECa, 2010), and the guidelines provided by the NYSDEC. This ISMP addresses the means for implementing the Institutional and Engineering Controls (ICs and ECs) that will be required for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the ISMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the site conditions. The NYSDEC project manager will provide a notice of any approved changes to the ISMP, and append these notices to the ISMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 (NYSDEC, 2010a) for the following reasons:

1. 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent, 6 NYCRR Part 375 and/or Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.
4. Notice within 24 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
5. Notice within 48 hours of any non-routine maintenance activities.
6. Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

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

8. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Order on Consent, and all approved work plans and reports, including this ISMP.
9. Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC and National Grid.

Table 1.1 includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix A.

Notifications will include:

- A detailed description of the work to be performed, including the location and aerial extent, plans for re-grading, intrusive elements or utilities to be installed, and estimated volumes of soil to be excavated;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A copy of the contractor's health and safety plan, in electronic format;
- Adherence to the New York State Department of Health (NYSDOH) and NYSDEC-approved Community Air Monitoring Plan (CAMP);
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

National Grid will review and provide comments on all planned surface-intrusive activities. National Grid may have a representative on-site, as appropriate, during any surface-intrusive work activities to observe activities and document compliance with this ISMP.

1.4 Further Investigation and Possible Remedial Work Plan

Further investigation of the Site may be required should large-scale redevelopment occur, if any of the existing substructures are demolished, or if the subsurface is otherwise made accessible. Based on the previous and new investigation results and the Department's determination of the need for a remedy, a remedial work plan will be developed for the final remedy. If a remedy is determined to be necessary to address sources of non-MGP-related impacts present at the Site, this will be evaluated separately for further action. A Citizen Participation Plan (CPP) will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in Jamaica, Queens County, New York and is identified as Block 10099 and Lot 1 on the New York City Tax Map (see Figure 2-1). The Site is less than 1-acre in area and is bounded by the Long Island Rail Road (LIRR) Right of Way to the north, the Prospect Cemetery and a commercial property owned by the DASNY to the south, vacant land and the York College of the City University of New York (CUNY) campus to the east, and 158th Street and commercial businesses to the west (see Figure 2-1). The owner(s) of the site parcel(s) at the time of issuance of this ISMP is/are:

Dormitory Authority of the State of New York (DASNY)

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a fenced-off, paved lot. The Site is zoned R6, which indicates residential property with moderate density and is currently utilized for commercial purposes. Site occupants include a waste carting company that utilizes the lot for storage and repair of roll-off containers and trash compactors. The City of New York Department of Finance has listed the property as Building Class V5, which indicates vacant land.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial properties in all directions. Notably, adjacent to and north of the Site is the LIRR main line right of way and termination point for the New York Subway's J, Z and E lines, south is the historic Prospect Cemetery, to the east is the campus of York College, and west of the Site is a roll-off storage yard and an automotive parts manufacturer. In addition, the former Jamaica Gas Holder Site is located less than 0.25

miles south-southeast of the former MGP Site. The former holder site is currently the location of an office and laboratory facility operated by the U.S. Food and Drug Administration, and a portion of the York College's science building.

2.2.2 [Geology](#)

The Site appears to be a relatively flat property that originally sloped slightly from northeast to southwest. The Site is currently paved with no significant slope. The Site geology consists of two unconsolidated units varying in thickness and distribution: fill and sand. No confining units or bedrock surface was encountered during a Site Characterization (SC) performed in 2012 and a Remedial Investigation (RI) completed in 2013. The SC and RI borings were advanced to a maximum depth of 45 feet below ground surface (bgs), which was not deep enough to determine the presence and depth of the Gardiner's Clay which may occur sporadically or be absent in the Site vicinity. If present in the Site vicinity, Gardiner's Clay is estimated to occur at depths ranging between 75 and 90 feet bgs (Buxton and Shernoff, 1999). The top of bedrock is estimated to be at depths greater than 500 feet bgs in the Site vicinity (Misut and Monti, 1999).

The fill upper unit, consisting of poorly-graded sand and gravel with varying amounts of debris, is observed to be present in all areas of the Site in thicknesses ranging from 3 to 19 feet.

A sand native unit was comprised of subunits of well-graded sand and poorly-graded sand. The well-graded sand is composed of light to dark brown, medium to fine sand, and less than 15% coarse subangular gravel, with a few thin layers of fine sand or rounded gravel. Well-graded sand was typically encountered directly below the fill unit and generally ranged from 18.5 to 35 feet in thickness. The poorly-graded sand is composed of predominately fine sand and ranges from 2.5 to 5 feet in thickness within the well-graded sand unit. The maximum boring depth during the investigations was 45 feet bgs, and the bottom of the well-graded sand was not encountered at that depth. Silty sand and sandy silt lenses were observed intermittently along the southern portion of the Site

within the well-graded sand unit as discontinuous lenses or pockets. A thin lens of clay and silty clay was encountered within the sand unit in the southwestern portion of the Site.

A geologic cross section is shown in Figures 2-2A and 2-2B. Site specific boring logs are provided in Appendix B.

2.2.3 Hydrogeology

A groundwater contour map is shown in Figures 2-3A and 2-3B. Groundwater elevation data is provided in Table 2.1. Groundwater monitoring well construction logs are provided in Appendix B. Groundwater at the Site is in the overburden at depths ranging from approximately 13 to 27 feet bgs and generally flows from north/northeast to the south/southwest.

2.3 **Investigation and Remedial History**

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

Based on available historical records, the Site was operated by the Jamaica Gas Light Company and later BUG from prior to 1873 to approximately 1938. The Jamaica Gas Light Company was incorporated in 1856, with corporate rights allowing it to operate in Queens¹. Separately, BUG was incorporated in September 1895, by interests affiliated with the Standard Oil Company (Standard Oil) to consolidate seven gas companies for the purpose of growing and controlling the market for Standard Oil's products, which were used in the carburation of gas. Increasing its customer base and therefore the use of Standard Oil products, on July 30, 1897, BUG acquired The Jamaica Gas Light Company

¹ "Brooklyn Union's Proposed Merger Approved Today." The Brooklyn Daily Eagle. 10 November 1927, p. 23.

by stock purchase and operated it as a subsidiary. Ownership of BUG was complicated and at times included ownership of various percentages by entities including individuals associated with Standard Oil, the American Light and Traction Company (a holding company organized for the purchase and reorganization of utilities and street railroads, which in turn was partially owned by The United Light and Power Company), and Koppers.

On October 10, 1927, it was announced that plans had “been completed for the absorption of [BUG’s] wholly-owned subsidiaries” and on December 31, 1927, subsidiary gas companies that had been acquired in 1895 and 1897, including The Jamaica Gas Light Company, were merged with BUG.

The Standard Oil Company, The American Light and Traction Company, The United Light and Power Company, and Koppers have been succeeded by other corporations, are doing business under other names, and/or are defunct. The successor to The Standard Oil Company is ExxonMobil. Successors to The American Light and Traction Company include American Natural Resources Company, a wholly-owned subsidiary of TransCanada Corporation, and DTE Energy. The successor to Koppers is Beazer. The United Light and Power Company was liquidated and dissolved in 1950, with its liabilities ultimately passing to the Iowa-Illinois Gas & Electric Company, now MidAmerican Energy Company. BUG itself merged with the Long Island Lighting Company in 1998 to form KeySpan Corporation, which was subsequently purchased by National Grid USA in 2006.

Operationally, a review of historical documents indicates that the Site was operated by the Jamaica Gas Light Company as an MGP for at least 25 years in the late 1800s before being converted to a gas storage and distribution facility around 1900, when two smaller holders (Holders No. 1 and 2) and structures associated with the MGP were demolished. Based on Sanborn maps for 1886 and 1891, The Jamaica Gas Light Company originally produced gas by coal carbonization. Changes appear to have occurred rapidly around the time of acquisition by BUG on July 30, 1897; an 1897 Sanborn map indicates that the

works had been converted to manufacturing carbureted water gas. Circa 1898 a new, larger holder had been erected² and, according to a 1901 Sanborn map, the Jamaica Gas Light Company works and Holders No. 1 and 2 had been abandoned. The holder constructed circa 1898 (Holder No. 3) remained and would have stored gas produced at other BUG works. It was purged and no longer in service by August 19, 1935, and by September 23, 1938 the holder had been demolished and the tank filled. According to Sanborn maps, through at least 1942 the property continued to be used for a meter/engine room/boiler building and for storage, and by 1951 the property was used as offices for The Brooklyn Union Gas Company, Queens Service Station. Figure 2-4 shows the locations of historic site structures. The property was subsequently used as office space by BUG until the late 1960s and then left vacant. No buildings have been built on the Site since then, and the Site is now actively used by Royal Waste Services, Inc. for equipment storage. Other than the presence of roll-off containers and trash compactors currently stored on the Site, no other uses of the property have been identified since the 1960s.

An SC was conducted on the site from February 2012 through April 2012 in accordance with the 2010 SC Work Plan. Sixteen soil borings were advanced and six of the boring were converted into monitoring wells and sampled for VOCs, SVOCs, Target Analyte List (TAL) metals, herbicides pesticides PCBS and Total Cyanide.

An RI was completed from October 2013 through December 2013. Three test pits were excavated around presumed locations of former MGP structures. Eight soil boing and four monitoring wells were installed and sampled.

To determine whether the soil and groundwater were impacted by the MGP above levels of concern, data from the SC and RI were compared to the following standards, criteria, and guidance (SCGs):

- Groundwater SCGs are based on the NYSDEC Ambient Water Quality Standards and Guidance Values [(AWQSGV), NYSDEC, 1998]; and

²New York City Department of Buildings, Gas Holder Construction Information, 1916, 1920, and 1921.

- Soil SCGs are based on the NYSDEC DER, 6 NYCRR Part 375 Restricted Commercial Use Soil Cleanup Objectives (SCOs), as well as NYSDEC's alternative polycyclic aromatic hydrocarbons (PAH) criterion for non-residential sites, total PAH of 500 milligram (mg)/kilogram (Kg), specified in NYSDEC Commissioner Policy (CP) 51 Soil Cleanup Guidance (NYSDEC, 2010b).

Some MGP-related impacts are present beneath the Site and are generally to the center and southern area of the Site within the vicinity of the two smaller holders and the former Purifier and Meter room (see Figure 2-4). These impacts included moderate naphthalene-like odors, staining, suspected purifier-like material, and light to moderate non-aqueous phase liquid (NAPL)-like coating of soil particles. The MGP-related impacts ranged from 3 to 33 feet bgs and have been vertically delineated. The MGP-related impacts generally reduced in extent laterally and below the foundation of the historical MGP structures.

Groundwater beneath the Site did not contain MGP-related constituents at concentrations exceeding the AWQSGVs. The inorganic compounds, detected at concentrations exceeding the AWQSGVs, occur naturally in the aquifer and are not related to the historic MGP operations.

The subsurface soil impacts are of limited extent and do not extend to neighboring property boundaries to the north, east, and west of the Site. Analytical exceedances were detected within subsurface soils along the southern property boundary. Surface soil analytical data indicated constituent concentrations below SCOs for Commercial Land Use and are only slightly above SCOs for Restricted Residential Land Use.

The results of the SC and RI indicated that MGP-related impacts are limited based on visual observation and generally confirmed by limited low-level soil and groundwater analytical detections. Total PAH concentrations only exceeded the CP-51 alternative criterion of 500 mg/Kg in three subsurface soil samples. The weathered aspect of the impacts are consistent with the Site history, particularly that gas manufacturing ended in

the early 1900s, and that following that, the Site was only used for gas storage and distribution and was eventually paved.

Based on the character and distribution of the MGP-related impacts, it appears that a limited quantity of material was released to the subsurface in the vicinity of the former eastern small gas holder and the former Purifier and Meter room. The migration of this material was likely limited based in part on the volume and duration of the release and was vertically delineated by the SC and RI. There were no downgradient MGP-related impacts off-Site to the south of the cemetery. See Figures 2-5 and 2-6 for the surface and subsurface soil analytical results, respectively.

A Qualitative Human Health Exposure Assessment (QHHEA) was completed for the Site to determine the potential for human exposure to constituents present in impacted soils. It was concluded that complete exposure pathways could not be identified for current on-site visitors/trespassers or commercial/maintenance workers due to the presence of surface cover (pavement and gravel layer) over most of the Site and a secured fence. Current and future on-site Construction Workers performing surface-intrusive work on or adjacent to the Site may potentially be exposed to impacts in the surface and subsurface soil. Thus, only properly trained field personnel should complete surface-intrusive work in this area. Future on-site visitors/trespassers, commercial/maintenance workers, or residents may also be exposed to surface and subsurface soil contaminants; however, most of the Site is currently paved, fenced, and the use of the Site and surrounding areas is commercial/industrial.

2.4 Remedial Action Objectives

A remedial design for this site has not been prepared and there is no Record of Decision (ROD) or Decision Document, and therefore no Remedial Action Objectives (RAOs) have been established. In the interim, in the absence of formal RAOs, the ICs and ECs described within this ISMP are to be maintained until such time as RAOs or a No Further Action determination are developed.

2.5 Remaining Contamination

The site has not been remediated, and contamination as described in Section 2.3 remains.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the ISMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all IC/ECs on the site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix C) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the ISMP, as determined by the NYSDEC project manager.

3.2 Institutional Controls

A series of ICs is required to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to commercial uses only. Until the final SMP, this ISMP will be considered the IC and will be incorporated into Site operations to control exposure to subsurface impacts to ensure protection of public health and the environment. [Adherence](#)

to these ICs on the site is required by 6 NYCRR Part 375 and the Order on Consent (Index #A2-0552-0606; Site No. 241063) and will be implemented under this ISMP. ICs may not be discontinued without a revision of this ISMP, or a notification between the current property owner and National Grid, with copy to the NYSDEC. The IC boundaries are shown on Figure 3-1. These ICs are:

- The property may be used for: commercial use (the Site has been zoned for restricted residential use; however, the current use of the Site is and will remain commercial);
- The property owner(s) or their representatives must notify National Grid and NYSDEC, as per Section 1.3 of this ISMP, prior to any surface-intrusive work at the Site;
- All ECs must be operated and maintained as specified in this ISMP;
- All ECs must be inspected at a frequency and in a manner defined in the ISMP;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;
- Environmental or public health monitoring must be performed as defined in this ISMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this ISMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this ISMP;
- All surface-intrusive work will be performed in compliance with 29 Code of Federal Regulations (CFR) 1910.120
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by an access agreement between the current property owners and National Grid;
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2-2, and any potential

impacts that are identified must be monitored or mitigated although National Grid is responsible only for MGP-related impacts;

- Vegetable gardens and farming on the site are prohibited; and
- An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

During all surface-intrusive work, National Grid will provide an on-site representative to assist the property owner's contractor with identifying potentially MGP-related impacted materials. As discussed previously, materials with MGP-related impacts are known to exist on the Site. MGP-related impacted materials at the Site typically consist of soil impacted with PAHs and NAPL. One of the primary by-products of MGP operations is coal tar, which is a NAPL and is similar in composition to asphalt sealant and can be hardened to a solid state ("weathered"). MGP-related impacts at the Site range from soil impacted with weathered NAPL-like material to minor soil impacts. Although the composition of MGP-related impacts is well known, handling must be limited to personnel with appropriate health and safety training and proper personnel protective equipment (PPE).

There are several typical signs of the potential presence of MGP-related impacts within an open excavation, including: soil that is stained (black or bright blue), rainbow sheen on the surface of the groundwater, and/or a characteristic naphthalene-like odor, which has been described as "mothball-like". To be identified as MGP-related impacted, soil will usually exhibit either visual or olfactory signs. All soils should be placed on plastic prior to determining if it is MGP-related impacted. Soil or groundwater with visible or olfactory evidence of MGP-related impacts shall not go back in the ground and shall be properly disposed, as described in the EWP, at facilities pre-approved by National Grid. Excavated soil with no visible or olfactory evidence of impacts may be re-used as described in the EWP. National Grid will implement the CAMP for the Site on behalf of the property owner during all subsurface work, as described below and in the EWP.

Prior to any surface-intrusive activity, a communication plan consisting of meetings, emails, site visits and phone calls will be developed by National Grid and the property owner to facilitate project work and keep concerned parties up to date. Depending on scope and location of work as well as the potential to generate odor or dust complaints based on previously collected data (e.g., from the RI), placement of signage at the site perimeter may be required. In the event the public has immediate concerns regarding Site activities and/or odor or dust generation, signage shall provide the contact information for the NYSDEC and NYSDOH project managers and a National Grid telephone hotline.

The property owner's contractor(s) shall be responsible for preparing a site-specific Health and Safety Plan (HASP). All surface-intrusive work shall be performed in compliance with 29 CFR 1910.120 and the EWP. The contractor/property owner representative shall identify appropriate Occupational Safety and Health Administration OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER)-trained workers and requisite equipment for all subsurface work. In addition to OSHA HAZWOPER-trained workers, a Site Supervisor, with the OSHA HAZWOPER 8-Hour Supervisor Training in accordance with 29 CFR 1910.120(e) (8), shall be identified. The HASP shall include appropriate PPE for known MGP-related impacts at the site. National Grid will provide data for the Site upon request.

3.3 Engineering Controls

3.3.1 Cover (or Cap)

Exposure to remaining contamination at the site is prevented by a cover system placed over the site. This cover system is comprised of asphalt and gravel. The EWP provided in Appendix C outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this ISMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a HASP provided in Appendix D and associated CAMP prepared for the site and provided in Appendix E. Any disturbance of

the site's cover system must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

3.3.2 Other ECs

No other ECs have been established for the site under the ISMP. If a remedy is implemented that creates additional ECs, these will be discussed in a final SMP.

3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems

A remedial process has not been undertaken and RAOs have not been established in a decision document, so criteria for completion of remediation and termination of remedial systems is not applicable. The existing Site cover is required to remain in place as described by this ISMP until such time as a No Further Action determination is made or a remedial action is completed, at which time criteria for completion of remediation and termination of remedial systems will be established in an SMP.

4.0 MONITORING PLAN

4.1 General

This Monitoring Plan describes the measures for evaluating the overall performance and effectiveness of the interim ICs and EC (a cover system and perimeter fence) to address impacts at the Site. This Monitoring Plan may only be revised with the approval of the NYSDEC project manager.

This Monitoring Plan describes the methods to be used for:

- Evaluating site information periodically to confirm that the measures required by this ISMP continue to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring Plan provides information on:

- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this ISMP.

4.2 Site – wide Inspection

Site-wide inspections will be performed as needed or at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e. no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs. During these inspections, an

inspection form will be completed as provided in Appendix F – Site Management Form. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all EC components at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the ISMP schedule. The inspections will determine and document the following:

- Whether ECs continue to perform as intended;
- If these controls continue to be protective of human health and the environment; and
- Compliance with requirements of this ISMP.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, the property owner will notify National Grid as soon as possible within 48 hours of the emergency. Once National Grid is notified, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a

summary of actions taken, or to be taken, and the potential impact to the environment and the public. This confirmation will be made by National Grid.

4.3 Treatment System Monitoring and Sampling

There are no treatment systems in place at the Site. The gravel and asphalt cover and perimeter fence is the only EC currently in place, which will be inspected regularly as per Section 4. Therefore, treatment systems, monitoring, and sampling are not applicable

4.4 Post-Remediation Media Monitoring and Sampling

A final remedy is not in place at the Site. The gravel and asphalt cover and perimeter fence is the only EC currently in place, which will be inspected regularly as per Section 4. Therefore, post remediation media monitoring, and sampling is not applicable.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The site EC does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this ISMP. Site fencing and signage shall be maintained as necessary.

5.2 Remedial System (or other Engineering Control) Performance Criteria

A final remedy is not in place at the Site. The gravel and asphalt cover and perimeter fencing is the only EC currently in place, which will be inspected regularly as per Section 4. Therefore, remedial system performance criteria are not applicable.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

A vulnerability assessment is not applicable for this Site as there is no remedy in place.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. Green remediation evaluations are not applicable as a remedy has not been implemented at the Site and there is no ongoing remedial action. A Green Remediation Evaluation would be part of any future feasibility study, remedial design and/or remedial action.

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. This is currently not applicable as a remedy has not



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

been designed or implemented at the Site. If appropriate following implantation of a remedy, RSOs may be conducted as required by a final SMP.

7.0. REPORTING REQUIREMENTS

7.1 Interim Site Management Inspection Reports

All site management inspection events will be recorded on the appropriate site management forms provided in Appendix F. These forms are subject to NYSDEC revision. All site management inspection events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection generated for the site during the reporting period will be provided in electronic format to the NYSDEC and NYSDOH in accordance with the requirements of Table 7-1.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Inspection reports will be qualified to the extent that National Grid does not own the property and National Grid and/or National Grid's representatives are only present at

the Site on an intermittent basis. National Grid does not have direct control over the property owners or their employees. A summary of the matrix of responsibilities identified in this ISMP for the property owner and National Grid is presented in Table 7-2.

7.2 Periodic Review Report

A remedial design for this site has not been prepared and there is no ROD or Decision Document. The need for (and required contents of) a Periodic Review Report would be established in a final SMP to be developed if a final remedy is implemented.

7.3 Corrective Measures Work Plan

A remedial design for this site has not been prepared and there is no ROD or Decision Document. Requirements for development of a Corrective Measures Work Plan are currently not applicable, and would be established in a final SMP to be developed if a final remedy is implemented.

7.4 Remedial Site Optimization Report

A remedial design for this site has not been prepared and there is no ROD or Decision Document. Requirements for development of a Remedial Site Optimization Report are currently not applicable, and would be established in a final SMP to be developed if a final remedy is implemented.

8.0 REFERENCES

[6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.](#)

AECOM, 2010. Site Characterization Work Plan, Former Jamaica Gas Light Company MGP Site, Queens, New York. July 2010.

AECOM, 2012. Site Characterization Report, Former Jamaica Holder Site, Queens, New York. August 2012.

AECOM, 2015. Remedial Investigation Report, Former Jamaica Gas Light Company MGP Site, Queens, New York. November 2015.

Buxton, Herbert and Peter K. Shernoff, 1999. Ground-Water Resources of Kings and Queens Counties, Long Island, New York, United States Geological Survey, Water Supply Paper 2498.

Misut, P. E. and Jack Monti Jr., 1999. "Simulation of ground-water flow and pumpage in Kings and Queens Counties, Long Island, New York," in the U. S. Geological Survey Water-Resources Investigations Report 98-4071.

[NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series \(TOGS\) 1.1.1. June 1998 \(April 2000 addendum\).](#)

NYSDEC, 2007. Order on Consent and Administrative Settlement - In the matter of the Development and Implementation of Remedial Programs for Former MGPs and Gas Holder Locations Under Article 27, Title 13 of the ECL by Brooklyn Union, Index # A2-0552-0606, March 2007.

[NYSDEC, 2010a. DER-10 – "Technical Guidance for Site Investigation and Remediation".](#)

NYSDEC, 2010b. CP-51, Soil Cleanup Guidance.



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

TABLES



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

Table 1.1: Notifications*

<u>Name</u>	<u>Contact Information</u>	<u>Required Notification**</u>
Greta White NYSDEC Project Manager	625 Broadway Albany, NY 12233 (518) 402-2029 greta.white@dec.ny.gov	All Notifications
Kiera Thompson NYSDEC Project Manager Supervisor	625 Broadway Albany, NY 12233 (518) 402-9662 kiera.thompson@dec.ny.gov	All Notifications
Alexandra Servis NYSDEC Site Control	625 Broadway Albany, NY 12233 (518) 402-9473 alexandra.servis-oettinger@dec.ny.gov	Notifications 1 and 8
Stephanie Selmer NYSDOH Project Manager	Empire State Plaza - Corning Tower Room 1787 Albany, NY 12237 (518) 402-7860 stephanie.selmer@health.ny.gov	Notifications 4, 6, and 7
Donald Campbell National Grid Project Manager	2 Hanson Place, 11 th Floor Brooklyn, NY, 11217 (347) 452 5973 donald.campbell@nationalgrid.com	All Notifications

* Note: Notifications are subject to change and will be updated as necessary.

** Note: Numbers in this column reference the numbered bullets in the notification list in this section.

Table 2-1
Monitoring Well Construction, Survey Elevations, and Groundwater Level Gauging Results
Former Jamaica Gas Light Company MGP Site
Queens, New York

Ground Surface Elevation (ft NAVD 88)		Top of Casing Elevation (ft NAVD 88)	Date Installed	Well Diameter and Material		Screen Slot	Screened Interval (ft bgs)	Date Developed	New York State Plane Coordinate System, Long Island Zone (NAD 83)		04-Apr-12			09-Dec-13		
									Northing	Easting	DTW (ft bgs)	DTB (ft bgs)	Groundwater Elevation (ft NAVD 88)	DTW (ft bgs)	DTB (ft bgs)	Groundwater Elevation (ft NAVD 88)
MW-1	39.02	38.75	5-Mar-12	2-inch	PVC	0.010	16 - 26	21-Mar-12	194816.11	1039315.89	17.81	27.03	20.94	18.79	27.00	19.96
MW-2	41.38	41.16	6-Mar-12	2-inch	PVC	0.010	17 - 27	21-Mar-12	194758.62	1039405.43	20.34	28.01	20.82	21.29	27.88	19.87
MW-3	44.56	43.85	7-Mar-12	2-inch	PVC	0.010	20.5 - 30.5	21-Mar-12	194895.32	1039490.05	22.76	31.60	21.09	23.72	31.33	20.13
MW-4	47.66	47.21	9-Mar-12	2-inch	PVC	0.010	24.5 - 34.5	21-Mar-12	194954.93	1039607.92	26.03	35.98	21.18	27.01	35.89	20.20
MW-5	43.63	43.25	12-Mar-12	2-inch	PVC	0.010	21 - 31	21-Mar-12	194923.54	1039437.80	22.11	33.22	21.14	26.02	33.34	17.23
MW-6	46.32	46.05	28-Mar-12	2-inch	PVC	0.010	21.5 - 31.5	21-Mar-12	194969.53	1039532.95	21.81	32.60	24.24	25.82	32.52	20.23
MW-7	46.29	46.06	13-Nov-13	2-inch	PVC	0.010	24 - 34	26-Nov-13	194869.73	1039517.81	NA	NA	NA	25.90	36.45	20.16
MW-8	45.38	45.14	10-Nov-13	2-inch	PVC	0.010	26 - 36	25-Nov-13	194806.11	1039657.23	NA	NA	NA	25.15	38.20	19.99
MW-9	41.16	40.97	11-Nov-13	2-inch	PVC	0.010	21 - 31	25-Nov-13	194733.22	1039599.65	NA	NA	NA	21.06	32.99	19.91
MW-10	38.23	37.77	16-Nov-13	2-inch	PVC	0.010	17 - 27	26-Nov-13	194692.44	1039535.32	NA	NA	NA	18.11	28.51	19.66
*MW-11	33.65	33.18	21-Feb-12	1-inch	PVC PP	0.010	13.5 - 23.5	22-Mar-12	194549.09	1039705.10	12.79	25.21	20.39	13.63	25.15	19.55

Notes:
*MW-11 was formerly known as Jamaica Holder MW-1 NYSDEC Site No. 241062
ft - feet
NAVD88 - North American Vertical Datum of 1988
DTW = Depth to water from the top of casing/PVC
DTB = Depth to bottom from the top of casing/PVC
NA = Not applicable
PP = Pre-Pack Screen
bgs = Below Ground Surface
All wells have 2-foot sumps.
MW-3 was installed adjacent to SB-8.



Former Jamaica Gas Light Company Manufactured Gas Plant Site
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Table 7-1: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually, or as needed

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC project manager.

Table 7-2. Matrix of Responsibility by Property Owner, National Grid, and Governing Agency
Former Jamaica Gas Light Company Manufactured Gas Plant Site
Queens, New York

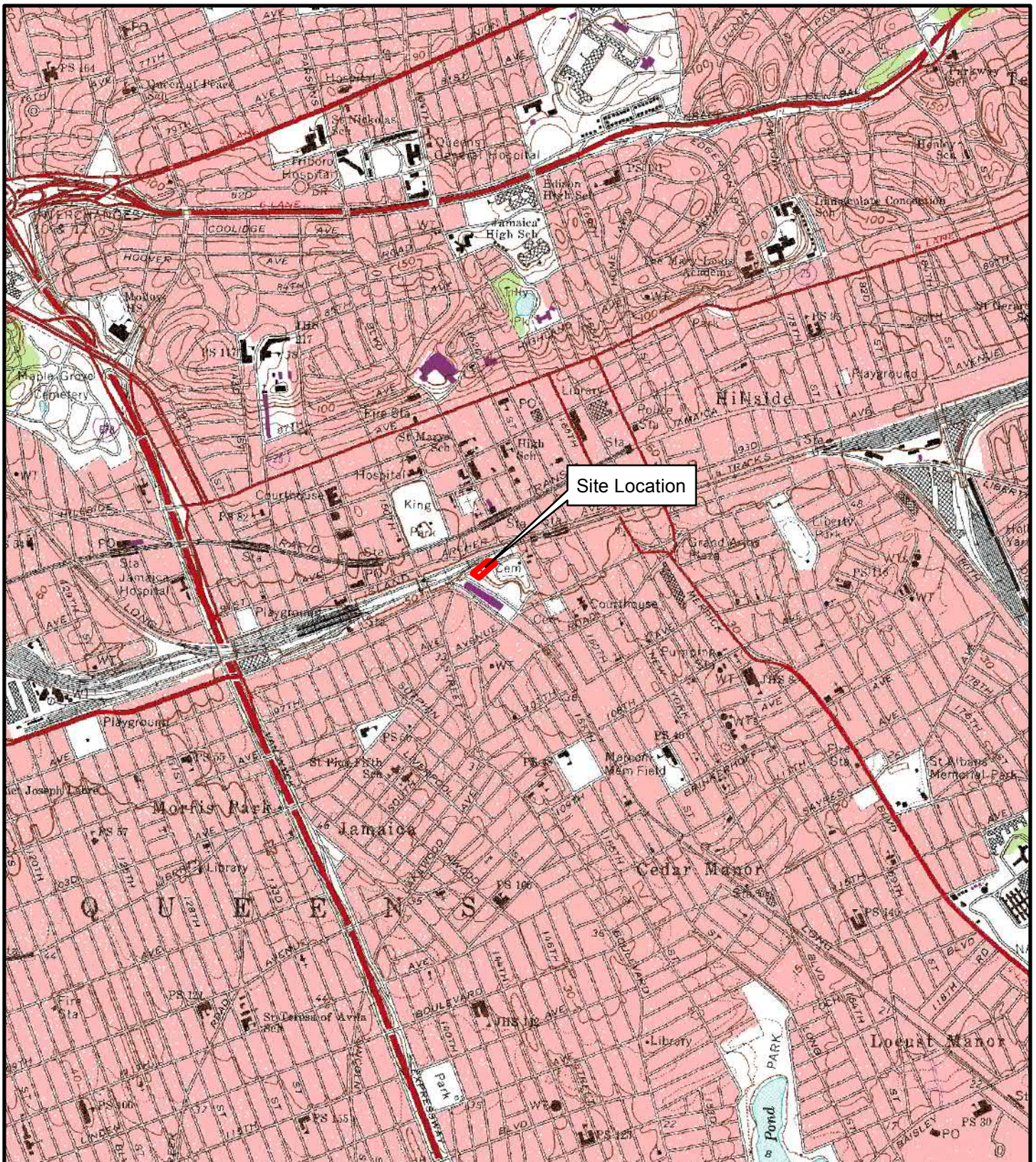
Task	NYSDEC	National Grid	Property Owner	Responsibility		
				NYSDEC	National Grid	Property Owner
Access Agreement (AA)		✓	✓		AA will be executed between the Property Owner and National Grid.	AA will be executed between the Property Owner and National Grid. Access to the Site will be provided to National Grid and NYSDEC.
Community Air Monitoring Plan (CAMP)	✓	✓		Review and Comment.	National Grid's environmental professional consultants will follow Site-specific CAMP procedures during intrusive work.	
Emergency Response due to EC Failure caused by Natural Disaster or Damage/Defect to Foundation, Structures, or EC for emergency utility repair	✓	✓	✓	Review and comment, as necessary	National Grid will verbally notify DEC of any event and associated changes by noon the following day (after notification by the Property Owner) and submit written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. National Grid will review emergency activities, conduct maintenance or repair (if necessary) and submit update to NYSDEC	Property Owner shall provide details of emergency work to National Grid and NYSDEC within 48 hrs of emergency
Engineering Control (EC) - Cover System		✓	✓		Inspect EC during annual inspection and when required by NYSDEC. Notify NYSDEC of known damage.	Maintenance and repair of cover system. Notify National Grid of damage.
Limited Intrusive Work (Small Scale)* performed under the Excavation Work Plan (EWP)	✓	✓	✓	Review and Comment.	National Grid to notify NYSDEC once it has been notified by the property owner.–Smaller scale (i.e., “limited”) intrusive activities will comply with the Excavation Work Plan and may require a Notice of Intrusion letter or a simple letter work plan.–National Grid's contracted qualified environmental professional will provide visual, olfactory, and instrument-based soil screening and CAMP monitoring.	Provide notice to National Grid as early as possible at a minimum of 60 days prior to intrusive activity and 30 days prior to starting field activities. All ground intrusive activities must follow the ISMP. Property Owner is responsible for the structural integrity of excavations and structures that may be affected. Property Owner is responsible for soil management in accordance with the EWP.
Future Property Development (Large Scale)*	✓	✓	✓	Review and Comment.	National Grid to notify NYSDEC once it has been notified by the property owner. Large-scale intrusive work will require additional investigation and remediation. Prepare a detailed Remedial Work Plan if required by NYSDEC based on investigation results.	Provide notice in writing to National Grid as early as possible, at a minimum 18 months.
Future Site Subdivision		✓	✓		National Grid to notify NYSDEC once it has been notified by the property owner.	Property owner notifies National Grid of the subdivision.
HASP	✓	✓	✓	Review and Comment.	Develop a Site-specific HASP to be included in the (I)SMP.	Develop a Site-specific HASP for any subsurface work.
Inspections		✓			National Grid will complete inspections once per year and after severe weather that may affect ECs and monitoring. A Site Management Form will be completed and provided to NYSDEC.	
Property Use Change (currently Restricted Use Commercial)	✓	✓	✓	Review and Comment.	Provide at a minimum 60 days notice to NYSDEC once it has been notified by the property owner. National Grid to review and confer with NYSDEC if ISMP revision and/or additional ICs are required. Following use change, National Grid to update ISMP and submit to NYSDEC, if required.	Provide notice to National Grid as soon as possible.
Property Ownership Change	✓	✓	✓	Notification receipt confirmation to Property Owner in 15 days (business).	Provide at a minimum 60 days notice to NYSDEC once it has been notified by the property owner. Notification receipt confirmation to Property Owner in 15 days (business).	Provide notice to National Grid as soon as possible. Within 15 days after transfer, confirm in writing to NYSDEC and National Grid the new owner's name, contact person, and contact information.
Record Of Decision (ROD)	✓			NYSDEC Submits ROD.		
Security			✓			Property Owner is responsible for site security.
Interim Site Management Plan (ISMP)	✓	✓	✓	Review and Approve ISMP and revisions. Append revisions to ISMP.	Prepare the ISMP and update when required.	Implement the ISMP for any ground intrusive work.

Notes:
* - The property owner is required to comply with the ISMP including all notifications to National Grid and provisions of the Excavation Work Plan. National Grid is only responsible for costs associated with MGP-related impacts.
Nothing on this page shall supersede the provisions of a Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the Site.



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

FIGURES



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125 Broad Street
16th Floor
New York, NY 10004
(212) 377-8400

Site Location Map
National Grid
Former Jamaica Gas Light Company MGP Site
Queens, New York
Interim Site Management Plan

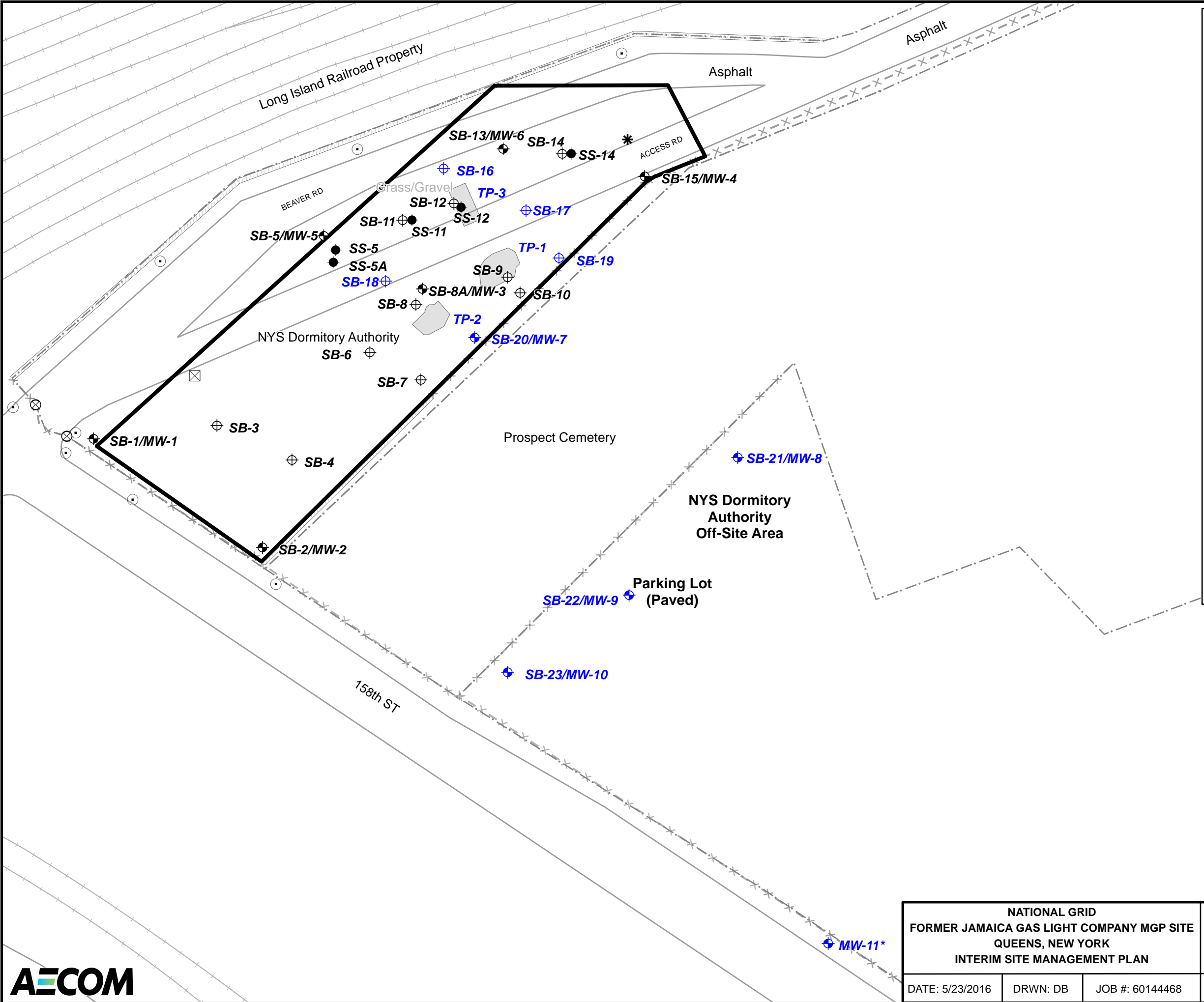
Data Source: USGS Topographic Quadrangle - Jamaica, 2009

Scale:	Date:	Project Number:
1"=2000'	May 12, 2015	60144468

Figure Number:

1-1

Document Path: J:\Water\ProjectFiles\IP60\60144468_Jamaica\GIS\MXD\Figure 2-4 Sample Locations_ISMP.mxd



Legend

- Gate
- Project Site
- Approximate Property Boundary Not Surveyed
- Historical Feature
- Fence
- Retaining Wall
- Present Curb Line
- Railroad
- Water Hydrant
- Utility Poles
- Tree
- Light Post

Remedial Investigation Locations

- Monitoring Well Location
- Soil Boring
- Limits of Test Pit Excavation

Site Characterization Locations

- Monitoring Well Location
- Soil Boring
- Surface Soil Sample

N
W
E
S

02550
1 in = 50 ft
Feet

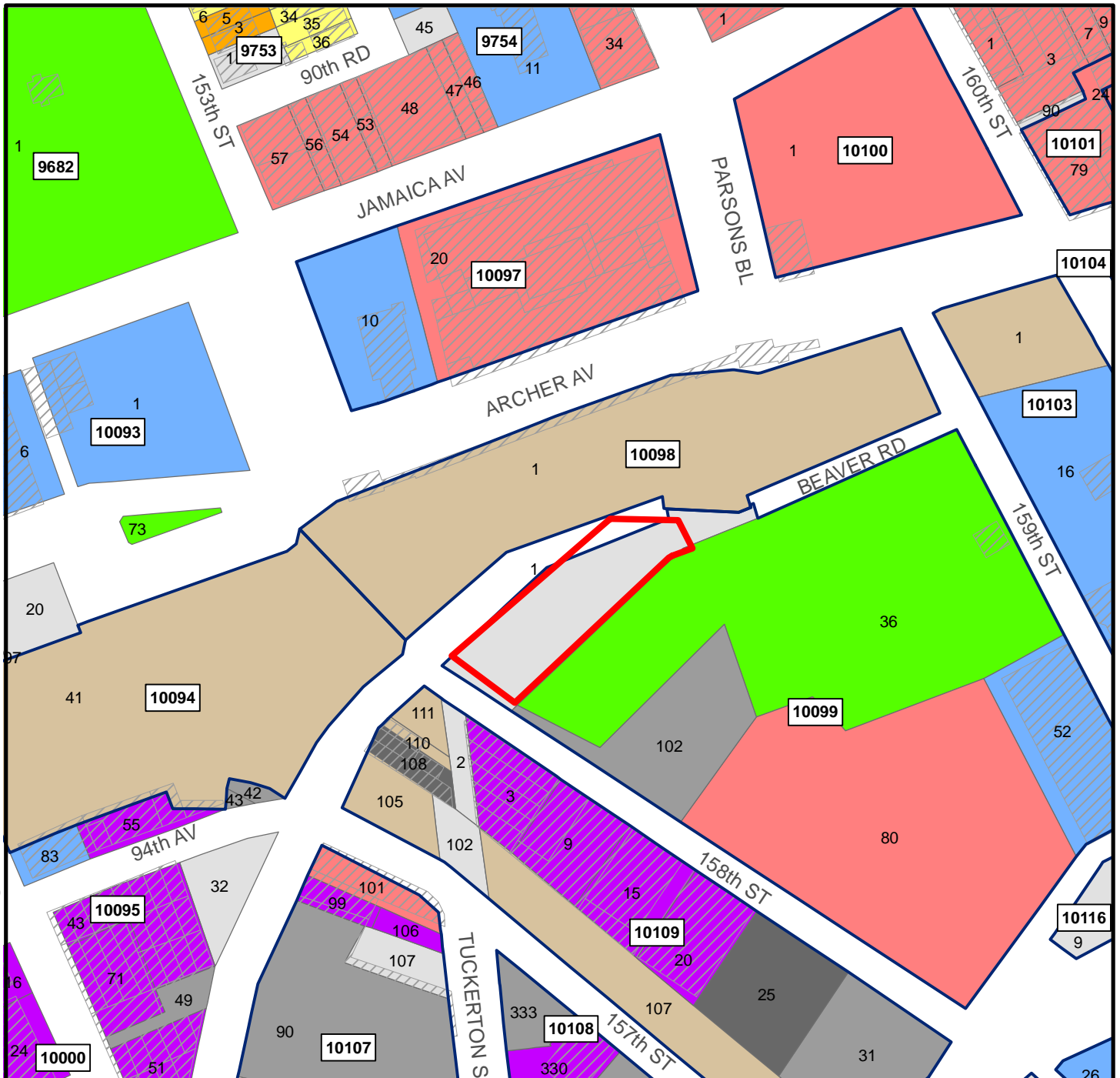
NOTES:

1. SITE FEATURES (FENCE, RETAINING WALL, ETC.) TAKEN FROM GEOD CORPORATION SURVEY, DATED APRIL 2012 AND NOVEMBER 2013.

2. MW-11 - FORMERLY KNOWN AS JAMAICA HOLDER MW-1 (NYSDEC SITE NO. 241062).



NATIONAL GRID FORMER JAMAICA GAS LIGHT COMPANY MGP SITE QUEENS, NEW YORK INTERIM SITE MANAGEMENT PLAN			SITE LAYOUT AND SITE CHARACTERIZATION AND REMEDIAL INVESTIGATION SAMPLE LOCATIONS	
DATE: 5/23/2016	DRWN: DB	JOB #: 60144468		FIGURE 1-2



Legend

Land Use

One & Two Family Buildings	Public Facilities and Institutions	Parking Facilities	Block Boundary
Multi Family Walk Up Buildings	Transportation and Utility	Vacant Land	Block Number
Commercial and Office Building	Open Space and Outdoor Recreation	Unknown	Lot Number
	Project Site		
	Building		

Note: Tax Block & Tax Lot files are copyrighted by the New York City Department of City Planning



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Parcel Locations National Grid Former Jamaica Gas Light Company MGP Site Queens, New York Interim Site Management Plan

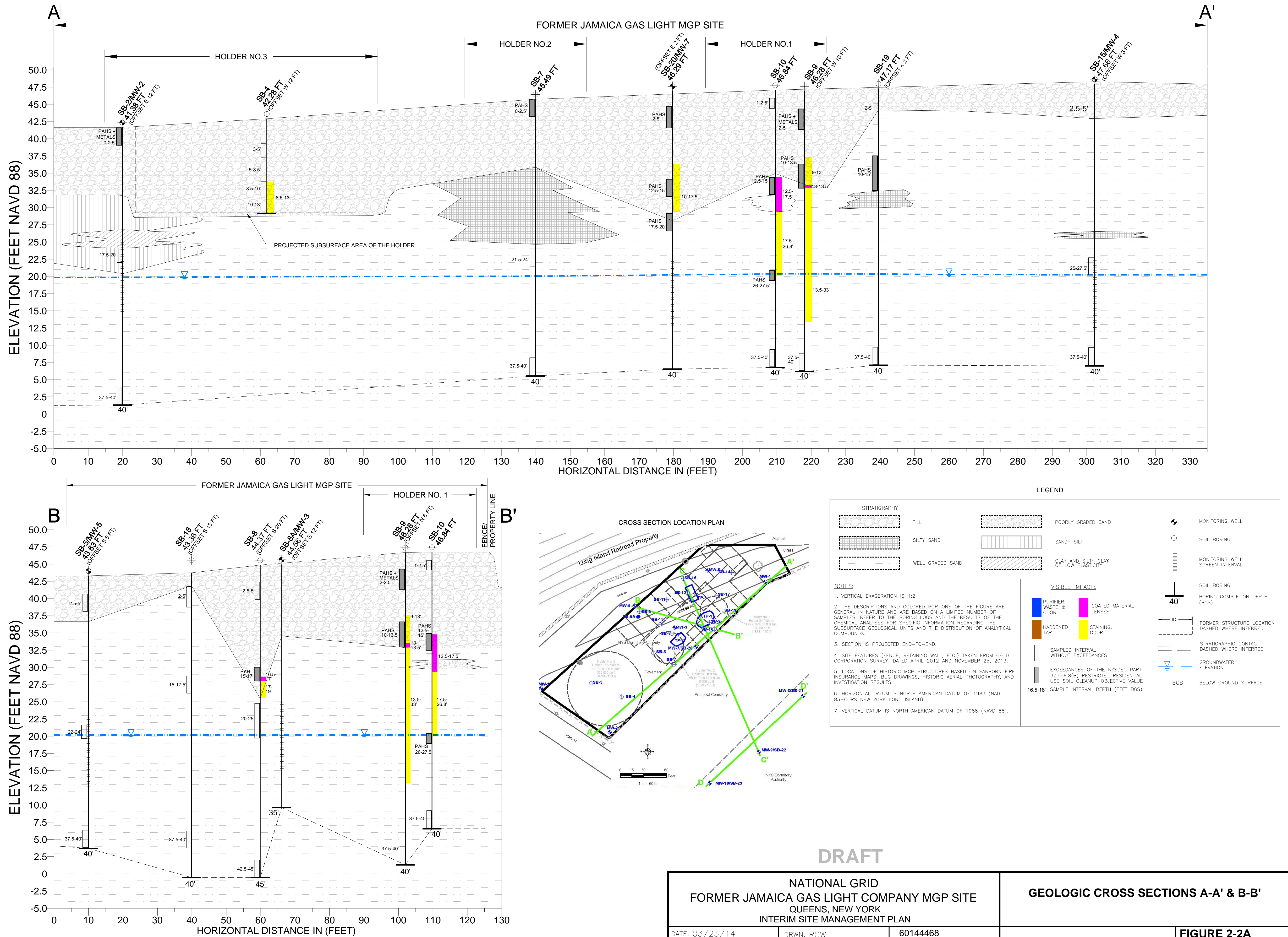
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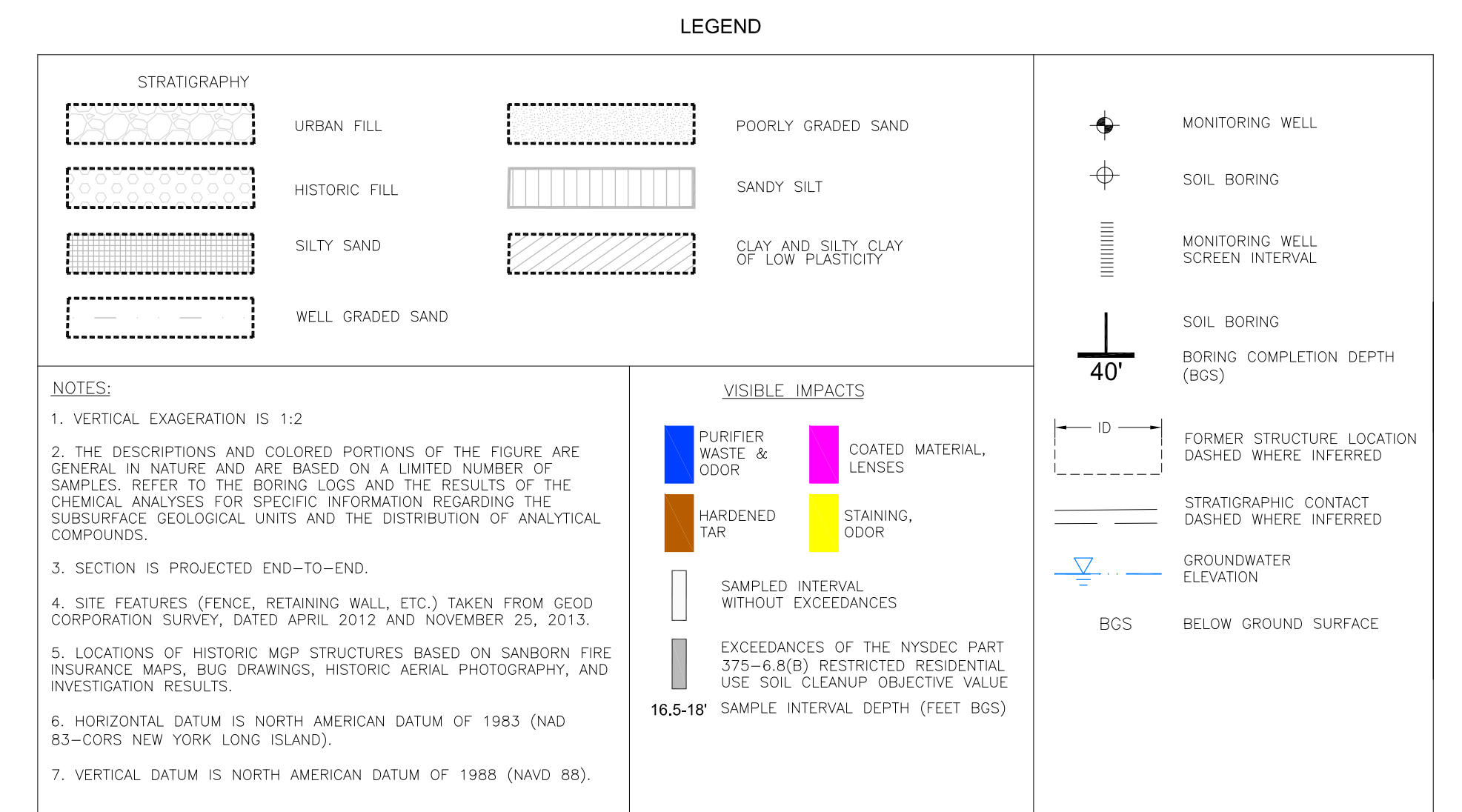
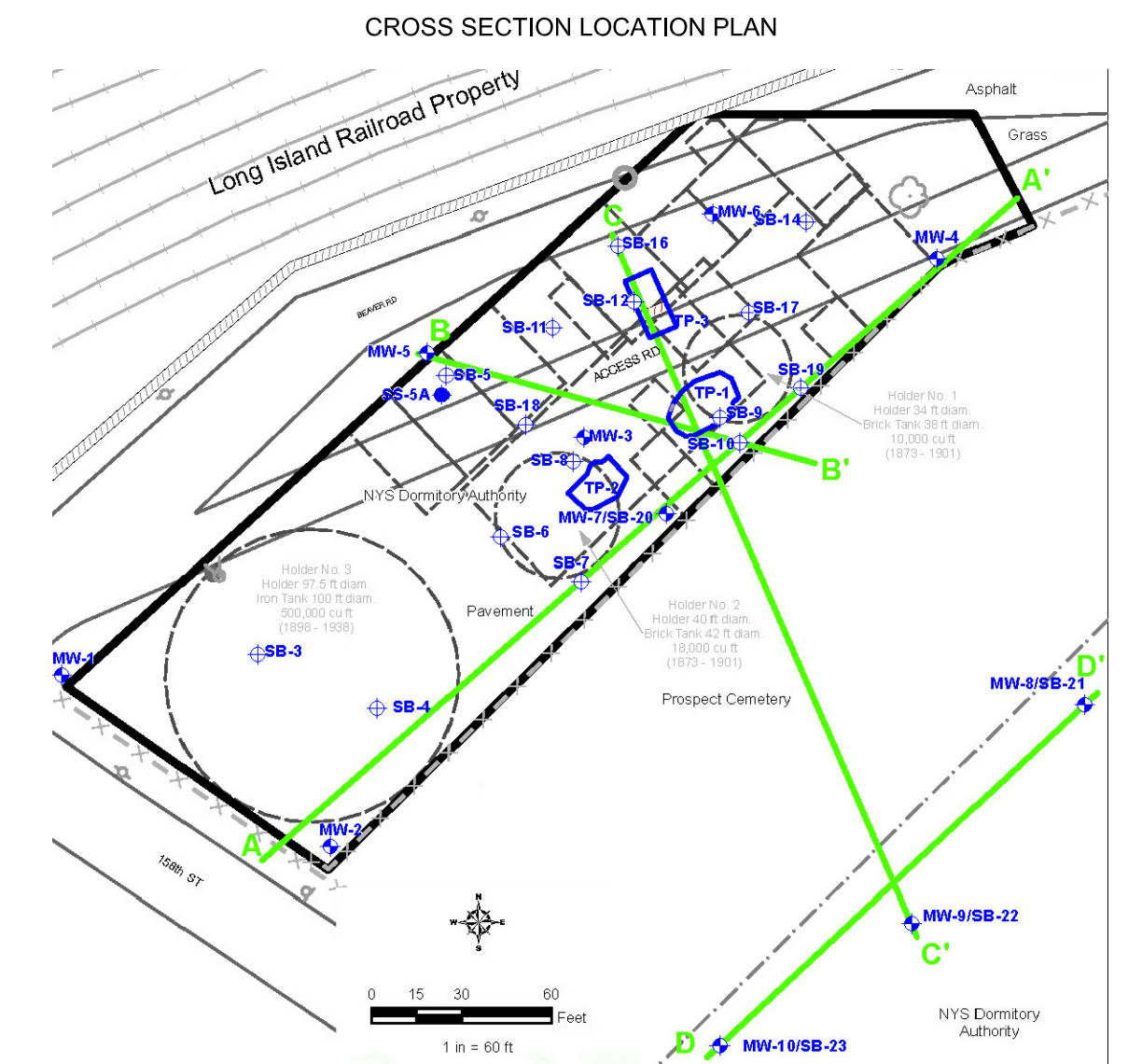
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2-1

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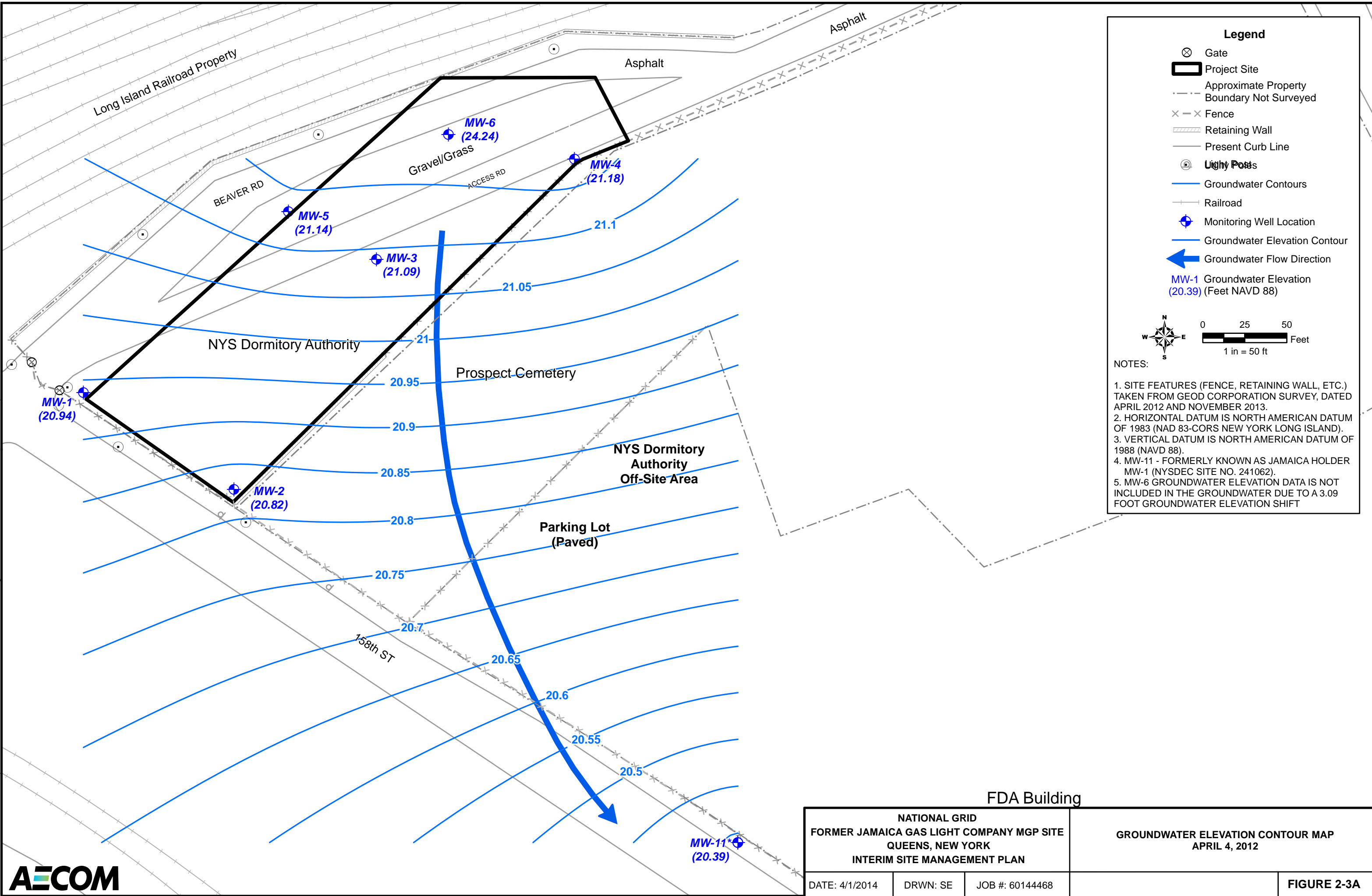
AECOM



**FIGURE 2-2B**

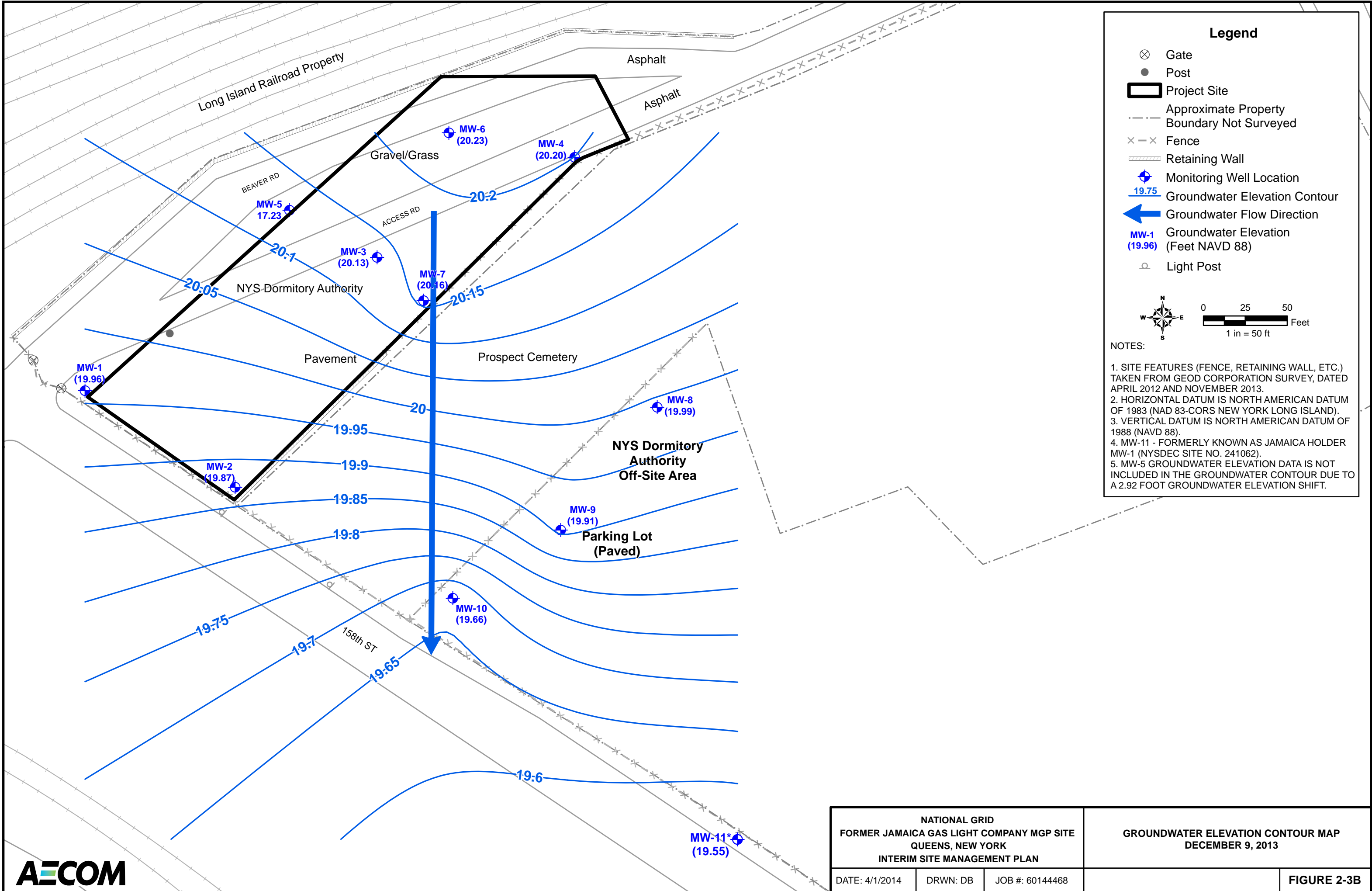
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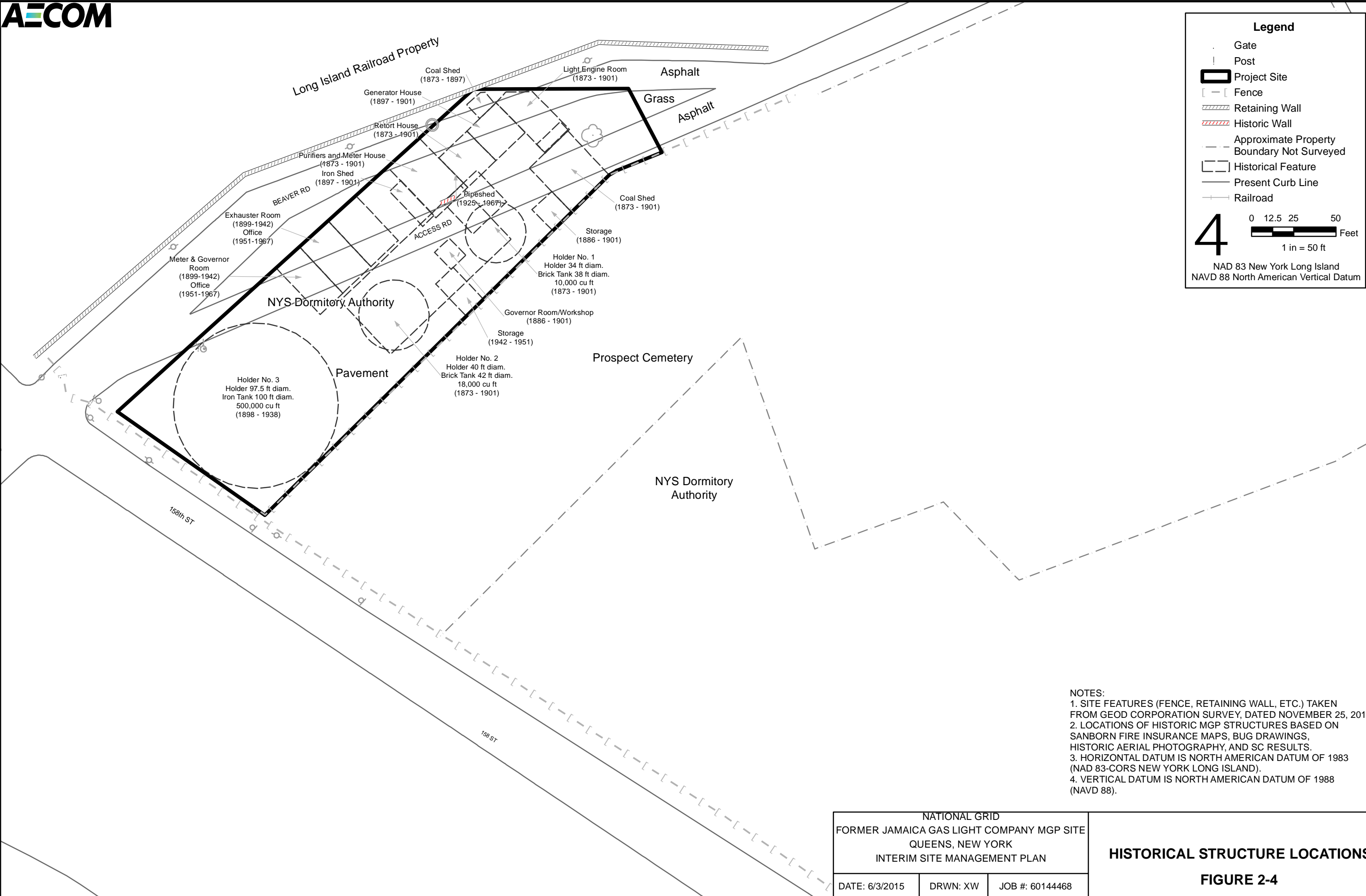
Document Path: J:\Water\ProjectFiles\60144468_Jamaica\GIS\MXD\Figure 4-4 Groundwater Elevation Contours April 4, 2012.mxd



NATIONAL GRID FORMER JAMAICA GAS LIGHT COMPANY MGP SITE QUEENS, NEW YORK INTERIM SITE MANAGEMENT PLAN			GROUNDWATER ELEVATION CONTOUR MAP APRIL 4, 2012	
DATE: 4/1/2014	DRWN: SE	JOB #: 60144468	FIGURE 2-3A	

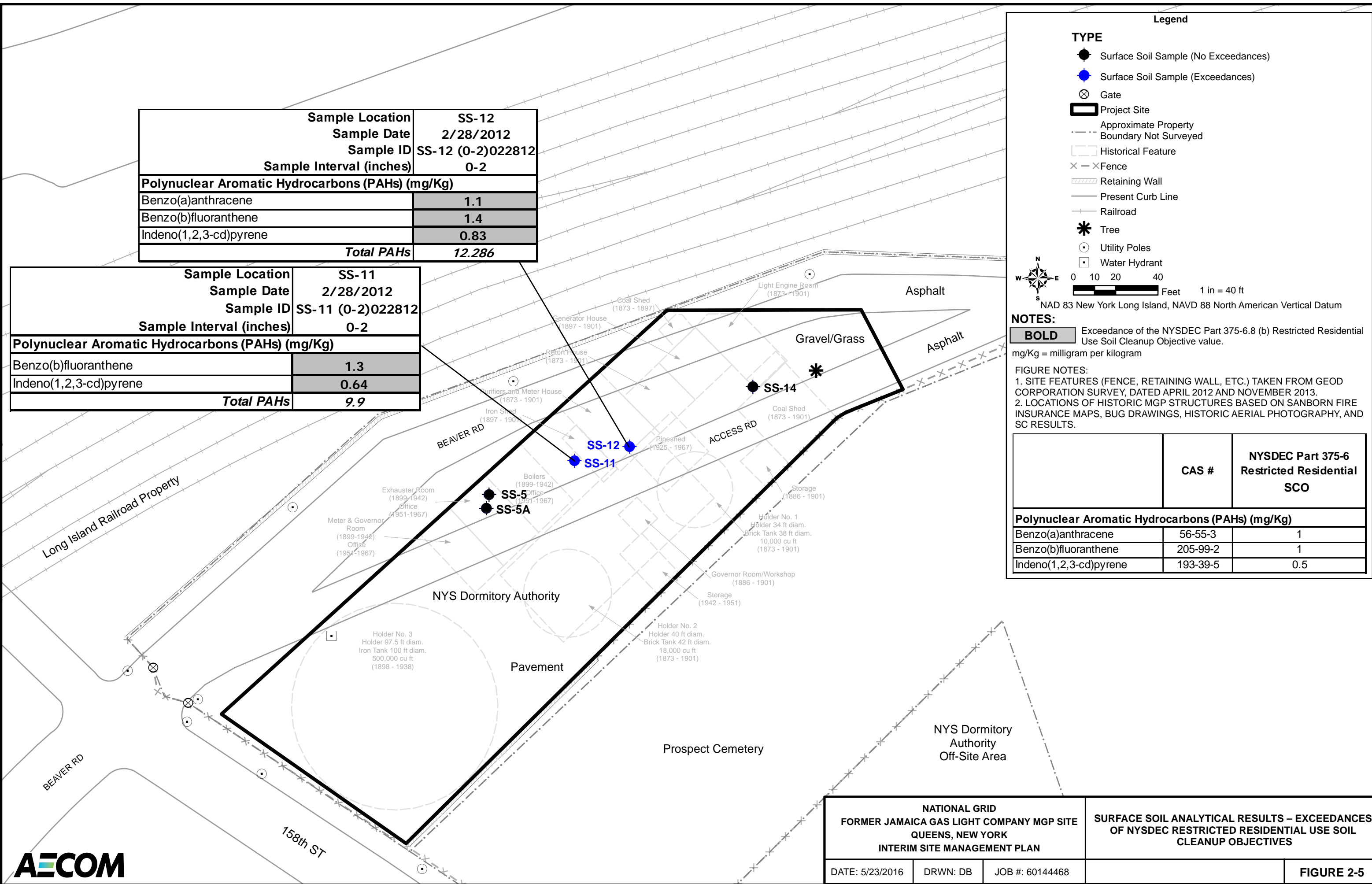
Document Path: J:\Water\ProjectFiles\60144468_Jamaica\GIS\MXD\Figure 4-5 Groundwater Elevation Contour Map December 9 20131.mxd





V:\National Grid\Jamaica MGP Site\GIS\Mxd\Updated_20140108\Figure 2-3 Historical Structure Locations and Site Boundary.mxd (National Grid on USNYOS01\Environment\Y)

Document Path: J:\Water\ProjectFiles\60144468_Jamaica\GIS\MXD\Figure 5-4 Surface Soil Analytical Exceedances.mxd



J:\Water\ProjectFiles\6014468_Jamaica\GIS\MXD\Figure 5-5 Subsurface Soil Remedial Use Objectives.mxd (National Grid on USNYSDEM Environment.VN)



Sample Location	SB-12	SB-12	SB-12
Sample Date	2/28/2012	2/28/2012	2/28/2012
Sample ID	SB-12 (2.5-5)022812	SB-12 (5-7.5)022812	SB-12 (10-12.5)022812
Sample Interval (feet)	2.5-5	5-7.5	10-12.5
SDG	460373431	460373431	460373431
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)			
Benzo(a)anthracene	24	69	0.21
Benzo(a)pyrene	18	37	0.12
Benzo(b)fluoranthene	19	41	0.17
Benzo(k)fluoranthene	8.4	22	0.05
Chrysene	21	54	0.2 J
Dibenz(a,h)anthracene	3.4	5.1	< 0.035 U
Indeno(1,2,3-cd)pyrene	13	13	< 0.035 U
Total PAHs	228.49	528	1.607

Sample Location	SB-11	SB-11
Sample Date	2/28/2012	2/28/2012
Sample ID	SB-11 (0-2.5)022812	SB-11 (25-27)022812
Sample Interval (feet)	0-2.5	25-27
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Indeno(1,2,3-cd)pyrene	0.61	0.41
Total PAHs	9.662	8.37

Sample Location	SB-08	SB-08
Sample Date	3/1/2012	3/1/2012
Sample ID	SB-8 (15-17)030112	SB-8 (20-25)030112
Sample Interval (feet)	15-17	20-25
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Indeno(1,2,3-cd)pyrene	0.51	< 0.035 U
Total PAHs	9.546	ND

Sample Location	TP-02
Sample Date	11/5/2013
Sample ID	TP-2(15-17)110513
Sample Interval (feet)	15-17
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)	
Benzo(a)anthracene	6
Benzo(a)pyrene	7.3 J
Benzo(b)fluoranthene	10
Chrysene	5.8
Dibenz(a,h)anthracene	0.52
Indeno(1,2,3-cd)pyrene	2
Total PAHs	65.81

Sample Location	SB-06	SB-06	SB-06
Sample Date	2/22/2012	2/22/2012	2/22/2012
Sample ID	SB-6 (1-3.5)022212	SB-6 (37.5-40)022212	DUP-1-022212
Sample Interval (feet)	1-3.5	37.5-40	37.5-40
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)			
Benzo(a)anthracene	6	< 0.036 U	< 0.037 U
Benzo(a)pyrene	6	< 0.036 U	< 0.037 U
Benzo(b)fluoranthene	5.8	< 0.036 U	< 0.037 U
Chrysene	5.5	< 0.36 U	< 0.37 U
Dibenz(a,h)anthracene	1.3	< 0.036 U	< 0.037 U
Indeno(1,2,3-cd)pyrene	4.1	< 0.036 U	< 0.037 U
Total PAHs	50.69	ND	ND

Sample Location	SB-03
Sample Date	2/27/2012
Sample ID	SB-3 (10-11.75)022712
Sample Interval (feet)	10-11.75
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)	
Benzo(a)anthracene	1.9
Benzo(a)pyrene	1.3
Benzo(b)fluoranthene	1.7
Indeno(1,2,3-cd)pyrene	1
Total PAHs	25.091

Sample Location	SB-07	SB-07
Sample Date	2/22/2012	2/22/2012
Sample ID	SB-7 (0-2.5)22212	SB-7 (37.5-40)022212
Sample Interval (feet)	0-2.5	37.5-40
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Benzo(a)anthracene	1.1	< 0.036 U
Benzo(b)fluoranthene	1.1	< 0.036 U
Indeno(1,2,3-cd)pyrene	0.53	< 0.036 U
Total PAHs	10.669	ND

Sample Location	SB-02	SB-02
Sample Date	3/6/2012	3/6/2012
Sample ID	SB-2 (0-2.5)030612	SB-2 (17.5-20)030612
Sample Interval (feet)	0-2.5	17.5-20
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Benzo(a)anthracene	1.3	< 0.035 U
Benzo(a)pyrene	1.3	< 0.035 U
Benzo(b)fluoranthene	1.4	< 0.035 U
Indeno(1,2,3-cd)pyrene	1	< 0.035 U
Total PAHs	12.77	ND
Inorganic Compounds (mg/Kg)		
Lead	596	5

Sample Location	SB-16	SB-16
Sample Date	11/18/2013	11/18/2013
Sample ID	SB-16 (5-10)111813	SB-16 (37.5-40)111813
Sample Interval (feet)	5-10	37.5-40
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Benzo(a)anthracene	20	< 0.038 U
Benzo(a)pyrene	23	< 0.038 U
Benzo(b)fluoranthene	26	< 0.038 U
Benzo(k)fluoranthene	11	< 0.038 U
Chrysene	19	< 0.38 U
Dibenz(a,h)anthracene	3.7	< 0.038 U
Indeno(1,2,3-cd)pyrene	12	< 0.038 U
Total PAHs	286.1	ND

Sample Location	TP-03
Sample Date	11/7/2013
Sample ID	TP-03(8-12)110713
Sample Interval (feet)	8-12
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)	
Benzo(a)anthracene	24
Benzo(a)pyrene	22 J
Benzo(b)fluoranthene	26
Benzo(k)fluoranthene	9.8
Chrysene	22
Dibenz(a,h)anthracene	2.6
Indeno(1,2,3-cd)pyrene	14
Total PAHs	229.12

Sample Location	SB-14	SB-14	SB-14
Sample Date	2/27/2012	2/27/2012	2/27/2012
Sample ID	SB-14 (2-5)022712	DUP-2-022712	SB-14 (25-26.5)022712
Sample Interval (feet)	2-5	2-5	25-26.5
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)			
Benzo(a)anthracene	2.7	3.1	0.36
Benzo(a)pyrene	2.3	2.8	0.33
Benzo(b)fluoranthene	2.1	2.5	0.3
Dibenz(a,h)anthracene	0.41	0.38	0.079
Indeno(1,2,3-cd)pyrene	1	0.84	0.22
Total PAHs	17.836	19.96	3.229

Sample Location	SB-17	SB-17	SB-17	SB-17
Sample Date	11/16/2013	11/18/2013	11/18/2013	11/18/2013
Sample ID	SB-17(2-5)111613	SB-17 (5-10)111813	SB-17 (10-15)111813	SB-17 (37.5-40)111813
Sample Interval (feet)	2-5	5-10	10-15	37.5-40
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)				
Benzo(a)anthracene	< 0.036 U	1.4	< 0.035 U	< 0.038 U
Benzo(a)pyrene	7.1 J	4.7	5.8	< 0.038 U
Benzo(b)fluoranthene	5.1	4.7	3.9 J	< 0.038 U
Dibenz(a,h)anthracene	0.6	0.48	0.52	< 0.038 U
Indeno(1,2,3-cd)pyrene	5.5	3.5	5	< 0.38 U
Total PAHs	27.245	28.25	23.816	1.6 J

Sample Location	SB-19	SB-19
Sample Date	11/12/2013	11/12/2013
Sample ID	SB-19 (10-15)111213	SB-19 (37.5-40)111213
Sample Interval (feet)	10-15	37.5-40
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Indeno(1,2,3-cd)pyrene	0.81	0.01 J
Total PAHs	9.644	0.104

Sample Location	SB-09	SB-09	SB-09
Sample Date	2/23/2012	2/23/2012	2/23/2012
Sample ID	SB-9 (2.5-5)022312	SB-9 (10-13.5)022312	SB-9 (37.5-40)022312
Sample Interval (feet)	2.5-5	10-13.5	37.5-40
SDG	460373431	460373431	460373881
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)			
Benzo(a)anthracene	1.6	19	< 0.039 U
Benzo(a)pyrene	1.8	24	< 0.039 U
Benzo(b)fluoranthene	1.9	17	< 0.039 U
Benzo(k)fluoranthene	0.69	6.6	< 0.039 U
Chrysene	1.5	19	< 0.39 U
Dibenz(a,h)anthracene	0.31	2	< 0.039 U
Indeno(1,2,3-cd)pyrene	1.2	18	< 0.039 U
Naphthalene	0.12 J	190	< 0.39 U
Phenanthrene	1.6	130	< 0.39 U
Total PAHs	17.611	884.6	ND
Inorganic Compounds (mg/Kg)			
Mercury	3.8	0.25	< 0.039 U

Sample Location	SB-10	SB-10	SB-10
Sample Date	2/23/2012	2/23/2012	2/23/2012
Sample ID	SB-10 (12.5-15)022312	SB-10 (26-27.5)022312	SB-10 (37.5-40)022312
Sample Interval (feet)	12.5-15	26-27.5	37.5-40
SDG	460373431	460373431	460373881
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)			
Benzo(a)anthracene	82	3.4	< 0.036 U
Benzo(a)pyrene	37	1.8	< 0.036 U
Benzo(b)fluoranthene	47	1.9	< 0.036 U
Benzo(k)fluoranthene	17	0.56	< 0.036 U
Chrysene	71	3.4	< 0.36 U
Dibenz(a,h)anthracene	5.2	0.47	< 0.036 U
Fluoranthene	110	4.4	< 0.36 U
Indeno(1,2,3-cd)pyrene	11	1	< 0.036 U
Phenanthrene	140	6.2	< 0.36 U
Total PAHs	854.8	36.12	ND

Sample Location	SB-21	SB-21
Sample Date	11/9/2013	11/9/2013
Sample ID	SB-21 (1-5)110913	SB-21 (5-10)110913
Sample Interval (feet)	1-5	5-10
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Benzo(a)pyrene	1.4 J	0.25 J
Benzo(b)fluoranthene	1.5 J	0.24
Indeno(1,2,3-cd)pyrene	0.76	0.22
Total PAHs	9.415	2.275

Sample Location	SB-22	SB-22
Sample Date	11/10/2013	11/10/2013
Sample ID	SB-22 (5-10)111013	SB-22 (10-15)111013
Sample Interval (feet)	5-10	10-15
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Benzo(a)anthracene	2	< 0.035 U
Benzo(a)pyrene	2.1 J	< 0.035 U
Benzo(b)fluoranthene	2.1	< 0.035 U
Dibenz(a,h)anthracene	0.42	< 0.035 U
Indeno(1,2,3-cd)pyrene	1.7	< 0.035 U
Total PAHs	21.816	ND

Sample Location	SB-23	SB-23
Sample Date	11/9/2013	11/16/2013
Sample ID	SB-23 (1-4)110913	SB-23(5-10)111613
Sample Interval (feet)	1-4	5-10
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)		
Indeno(1,2,3-cd)pyrene	0.81	0.12
Total PAHs	8.636	0.643

NATIONAL GRID
FORMER JAMAICA GAS LIGHT COMPANY MGP SITE
QUEENS, NEW YORK
INTERIM SITE MANAGEMENT PLAN

SUBSURFACE SOIL ANALYTICAL RESULTS –
EXCEEDANCES OF NYSDEC RESTRICTED USE SOIL
CLEANUP OBJECTIVES

DATE: 5/23/2016 DRWN: SE JOB #: 60144468

FIGURE 2-6

Legend

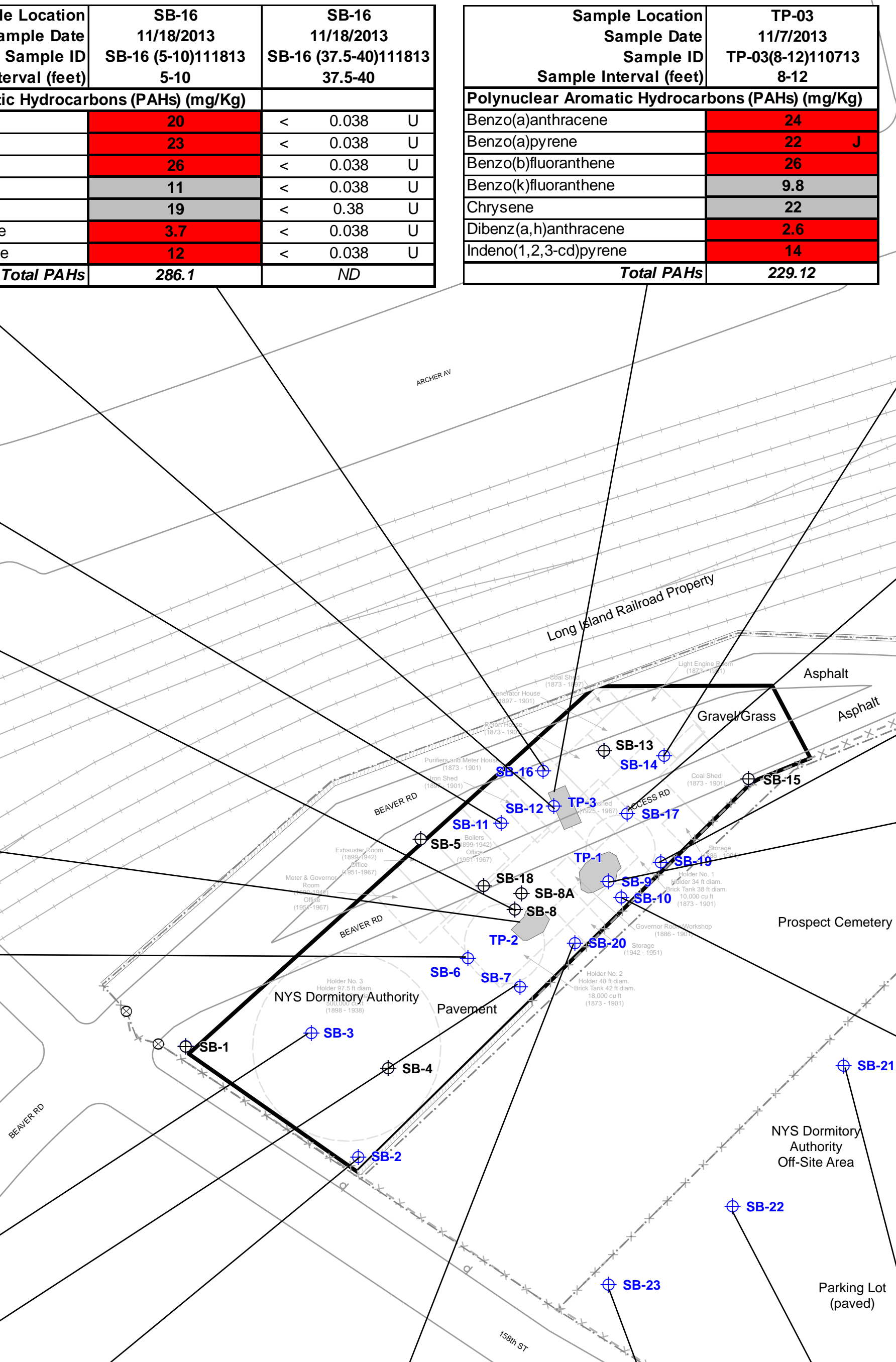
- Soil Boring (No Exceedences)
- Soil Boring (Exceedences)
- Gate
- Project Site
- Approximate Property Boundary Not Surveyed
- Historical Feature
- Railroad
- Fence
- Retaining Wall
- Present Curb Line
- Test Pits
- Light Post

0 25 50 100 Feet
1 in = 50 ft

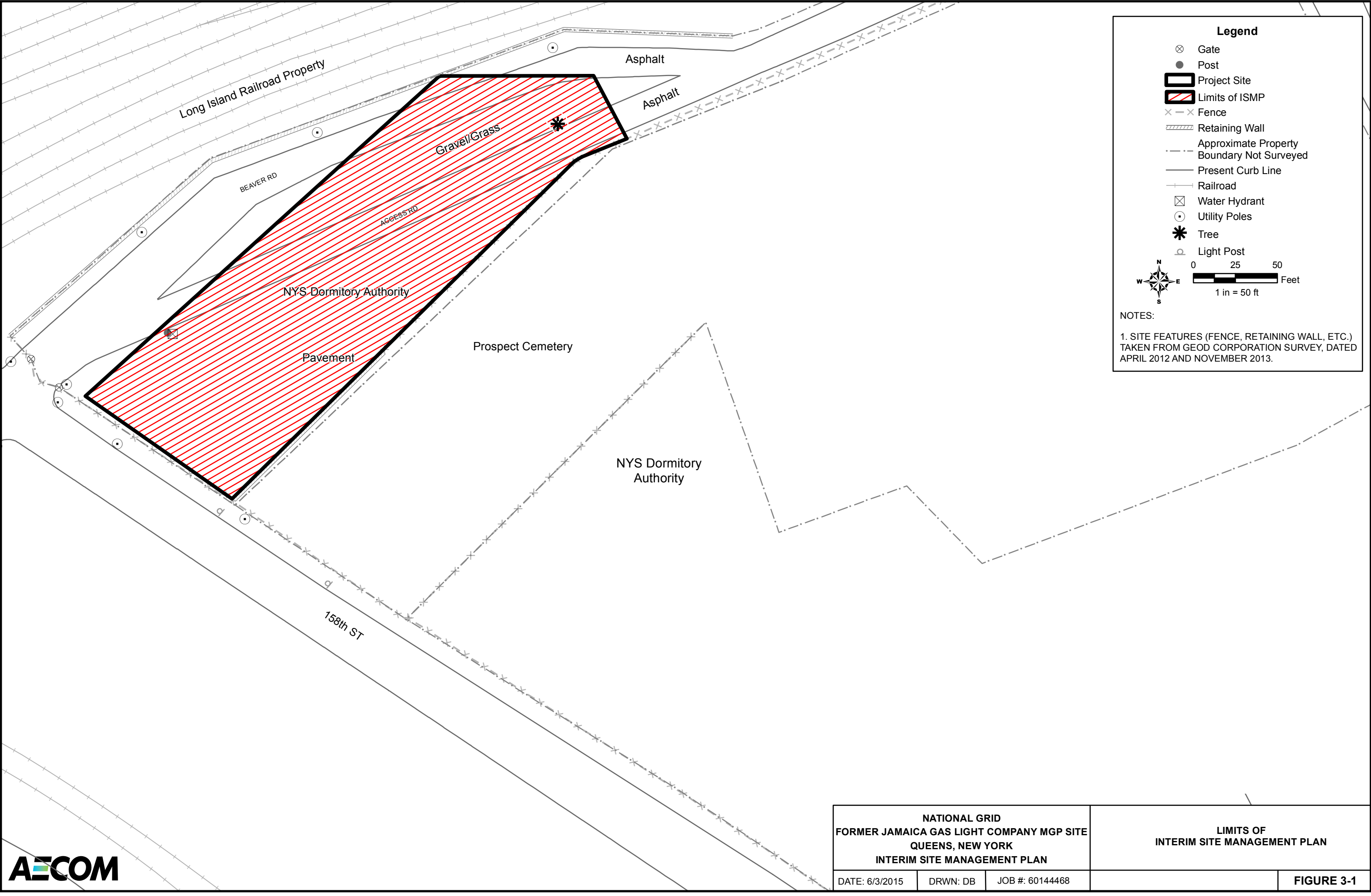
BOLD Exceedance of the NYSDEC CP-51 Alternate Criteria of 500 mg/kg for Total PAHs.
BOLD Exceedance of the NYSDEC Part 375-6.8(b) Restricted Residential Use Soil Cleanup Objective value.
BOLD Exceedance of the NYSDEC Part 375-6.8(b) Commercial Use Soil Cleanup Objective value.
Only Exceedances of MGP constituents are shown
Bold indicates compound was detected
ND = calculated totals are not detected
mg/Kg = milligram per kilogram
U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

GENERAL NOTES:
1. SITE FEATURES (FENCE, RETAINING WALL, ETC.) TAKEN FROM GEOD CORPORATION SURVEY, DATED APRIL 2012 AND NOVEMBER 2013.
2. LOCATIONS OF HISTORIC MGP STRUCTURES BASED ON SANBORN FIRE INSURANCE MAPS, BUG DRAWINGS, HISTORIC AERIAL PHOTOGRAPHY, AND SC RESULTS.

	CAS #	NYSDEC Part 375-6 Restricted Residential Use	NYSDEC Part 375-6 Commercial Use
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/Kg)			
Benzo(a)anthracene	56-55-3	1	5.6
Benzo(a)pyrene	50-32-8	1	1
Benzo(b)fluoranthene	205-99-2	1	5.6
Benzo(k)fluoranthene	207-08-9	3.9	56
Chrysene	218-01-9	3.9	56
Dibenz(a,h)anthracene	53-70-3	0.33	0.56
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	5.6
Naphthalene	91-20-3	100	500
Phenanthrene	85-01-8	100	500
Total PAH			
Inorganic Compounds (mg/Kg)			
Lead	7439-92-1	400	1,000
Mercury	7439-97-6	0.81	2.8



Document Path: J:\Water\ProjectFiles\60144468_Jamaica\GIS\MXD\Figure 2-2 Site Layout.mxd



NATIONAL GRID FORMER JAMAICA GAS LIGHT COMPANY MGP SITE QUEENS, NEW YORK INTERIM SITE MANAGEMENT PLAN			LIMITS OF INTERIM SITE MANAGEMENT PLAN	
DATE: 6/3/2015	DRWN: DB	JOB #: 60144468	FIGURE 3-1	



APPENDIX A – LIST OF SITE CONTACTS

Name	Phone/Email Address
Linda M. Myles Associate General Counsel The City University of New York	212-794-5426 Linda.myles@mail.cuny.edu
Iris Weinshall Vice Chancellor for Facilities Planning, Construction and Management	212-794-5558 Iris.weinshall@mail.cuny.edu
Donald Campbell Project Manager, Site Investigation & Remediation National Grid	718-963-5453 Donald.campbell@nationalgrid.com
Greta White Project Manager NYSDEC	518-402-2029 greta.white@dec.ny.gov
Joseph Giordano Environmental Land Use Manager, Legal Department National Grid	516-545-4790 joseph.giordano@nationalgrid.com
Robert Forstner National Grid's Consultant AECOM	212-377-8721 robert.forstner@aecom.com



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

APPENDIX B – BORING AND MONITORING WELL CONSTRUCTION LOGS



Boring ID: SB-1 / MW-1

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 5, 2012

Date Started/Completed: March 5, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: Jessica Ehlen

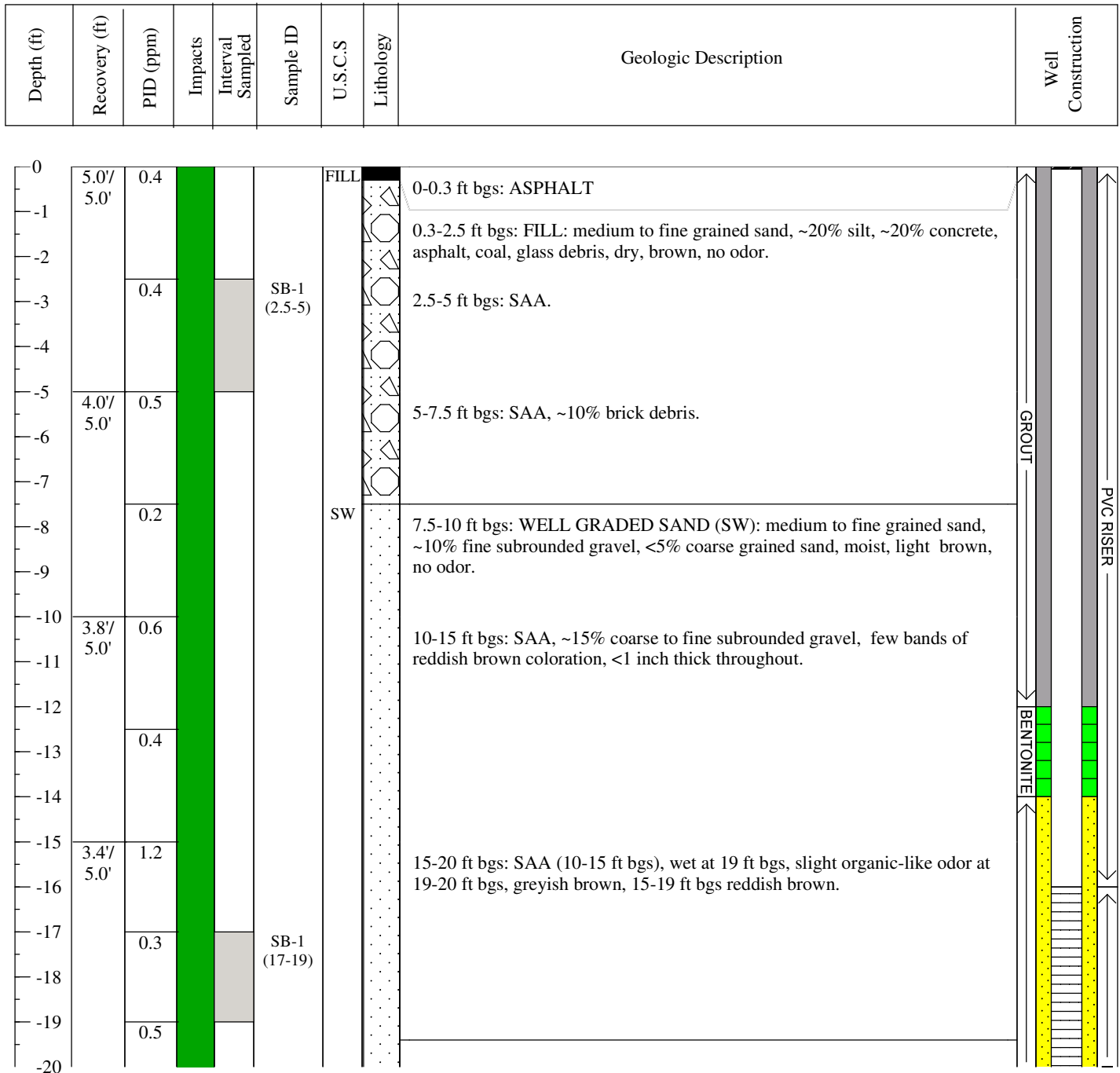
Water Level: ~19 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 39.02' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-1



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
A 2 inch well was installed at this location from 16 to 26 ft bgs.
Well was installed ~3' south from sampled boring due to auger refusal.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-1 / MW-1

Page 2 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-210
Client: National Grid
Date Pre-Cleared: March 5, 2012
Date Started/Completed: March 5, 2012

Drilling Company: Fenley and Nicol
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 8 inches
Logged By: Jessica Ehlen

Water Level: ~19 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 39.02' NAVD 88
Converted To Well (Y/N): Yes
Well ID: MW-1

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20	5.0'/ 5.0'	1.8						20-25 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% coarse grained sand, <5 % fine subrounded gravel, wet, light brown to reddish brown, no odor.	
-21		0.3							
-22	5.0'/ 5.0'	1.1						25-30 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~5% fine subrounded gravel, wet, light brown, no odor.	
-23		0.5							
-24	5.0'/ 5.0'	1.1						30- 35 ft bgs:SAA.	
-25		0.4							
-26	3.8'/ 5.0'	0.5						35-40 ft bgs: SAA, brown.	
-27		0.5							
-28					SB-1 (37.5-40)				
-29									
-30									
-31									
-32									
-33									
-34									
-35									
-36									
-37									
-38									
-39									
-40								END OF BORING 40 ft bgs	

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
A 2 inch well was installed at this location from 16 to 26 ft bgs.
Well was installed ~3' south from sampled boring due to auger refusal.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-2 / MW-2

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 6, 2012

Date Started/Completed: March 6, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: Jessica Ehlen

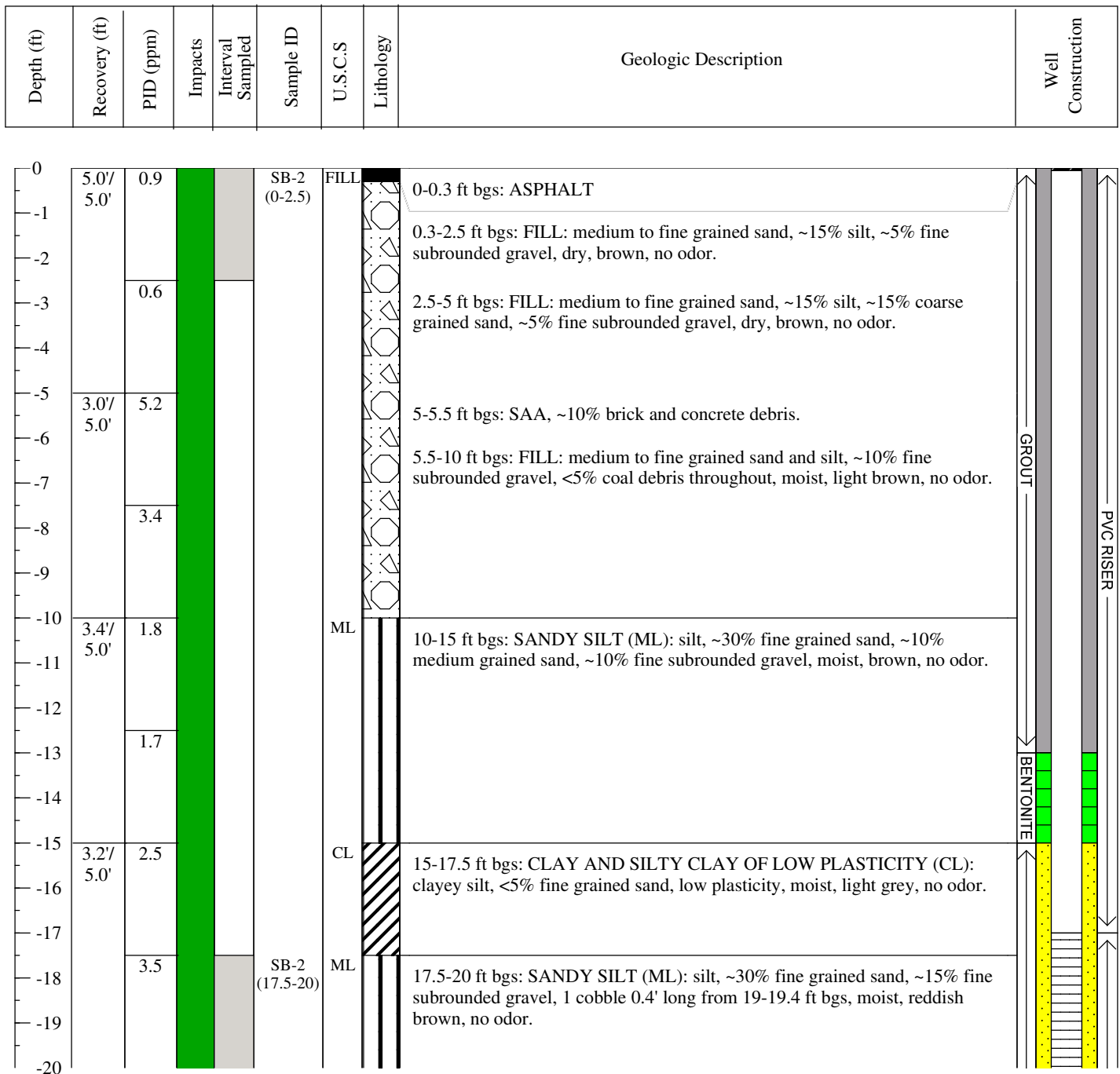
Water Level: ~20 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 41.38' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-2



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
A 2 inch well was installed at this location from 17 to 27 ft bgs.
Boring collapsed from 40-29 ft bgs while pulling rods augers/rods from borehole.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-2 / MW-2

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 6, 2012

Date Started/Completed: March 6, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: Jessica Ehlen

Water Level: ~20 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 41.38' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-2

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20									
-21	2.8'/5.0'	3.3					SW	20-25 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~15% fine subrounded gravel, wet, light brown, no odor.	
-22									
-23		2.7							
-24									
-25	2.8'/5.0'	4.5						25-30 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~15% coarse grained sand, <5% fine subrounded gravel, wet, light brown, no odor.	
-26									
-27									
-28		2.7							
-29									
-30	5.0'/5.0'	3.2						30-35 ft bgs: SAA.	
-31									
-32									
-33		2.5							
-34									
-35	5.0'/5.0'	2.4						35-40 ft bgs: SAA.	
-36									
-37									
-38		1.3			SB-2 (37.5-40)				
-39									
-40								END OF BORING 40 ft bgs	

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
A 2 inch well was installed at this location from 17 to 27 ft bgs.
Boring collapsed from 40-29 ft bgs while pulling rods augers/rods from borehole.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-3

Page 1 of 1

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 27, 2012

Date Started/Completed: February 27, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

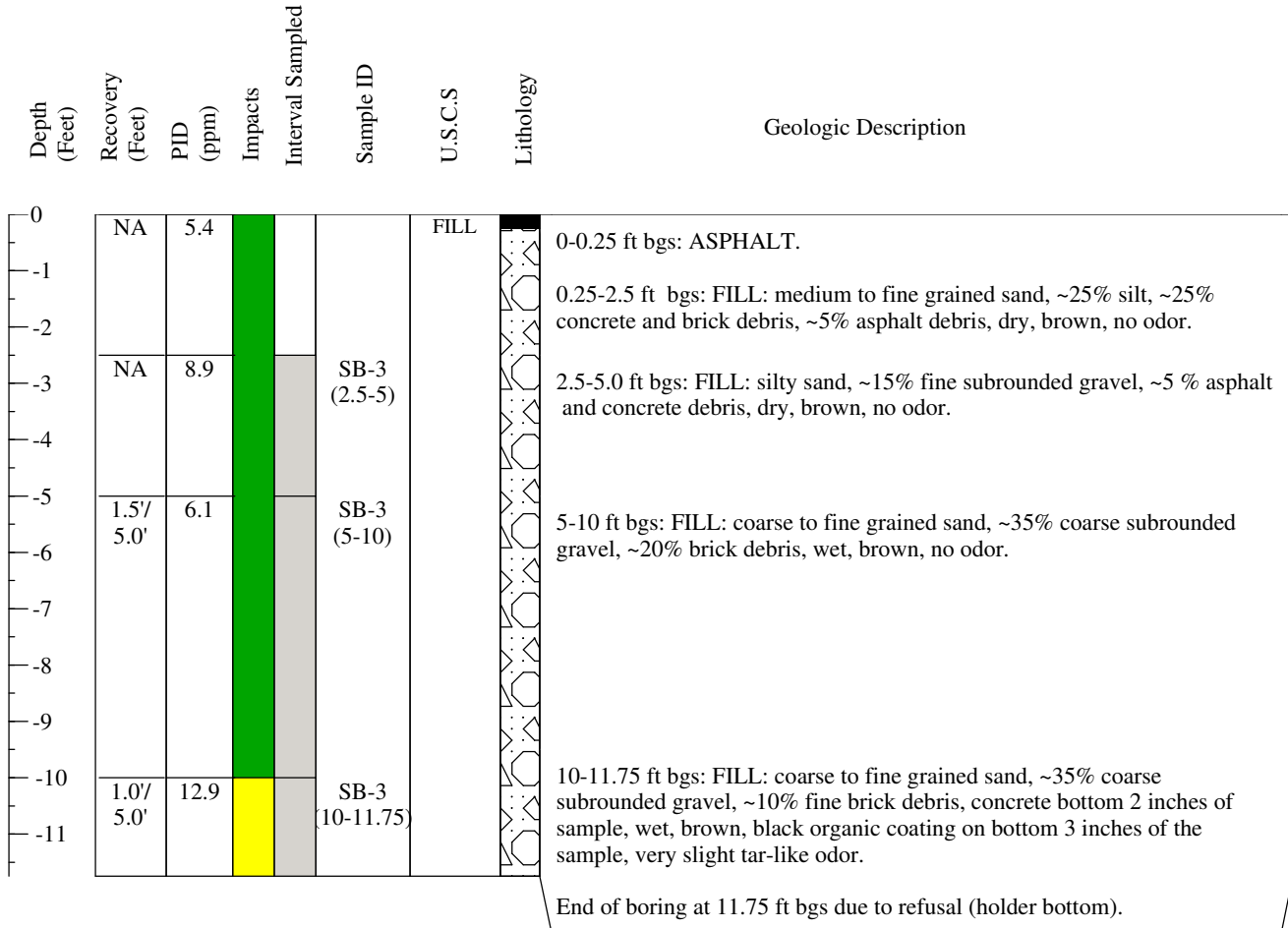
Water Level: ~5 ft bgs

Total Depth: 11.75 ft bgs

Ground Elevation: 40.78' NAVD 88

Converted To Well (Y/N): No

Well ID: NA



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S. - Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid



Boring ID: SB-4

Page 1 of 1

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 27, 2012

Date Started/Completed: February 27, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~10 ft bgs

Total Depth: 13 ft bgs

Ground Elevation: 42.28' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
0	5.0'/ 5.0'	4.2						0-0.2 ft bgs: ASPHALT
-1								0.2-1.5 ft bgs: FILL: medium to fine grained sand, ~25% silt, ~25% brick and concrete debris, brown, dry, no odor.
-2		6.1						1.5-3 ft bgs: SAA, moist.
-3		7.5			SB-4 (3-5)			3- 5 ft bgs: FILL: sandy silt, ~15% fine concrete and brick debris, moist, brown, no odor.
-4								
-5	3.3'/ 5.0'	7.3			SB-4 (5-8.5)			5-8.5 ft bgs: FILL: sandy silt, ~10% fine subrounded gravel, ~10% clay, moist, brown, slight organic odor.
-6								
-7								
-8								
-9		24.5			SB-4 (8.5-10)			8.5-10 ft bgs: FILL: wood debris (piling), creosote-like odor.
-10	1.8'/ 5.0'	14.9			SB-4 (10-13)			10-13 ft bgs: FILL: sandy silt, ~30% clay, ~10% wood, concrete, and brick debris, low plasticity, wet, 2 inches of concrete at bottom of sample, slight tar-like odor.
-11								
-12								
-13								End of boring at 13 ft bgs due to refusal (holder bottom).

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-5 / MW-5

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 8, 2012

Date Started/Completed: March 8/12, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: Jessica Ehlen

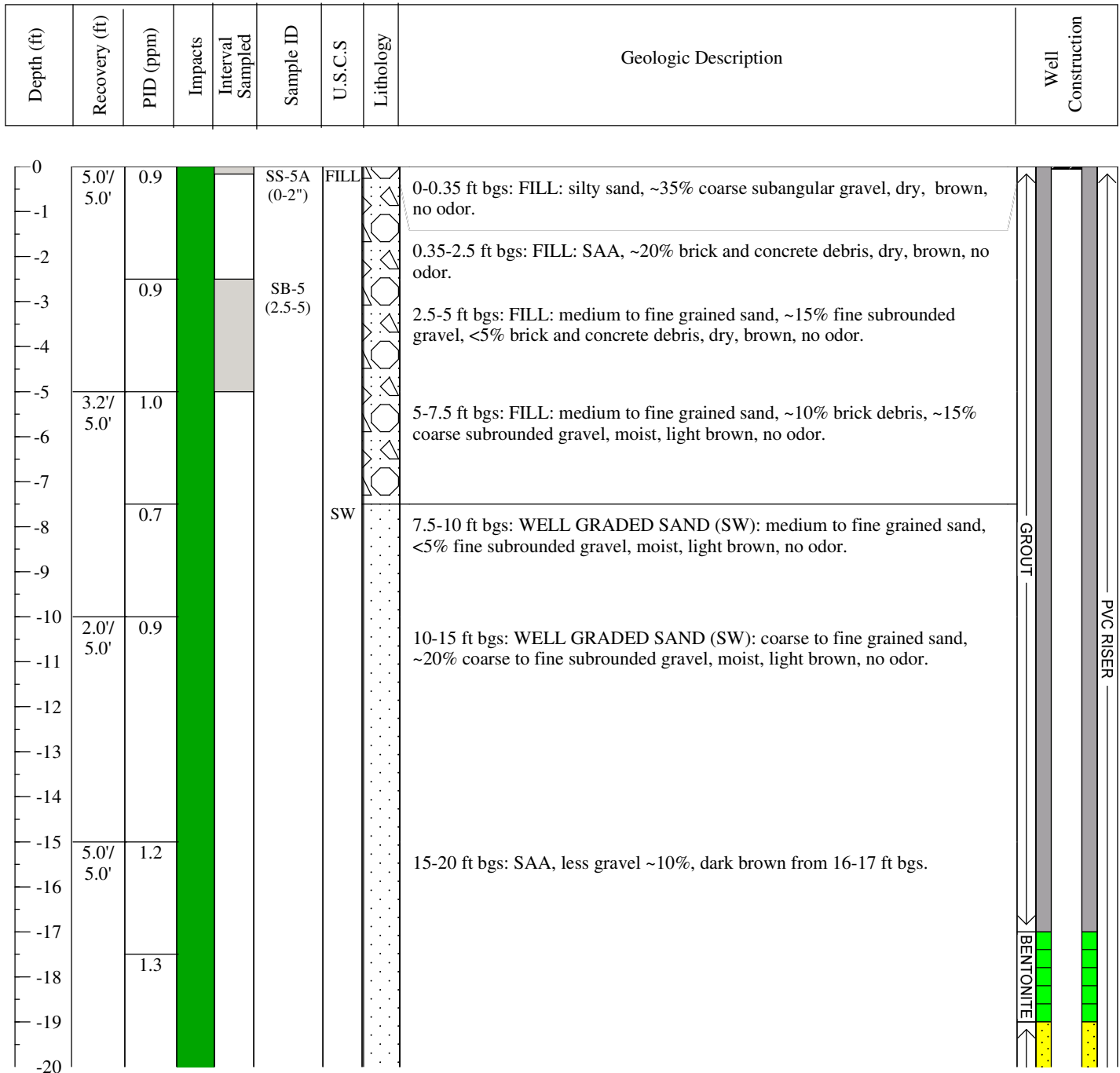
Water Level: ~24 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 43.63' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-5



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.
A 2 inch well was installed at this location from 21 to 31 ft bgs.
Boring collapsed from 40-33 ft bgs while augering.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-5 / MW-5

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 8, 2012

Date Started/Completed: March 8/12, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: Jessica Ehlen

Water Level: ~24 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 43.63' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-5

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20	5.0'/5.0'	0.6						20-25 ft bgs: SAA, wet at 24 ft bgs, ~5% fine subrounded gravel.	
-21		0.7							
-22		0.3			SB-5 (22-24)				
-23									
-24									
-25	5.0'/5.0'	0.6						25-30 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% coarse grained sand, ~10% fine subrounded gravel, wet, light brown, no odor.	
-26		0.1							
-27									
-28									
-29									
-30	5.0'/5.0'	0.0						30-35 ft bgs: SAA.	
-31		0.8							
-32									
-33									
-34									
-35	5.0'/5.0'	0.0						35-4 ft bgs: SAA, ~10% coarse subrounded gravel, wet, brown, no odor.	
-36		0.0							
-37									
-38					SB-5 (37.5-40)				
-39									
-40								END OF BORING 40 ft bgs	

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.
A 2 inch well was installed at this location from 21 to 31 ft bgs.
Boring collapsed from 40-33 ft bgs while augering.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-6

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 22, 2012

Date Started/Completed: February 22, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Hallie Garrett

Water Level: ~24 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 43.79' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
0	2.5'/ 3.5'	0.7						
-1					SB-6 (1-3.5)			0-0.21 ft bgs: ASPHALT 0.21-0.42 ft bgs: FILL: sandy gravel/gravelly sand base, no fines. GW/SW, grey / black, fine to medium grained sand, medium dense, dry. 0.42-3.5 ft bgs: FILL: fine to medium grained sand, ~10% coarse grained sand, ~10% angular gravel, <5% cobble, medium density, dry, brown.
-2								
-3								
-4	2.5'/ 3.5'	0.9						3.5-7 ft bgs: SAA.
-5								
-6								
-7	3.0'/ 3.0'	1.4						7-9.5 ft bgs: FILL: sandy silt, slightly plastic, ~25% fine to medium grained sand, soft, moist, reddish brown.
-8								
-9								9.5-10 ft bgs: FILL: brick/concrete fragments.
-10	2.5'/ 5.0'	1.3				SW		10-15 ft bgs: WELL GRADED SAND (SW): fine to medium grained sand, ~10% coarse angular sand, ~5 % fine rounded gravel, medium dense, dry, orangish brown.
-11								
-12								
-13								
-14								
-15	3.0'/ 5.0'	0.7						15-20 ft bgs: SAA, dark and light banding ~1/8-1/4 inch width.
-16								
-17								
-18		1.1						
-19								
-20								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-6

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 22, 2012

Date Started/Completed: February 22, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Hallie Garrett

Water Level: ~24 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 43.79' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	3.0'/ 5.0'	NA						20-25 ft bgs: SAA, 6 inch thick coarse sand and fine gravel lense at 24 ft bgs, wet at ~24 ft bgs.
-21								
-22		1.3			SB-6 (22-24)			
-23								
-24		1.3						
-25	3.0'/ 5.0'	1.1						25-30 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~5% fine rounded gravel, medium dense, wet, light brown.
-26								
-27								
-28		1.3						
-29								
-30	5.0'/ 5.0'	1.4						30-35 ft bgs: SAA.
-31								
-32								
-33		1.2						
-34								
-35	5.0'/ 5.0'	0.6						35-40 ft bgs: SAA.
-36								
-37								
-38		1.0			SB-6 (37.5-40)			
-39								
-40								END OF BORING 40 ft bgs

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-7

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 22, 2012

Date Started/Completed: February 22, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~24 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.49' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
0	5.0'/ 5.0'	2.8			SB-7 (0-2.5)		FILL	0-0.2 ft bgs: ASPHALT 0.2-1.2 ft bgs: FILL: medium to fine grained sand, ~25% silt, ~30% brick and concrete debris, dry, brown, no odor.
-1								
-2								
-3		2.1						1.2-2 ft bgs: FILL: CONCRETE SLAB 2-2.5 ft bgs: SAA (0.2-1.2).
-4								2.5-5 ft bgs: SAA.
-5	5.0'/ 5.0'	1.5						5-6 ft bgs: SAA.
-6		1.0						6-10 ft bgs: FILL: medium to fine grained sand, ~30% silt, ~10% fine subrounded gravel, 2 pieces of coal from 8.5-9 ft bgs, <5% plant fibers (roots), dry, brown, no odor.
-7								
-8		0.9						
-9								
-10	2.8'/ 5.0'	1.6				SM		10-15 ft bgs: SILTY SAND (SM): medium to fine grained sand and silt, <5% fine rounded gravel, dry, tan, dark brown from 13.5'-13.8', no odor.
-11								
-12								
-13								
-14								
-15	2.0'/ 5.0'	1.0						15-20 ft bgs: SAA, ~15% fine rounded gravel, dry, orange-tan, dark brown from 18'-19', no odor.
-16								
-17								
-18								
-19								
-20								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-7

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 22, 2012

Date Started/Completed: February 22, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~24 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.49' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	4.2'/ 5.0'	0.8						20-21.5 ft bgs: SAA, dry, dark brown from 21-21.3 ft bgs.
-21		0.6						
-22		0.6			SB-7 (21.5-24)	SW		21.5-24 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% coarse grained sand, moist, tan, orange band from 23'-23.2', no odor.
-23								
-24		1.0						24-25 ft bgs: SAA, wet.
-25	2.8'/ 5.0'	0.6						25-30 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~10% fine rounded gravel, wet, tan, few orange bands at 27.5'-28.7', no odor.
-26								
-27								
-28		0.5						
-29								
-30	5.0'/ 5.0'	1.0						30-35 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~25% fine rounded gravel, wet, light brown, no odor.
-31								
-32								
-33		0.6						
-34								
-35	5.0'/ 5.0'	0.6						35-40 ft bgs: SAA.
-36								
-37								
-38		2.0			SB-7 (37.5-40) +ms/msd			
-39								
-40								END OF BORING 40 ft bgs.

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



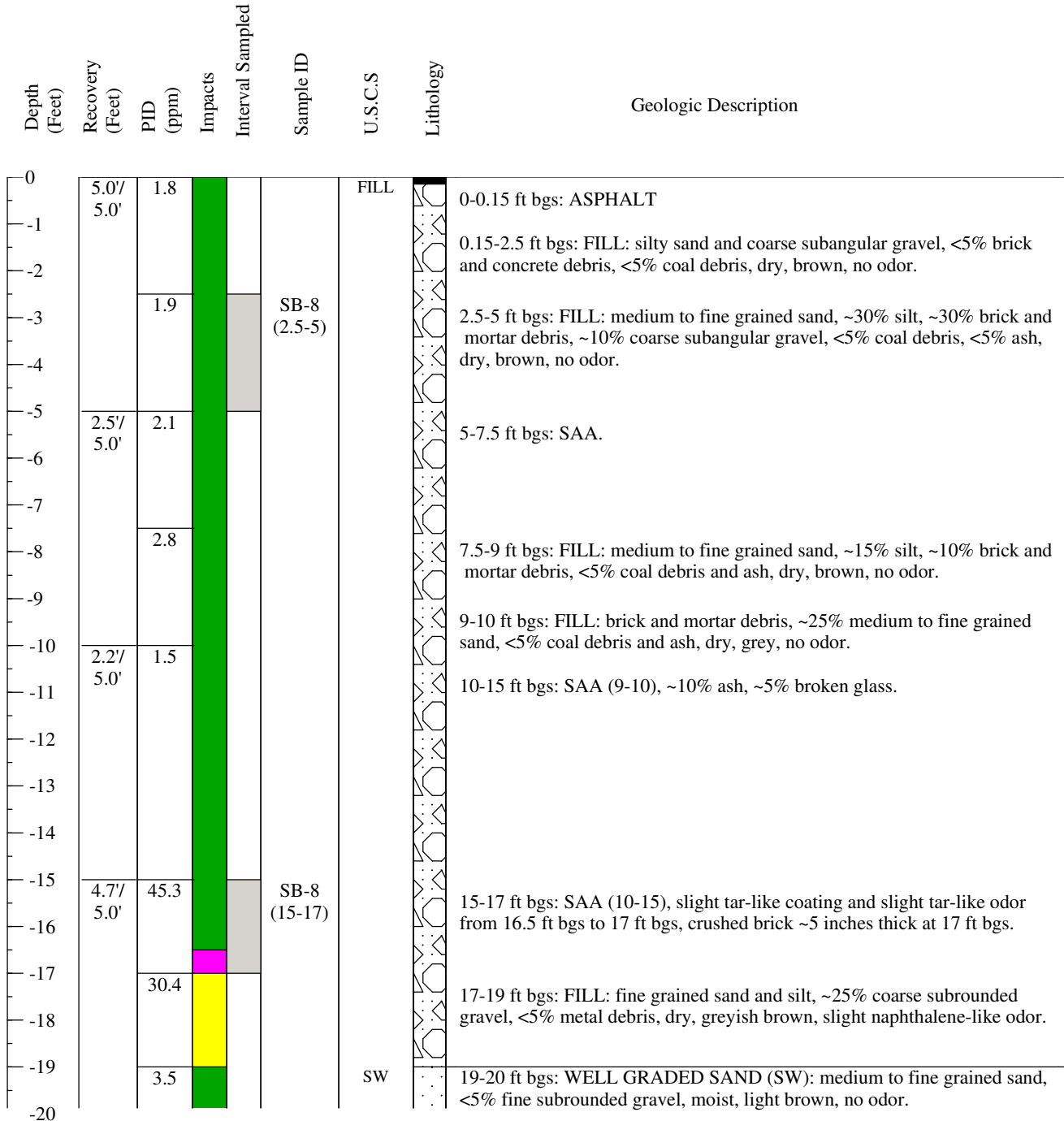
Boring ID: SB-8

Page 1 of 3

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-210
Client: National Grid
Date Pre-Cleared: March 1, 2012
Date Started/Completed: March 7, 2012

Drilling Company: Fenley and Nicol
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 8 Inches
Logged By: Jessica Ehlen

Water Level: ~24.5 ft bgs
Total Depth: 45 ft bgs
Ground Elevation: 44.37' NAVD 88
Converted To Well (Y/N): No
Well ID: NA



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-8

Page 2 of 3

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-210
Client: National Grid
Date Pre-Cleared: March 1, 2012
Date Started/Completed: March 7, 2012

Drilling Company: Fenley and Nicol
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 8 Inches
Logged By: Jessica Ehlen

Water Level: ~24.5 ft bgs
Total Depth: 45 ft bgs
Ground Elevation: 44.37' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	2.5'/ 5.0'	2.2			SB-8 (20-25)			20-25 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% coarse grained sand, moist, wet at 24.5 ft bgs, light brown, few bands of orange brown coloration, no odor.
-21								
-22								
-23								
-24								
-25	2.6'/ 5.0'	0.8						25-30 ft bgs: SAA, brown (no banding).
-26								
-27								
-28		0.6						
-29								
-30	3.3'/ 5.0'	1.5						30-35 ft bgs: SAA (25-30), ~10% coarse subrounded gravel.
-31								
-32								
-33		1.0						
-34								
-35	0.0'/ 5.0'	NA				NR		35-40 ft bgs: No Recovery, rock in sample bit.
-36								
-37								
-38								
-39								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



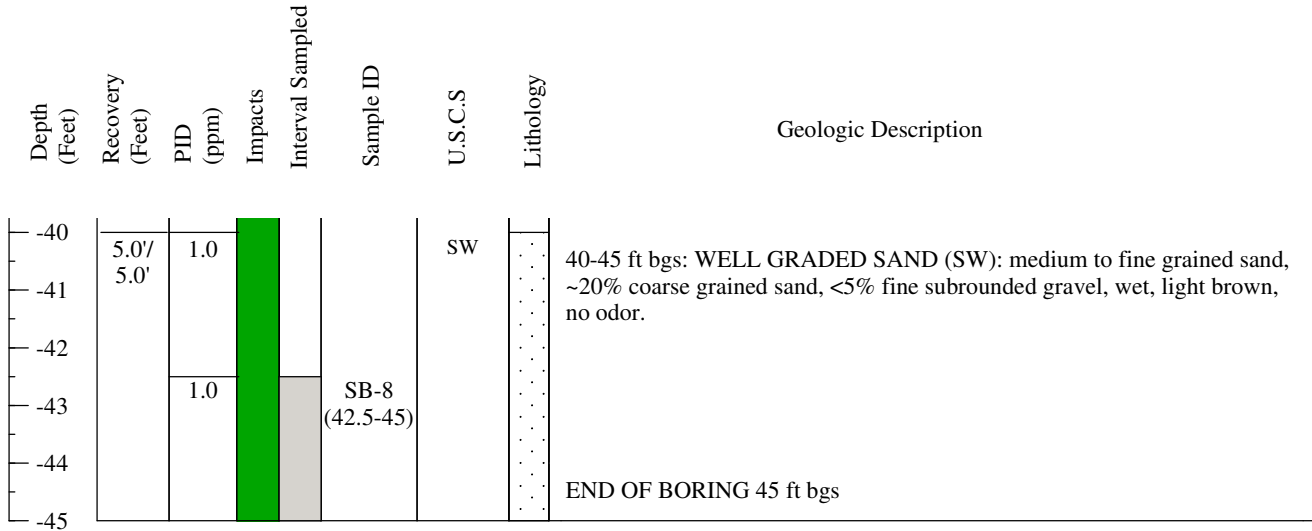
Boring ID: SB-8

Page 3 of 3

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-210
Client: National Grid
Date Pre-Cleared: March 1, 2012
Date Started/Completed: March 7, 2012

Drilling Company: Fenley and Nicol
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 8 Inches
Logged By: Jessica Ehlen

Water Level: ~24.5 ft bgs
Total Depth: 45 ft bgs
Ground Elevation: 44.37' NAVD 88
Converted To Well (Y/N): No
Well ID: NA



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-8A / MW-3

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 7, 2012

Date Started/Completed: March 7, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 Inches

Logged By: Jessica Ehlen

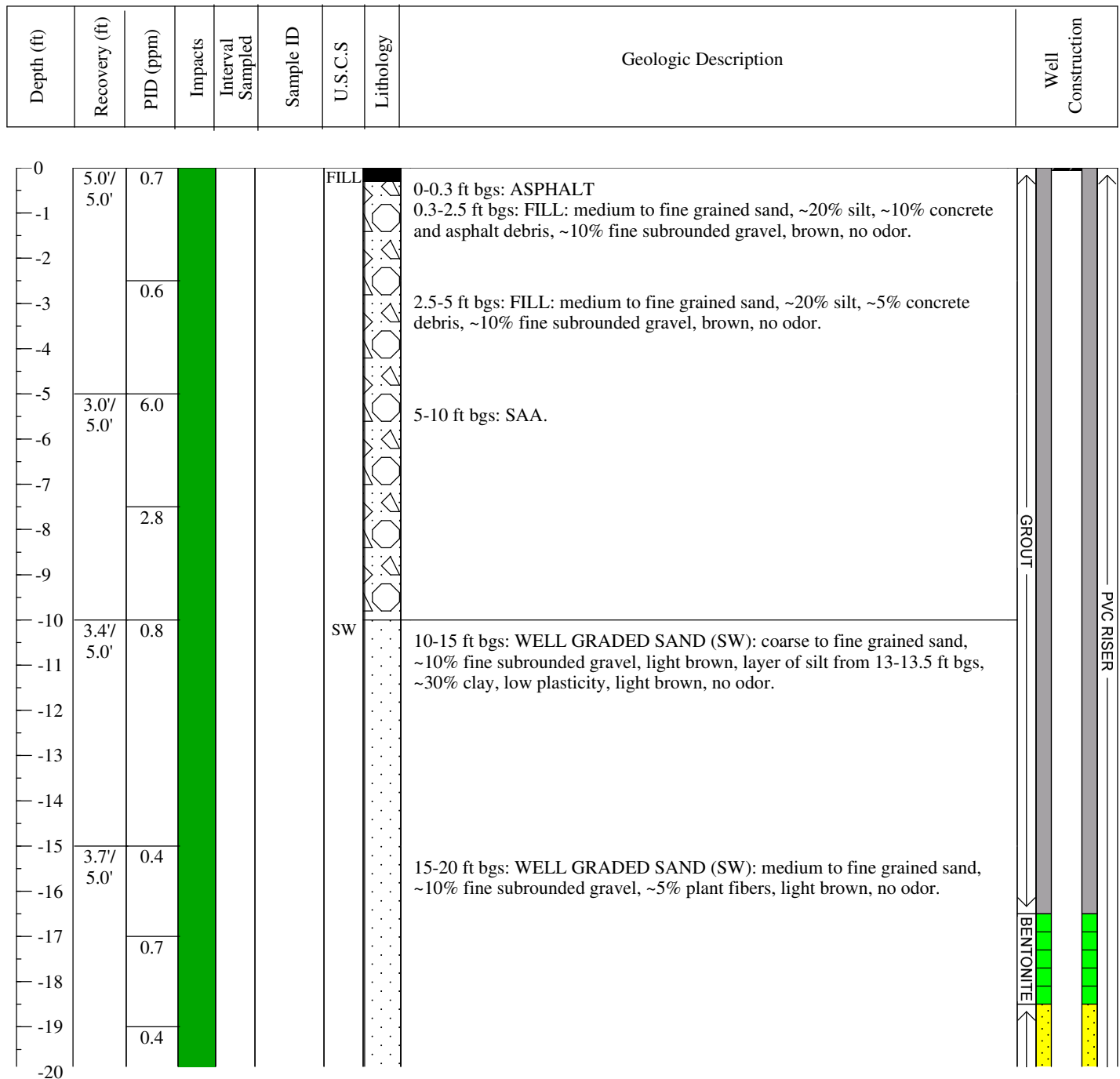
Water Level: ~24.5 ft bgs

Total Depth: 35 ft bgs

Ground Elevation: 44.56 NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-3



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.

Impacts include visual and olfactory observations.

A 2 inch well was installed from 20.5 to 30.5 ft bgs.

Borehole collapsed from 35-32.5 ft bgs while augering/pulling rods from borehole.

No samples were collected from this borehole.

Definitions:

1) NA - Not Applicable

2) ft - feet

3) bgs - below ground surface

4) U.S.C.S. - Unified Soil Classification System

5) NAVD 88 - North American Vertical Datum of 1988

6) SAA - Same As Above

7) PID - Photo Ionization Detector

8) ppm - parts per million

9) NAPL - Non-Aqueous Phase Liquid

10) HSA - Hollow Stem Auger

11) Well Screen 10 Slot



Boring ID: SB-8A / MW-3

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: March 7, 2012

Date Started/Completed: March 7, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 Inches

Logged By: Jessica Ehlen

Water Level: ~24.5 ft bgs

Total Depth: 35 ft bgs

Ground Elevation: 44.56 NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-3

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20	3.0'/5.0'	0.3						20-23.5 ft bgs: SAA.	
-21		0.3							
-22									
-23		0.4							
-24								23.5-25 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~20% fine subrounded gravel, light brown, wet, no odor.	
-25	5.0'/5.0'	0.5						25-30 ft bgs: SAA.	
-26									
-27									
-28		0.3							
-29									
-30	5.0'/5.0'	0.9						30-35 ft bgs: SAA.	
-31									
-32									
-33		0.6							
-34									
-35								END OF BORING 35 ft bgs	

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.

Impacts include visual and olfactory observations.

A 2 inch well was installed from 20.5 to 30.5 ft bgs.

Borehole collapsed from 35-32.5 ft bgs while augering/pulling rods from borehole.

No samples were collected from this borehole.

Definitions:

1) NA - Not Applicable

2) ft - feet

3) bgs - below ground surface

4) U.S.C.S. - Unified Soil Classification System

5) NAVD 88 - North American Vertical Datum of 1988

6) SAA - Same As Above

7) PID - Photo Ionization Detector

8) ppm - parts per million

9) NAPL - Non-Aqueous Phase Liquid

10) HSA - Hollow Stem Auger

11) Well Screen 10 Slot



Boring ID: SB-9

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 23, 2012

Date Started/Completed: February 23, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 3/16 Inches

Logged By: Hallie Garrett

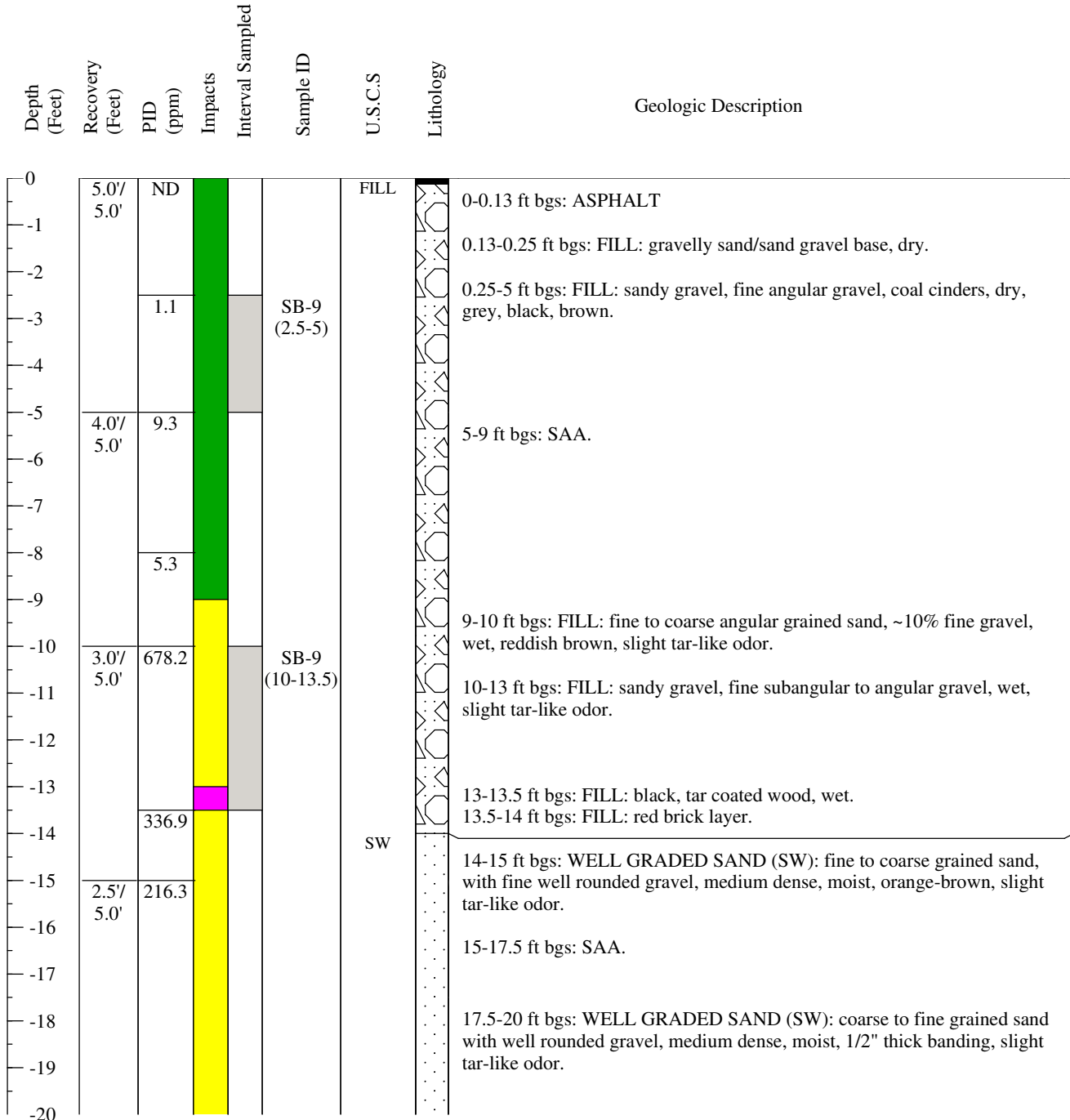
Water Level: ~26 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.28' NAVD 88

Converted To Well (Y/N): No

Well ID: NA



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-9

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 23, 2012

Date Started/Completed: February 23, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 3/16 Inches

Logged By: Hallie Garrett

Water Level: ~26 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.28' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	2.5'/	37.5						20-25 ft bgs: SAA, orange-brown, slight tar-like odor.
-21	5.0'							
-22								
-23								
-24								
-25	3.0'/	41.4						25-30 ft bgs: SAA, wet at 26 ft bgs, slight tar-like odor.
-26	5.0'							
-27								
-28								
-29								
-30	3.0'/	6.2						30-33 ft bgs: SAA.
-31	5.0'							
-32								
-33		8.1						33-35 ft bgs: SAA, ~40% coarse subangular gravel, wet, no odor.
-34								
-35	5.0'/	8.2						35-40 ft bgs: SAA.
-36	5.0'							
-37								
-38		9.2						
-39					SB-9 (37.5-40)			
-40								END OF BORING 40 ft bgs

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-10

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 23, 2012

Date Started/Completed: February 23, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Hallie Garrett

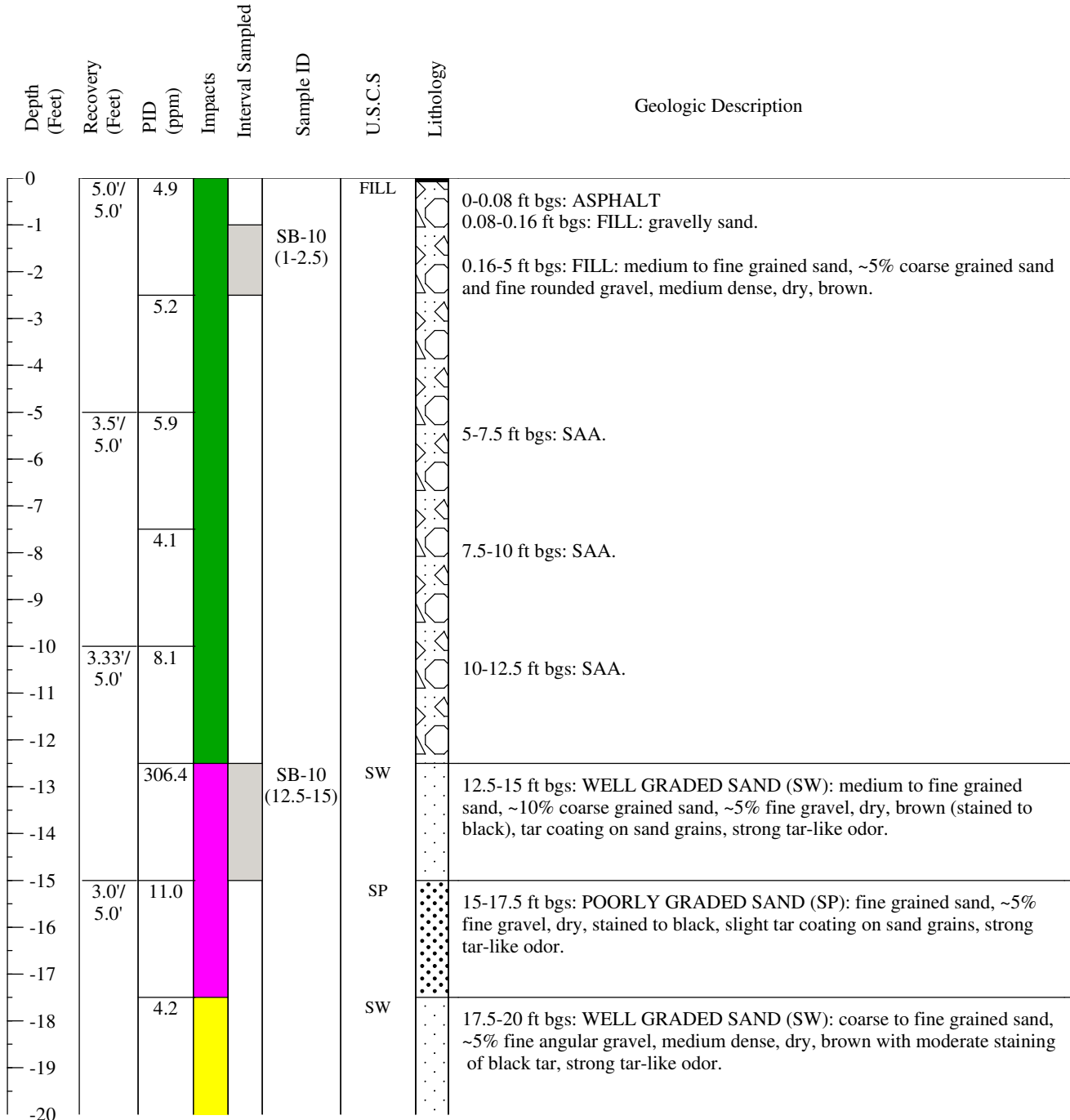
Water Level: ~26.2 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.84' NAVD 88

Converted To Well (Y/N): No

Well ID: NA



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-10

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Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 23, 2012

Date Started/Completed: February 23, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Hallie Garrett

Water Level: ~26.2 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.84' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	3.33/ 5.0'	6.0						20-23.5 ft bgs: SAA, no staining, light brown, to orange brown, banded 1/4 -1 inch, slight tar-like odor.
-21								
-22								
-23								
-24		3.2						23.5-25 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~10% fine gravel, dry, medium brown, banded with heavy staining, slight tar-like odor.
-25	3.67/ 5.0'	9.0						25-26.2 ft bgs: SAA.
-26		136.4			SB-10 (26-27.5)			26.2-26.8 ft bgs: SAA, wet, moderate staining, slight to moderate tar-like odor.
-27		2.8						26.8-30 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~10% rounded gravel, wet, no staining or odor.
-28								
-29								
-30	5.0/ 5.0'	9.2						30-35 ft bgs: SAA, no staining or odor.
-31								
-32								
-33		7.0						
-34								
-35	5.0/ 5.0'	9.4						35-40 ft bgs: SAA, no staining or odor.
-36								
-37								
-38		5.7						
-39					SB-10 (37.5-40)			END OF BORING 40 ft bgs
-40								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-11

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: February 28, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~27 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.13' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
0	6.0'/ 6.0'	0.2			SB-11 (0-2.5)		FILL	0-0.3 ft bgs: FILL: silty sand ~20% subangular coarse gravel, brown, no odor. 0.3-2.5 ft bgs: FILL: medium to fine grained sand, ~10% coarse grained sand, ~10% subrounded gravel, dry, light brown, no odor.
-1								
-2								
-3		0.4						2.5- 6 ft bgs: SAA.
-4								
-5								
-6	2.0'/ 5.0'	0.8					SW	6-10 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~20% coarse grained sand, ~10% subrounded coarse gravel, dry, light brown, no odor.
-7								
-8								
-9								
-10	3.4'/ 5.0'	0.5						10-15 ft bgs: SAA, moist at 11.5 ft bgs, few bands of orange-brown coloration.
-11								
-12								
-13		0.5						
-14								
-15	3.6'/ 5.0'	0.6						15-20 ft bgs: SAA.
-16								
-17								
-18		0.7						
-19								
-20								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-11

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: February 28, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~27 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.13' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	5.0'/ 5.0'	1.1						20-22 ft bgs: SAA.
-21								
-22		1.1						22-24.5 ft bgs: SAA, more orange banding.
-23								
-24					SB-11 (25-27)			24.5-25 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~25% fine subrounded gravel, moist, brown, no odor.
-25	5.0'/ 5.0'	0.6						25-27 ft bgs: SAA, moist, light brown, no odor.
-26								27-30 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~20% coarse grained sand, ~15% fine subrounded gravel, wet at ~27 ft bgs, brown, no odor.
-27		1.1						
-28								30-35 ft bgs: SAA, light brown to brown.
-29								
-30	5.0'/ 5.0'	0.4						
-31								
-32								
-33		2.2						
-34					SB-11 (35-40)			35-40 ft bgs: SAA, brown.
-35	5.0'/ 5.0'	1.3						
-36								
-37								
-38								
-39								
-40								END OF BORING 40 ft bgs

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-12

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: February 28, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

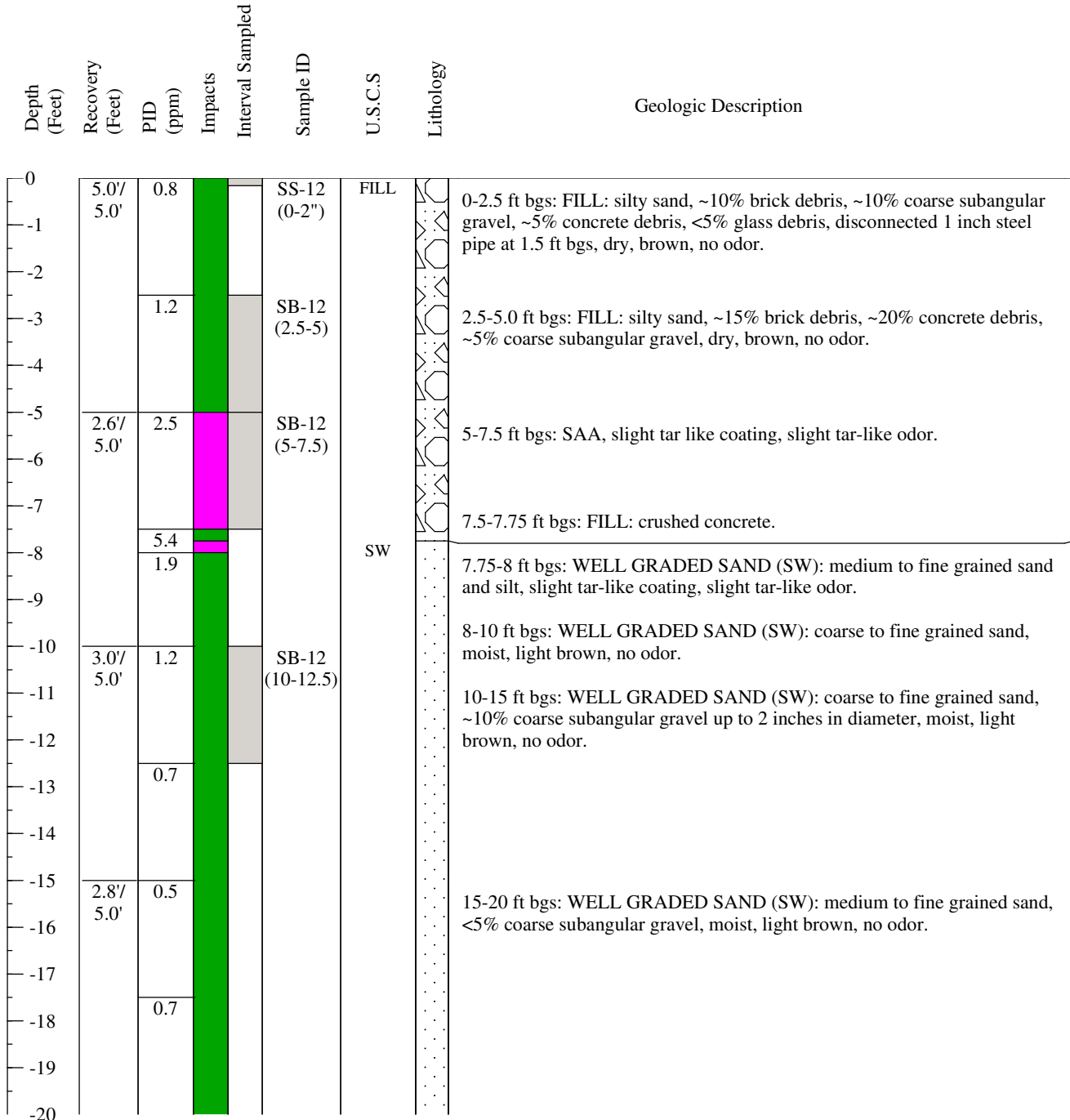
Water Level: ~23.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.65' NAVD 88

Converted To Well (Y/N): No

Well ID: NA



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-12

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: February 28, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~23.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.65' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	3.4'/ 5.0'	0.7					SP	20-25 ft bgs: POORLY GRADED SAND (SP): fine grained sand, ~25% medium grained sand, <5% coarse grained sand, moist, wet at 23.5 ft bgs, light brown, no odor.
-21								
-22		0.9						
-23	3.7'/ 5.0'	0.7						25-30 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~20% coarse grained sand, ~10% fine subrounded gravel, wet, brown, no odor
-24								
-25		0.4					SW	
-26	5.0'/ 5.0'							30-35 ft bgs: SAA.
-27		0.6						
-28								
-29	5.0'/ 5.0'	2.0						35-40 ft bgs: SAA.
-30								
-31		1.3						
-32	5.0'/ 5.0'	1.4						END OF BORING 40 ft bgs
-33								
-34		0.9						
-35								
-36								
-37								
-38					SB-12 (37.5-40)			
-39								
-40								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S. - Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid



Boring ID: SB-13 / MW-6

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: February 29, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 Inches

Logged By: K. Barbour / J. Ehlen

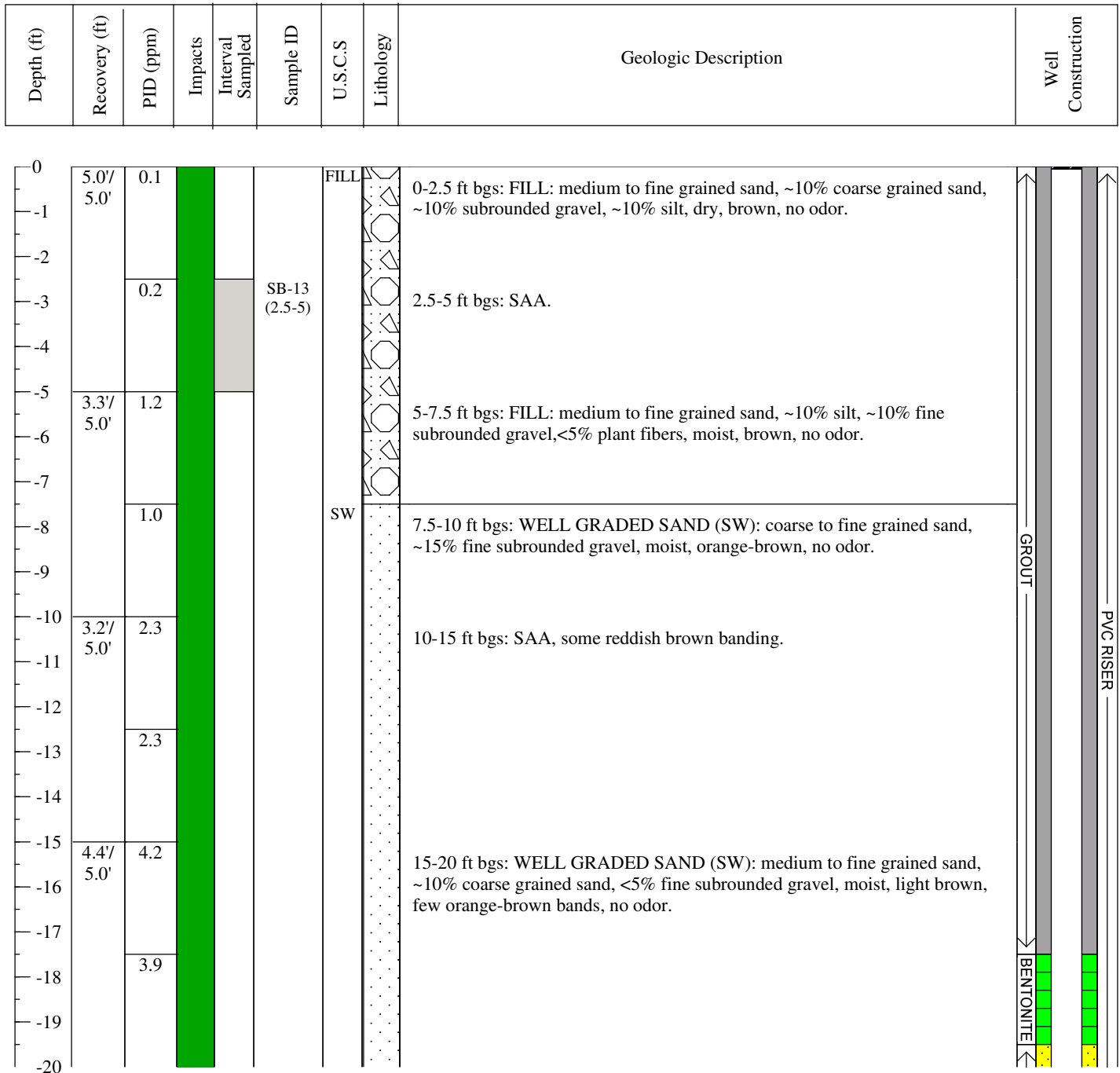
Water Level: ~24.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.32' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-6



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.
A 2 inch well was installed at this location from 21.5-31.5 ft bgs.
Borehole collapsed from 40-33.5 ft bgs while pulling augers/rods from borehole.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-13 / MW-6

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: February 29, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 Inches

Logged By: K. Barbour / J. Ehlen

Water Level: ~24.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.32' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-6

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20	4.4'/5.0'	1.8						20-25 ft bgs: SAA, more orange-brown banding, 1 coarse subangular gravel at 22 ft bgs, 2 inches in diameter, wet at 24.5 ft bgs.	
-21									
-22									
-23		2.4			SB-13 22.5-24.5				
-24									
-25	5.0'/5.0'	3.5							
-26		3.2						25-30 ft bgs: SAA (15-20), orange-brown to brown, sandy silt layer 28.2-28.4 ft bgs.	
-27									
-28		3.3							
-29									
-30	3.5'/5.0'	1.9						30-32.5 ft bgs: SAA, no silt layer.	
-31									
-32									
-33		2.8				SM		32.5-35 ft bgs: SILTY SAND (SM): silty fine sand, ~10% medium sand, <5% fine subrounded gravel, wet, brown, no odor.	
-34									
-35	5.0'/5.0'	3.1				SW		35-40 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~20% coarse grained sand, ~10% coarse subangular gravel, wet, brown, no odor.	
-36									
-37									
-38		1.0			SB-13 (37.5-40)				
-39									
-40								END OF BORING 40 ft bgs	

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.

Impacts include visual and olfactory observations.

A 2 inch well was installed at this location from 21.5-31.5 ft bgs.

Borehole collapsed from 40-33.5 ft bgs while pulling augers/rods from borehole.

Definitions:

1) NA - Not Applicable

2) ft - feet

3) bgs - below ground surface

4) U.S.C.S. - Unified Soil Classification System

5) NAVD 88 - North American Vertical Datum of 1988

6) SAA - Same As Above

7) PID - Photo Ionization Detector

8) ppm - parts per million

9) NAPL - Non-Aqueous Phase Liquid

10) HSA - Hollow Stem Auger

11) Well Screen 10 Slot



Boring ID: SB-14

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 27, 2012

Date Started/Completed: February 27, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~26.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.99' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
0	5.0'/ 5.0'	3.8			SS-14 (0-2")		FILL	0-2 ft bgs: FILL: medium to fine grained sand, ~10% silt, ~20% brick and concrete debris, ~10% fine subrounded gravel, dry, brown, no odor.
-1								
-2		3.8			SB-14 (2-5) +Dup 2			2-5 ft bgs: SAA, fine concrete and brick debris.
-3								
-4								
-5	2.5'/ 5.0'	3.9						5-10 ft bgs: FILL: sand, ~35% silt, 1 coarse subrounded gravel ~2 inches in diameter at 5 ft bgs, moist, brown, no odor.
-6								
-7								
-8		3.0						
-9								
-10	2.5'/ 5.0'	0.5						10-12.5 ft bgs: FILL: medium to fine grained sand, ~30% silt, 2 coarse subrounded gravel pieces up to 2 inches in diameter, moist, dark brown, no odor.
-11								
-12								
-13		0.6						12.5-15 ft bgs: FILL: medium to fine grained sand, <5% coarse subrounded gravel, moist, light brown, no odor.
-14								
-15	4.0'/ 5.0'	1.1						15-15.5 ft bgs: FILL: sandy silt, ~30% clay, low plastic, moist, light brown, no odor.
-16		0.6				SW		15.5-16 ft bgs: FILL: medium to fine grained sand, ~30% silt, <5% brick debris, moist, dark brown, no odor.
-17								
-18		0.8						16-20 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, <5% coarse subrounded gravel, moist, light brown, no odor.
-19								
-20								

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-14

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 27, 2012

Date Started/Completed: February 27, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 3 and 3/16 inches

Logged By: Jessica Ehlen

Water Level: ~26.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 46.99' NAVD 88

Converted To Well (Y/N): No

Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20	4.7'/	3.7					ML	20-20.75 ft bgs: SANDY SILT (ML): sandy silt, moist, light brown, no odor.
-21	5.0'	0.5					SW	
-22								20.75-21 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% mica schist pieces (black), moist, dark brown, no odor.
-23		0.7						21-25 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, <5% fine subrounded gravel, moist, light brown, few bands of orange-red sand, no odor.
-24								
-25	5.0'/	3.5			SB-14		SM	25-26 ft bgs: SILTY SAND (SM): silty sand, moist, light brown, no odor.
-26	5.0'				(25-26.5)		SW	
-27		0.4						26-26.5 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~20% coarse subangular gravel, moist, dark brown, no odor.
-28		1.2						26.5-30 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~10% coarse grained sand, ~10% fine subrounded gravel, wet, orange-brown, no odor.
-29								
-30	5.0'/	2.0						30-35 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, <5% fine subrounded gravel, wet, light brown, no odor.
-31	5.0'							
-32		1.1						
-33								
-34								
-35	5.0'/	1.8						35-40 ft bgs: SAA.
-36	5.0'							
-37								
-38		2.1			SB-14			
-39					(37.5-40)			
-40					+ms/msd			END OF BORING 40 ft bgs

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-15 / MW-4

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Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: March 8/9, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: K. Barbour / J. Ehlen

Water Level: ~27.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 47.66' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-4

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
0	5.0'/5.0'	0.1						0-2.5 ft bgs: FILL: silty sand, ~15% coarse gravel, dry, brown, no odor.	
-1									
-2									
-3		0.0			SB-15 (2.5-5)			2.5-5 ft bgs: SAA.	
-4									
-5	2.2'/5.0'	0.3					SW	5-10 ft bgs: WELL GRADED SAND (SW): coarse to fine grained sand, ~10% silt, ~5% fine subangular gravel, dry, light brown, no odor.	
-6									
-7									
-8									
-9									
-10	3.3'/5.0'	0.7						10-15 ft bgs: SAA, moist, few bands of reddish brown coloration (mineral), ~15% fine subrounded gravel.	
-11									
-12									
-13		0.3							
-14									
-15	5.0'/5.0'	1.6						15-20 ft bgs: WELL GRADED SAND (SW): medium to fine grained sand, ~15% fine subrounded gravel, <5% silt, moist, light brown, no odor.	
-16									
-17									
-18		0.4							
-19									
-20									

Notes:

Location was pre-cleared by hand from 0-5 ft bgs.

Impacts include visual and olfactory observations.

A 2 inch well was installed at this location from 24.5 to 34.5 ft bgs.

Definitions:

1) NA - Not Applicable

2) ft - feet

3) bgs - below ground surface

4) U.S.C.S. - Unified Soil Classification System

5) NAVD 88 - North American Vertical Datum of 1988

6) SAA - Same As Above

7) PID - Photo Ionization Detector

8) ppm - parts per million

9) NAPL - Non-Aqueous Phase Liquid

10) HSA - Hollow Stem Auger

11) Well Screen 10 Slot



Boring ID: SB-15 / MW-4

Page 2 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-210

Client: National Grid

Date Pre-Cleared: February 28, 2012

Date Started/Completed: March 8/9, 2012

Drilling Company: Fenley and Nicol

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 8 inches

Logged By: K. Barbour / J. Ehlen

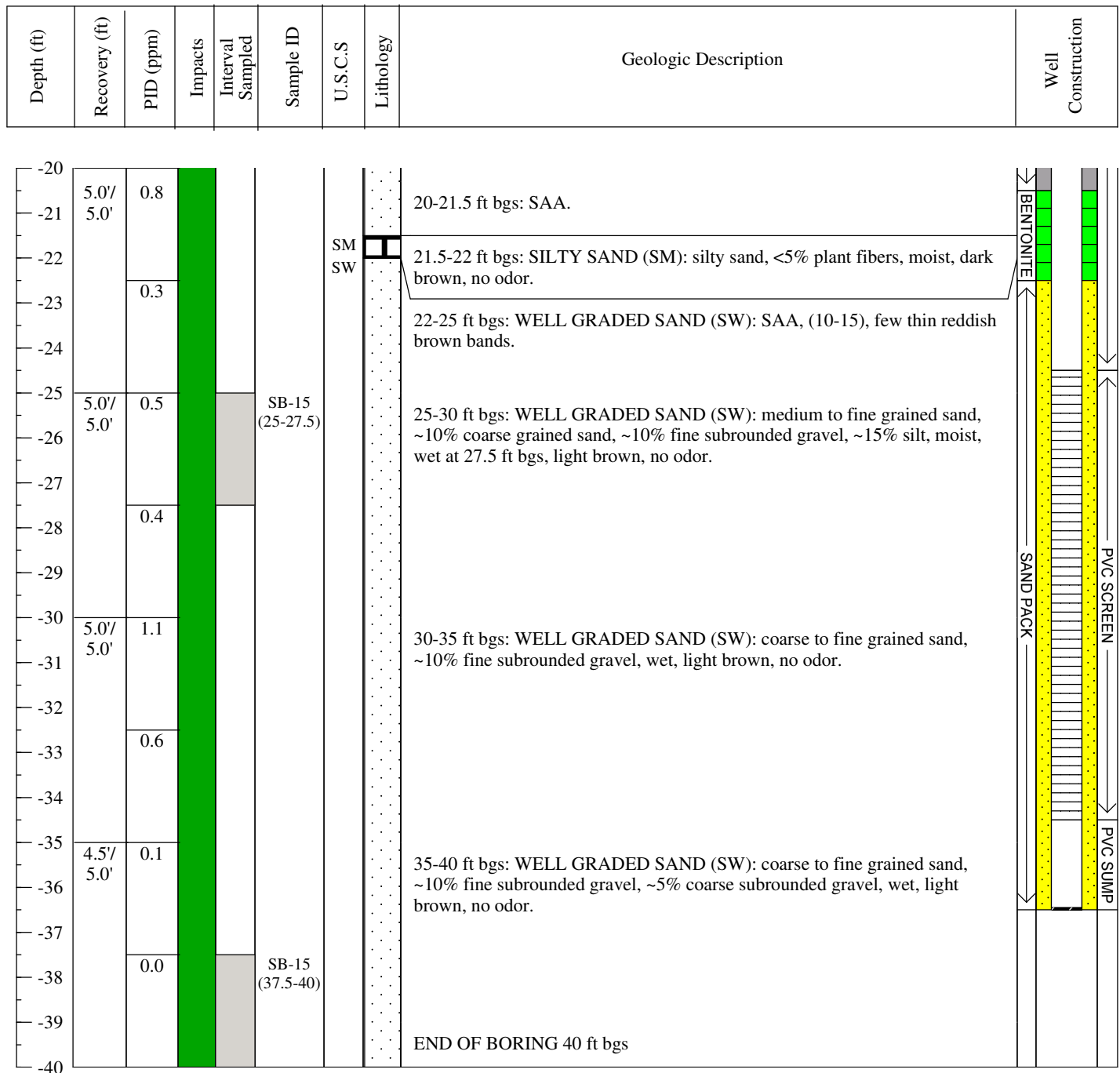
Water Level: ~27.5 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 47.66' NAVD 88

Converted To Well (Y/N): Yes

Well ID: MW-4



Notes:

Location was pre-cleared by hand from 0-5 ft bgs.
Impacts include visual and olfactory observations.
A 2 inch well was installed at this location from 24.5 to 34.5 ft bgs.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | 11) Well Screen 10 Slot |
| 6) SAA - Same As Above | |



Boring ID: SB-16

Page 1 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/15/13
Date Started/Completed: 11/18/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Kristen Barbour/Jessica Ehlen

Water Level: ~24.5 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 45.55' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-----------------	--------------------	--------------	--------------------------------	-----------	---------	-----------	----------------------

0		0.1						
-1								
-2								
-3	5.0/ 5.0	NA						
-4								
-5		0.3		SB-16 (4-5)				
-6								
-7								
-8	1.2/ 5.0	0.8		SB-16 (5-10)				
-9								
-10								
-11								
-12								
-13	3.3/ 5.0	1.4						
-14								
-15								
-16								
-17		3.2						
-18	4.0/ 5.0							
-19		3.6						
-20								

Notes:

Location was pre-cleared by vactron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-16

Page 2 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/15/13
Date Started/Completed: 11/18/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Kristen Barbour/Jessica Ehlen

Water Level: ~24.5 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 45.55' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20							
-21		2.8					20-25 ft bgs: SAA: <5% coarse sand, wet at 24.5 ft bgs.
-22							
-23	4.2/ 5.0						
-24		3.4					
-25							
-26							25-30 ft bgs: WELL GRADED SAND (SW): fine sand, 30% medium sand, <5% coarse sand, 5% subangular gravel, light brown, wet, no odor.
-27							
-28	3.0/ 5.0	4.4					
-29							
-30							30-35 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~5% coarse sand, brown, wet, no odor.
-31							
-32							
-33	2.8/ 5.0	2.8					
-34							
-35							
-36							35-40 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, wet, light brown, no odor.
-37		1.7					
-38	4.2/ 5.0						
-39		2.4		SB-16 (37.5-40) DUP			
-40							END OF BORING 40 ft bgs.

Notes:

Location was pre-cleared by vacutron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-17

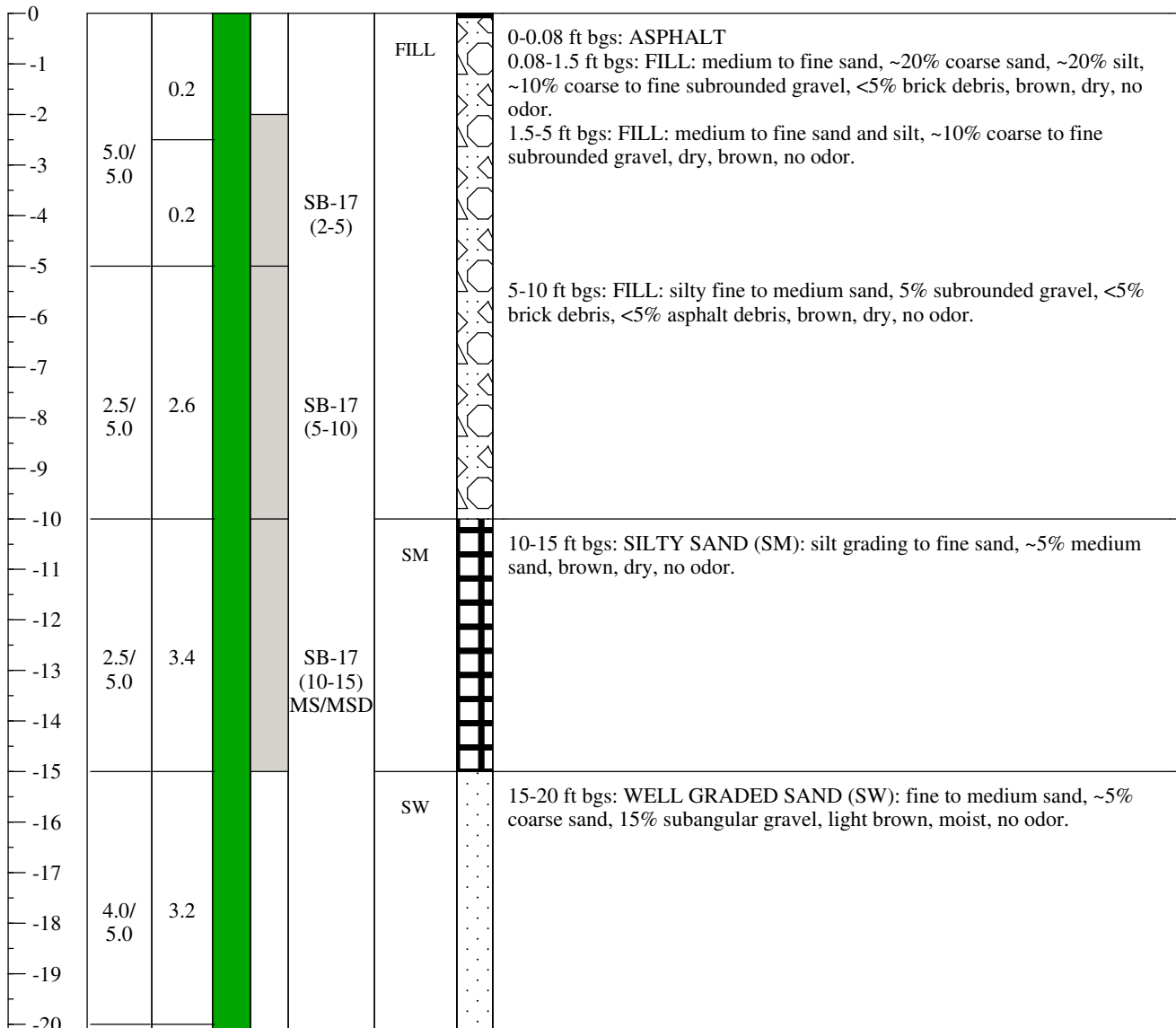
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Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/15/13
Date Started/Completed: 11/18/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen/ Kristen Barbour

Water Level: ~25 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 45.72' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
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Notes:

Location was pre-cleared by vactron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-17

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Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/15/13
Date Started/Completed: 11/18/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen/ Kristen Barbour

Water Level: ~25 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 45.72' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20							
-21		3.6					20-25 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~10% coarse sand, brown to light brown, moist, no odor.
-22							
-23	4.0/ 5.0						
-24		3.2					
-25							
-26							25-30 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, brown, wet, no odor.
-27							
-28	4.0/ 5.0	3.0					
-29							
-30							
-31							30-35 ft bgs: SAA.
-32		3.3					
-33	5.0/ 5.0						
-34		2.7					
-35							
-36							35-40 ft bgs: SAA.
-37		2.8					
-38	5.0/ 5.0						
-39		3.0		SB-17 (37.5-40)			END OF BORING 40 ft bgs.
-40							

Notes:

Location was pre-cleared by vactron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |





Boring ID: SB-18

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Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/15/13
Date Started/Completed: 11/19/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~23 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 43.36' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20							
-21		0.9					20-22.5 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~10% coarse sand, ~10% coarse to fine subrounded gravel, moist, light brown, no odor, few bands of orange-brown sand throughout.
-22							
-23	4.5/ 5.0						22.5-25 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, ~10% coarse to fine subrounded gravel, moist 22.5-23 ft bgs, wet 23-25 ft bgs, no odor, few bands of orange brown and brown sand throughout.
-24		1.0					
-25							
-26					SP		25-27 ft bgs POORLY GRADED SAND (SP): fine sand, ~10% medium sand, light brown, wet, no odor.
-27		1.4					
-28	5.0/ 5.0				SW		27-30 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, ~15% coarse to fine subrounded gravel, brown, wet, no odor.
-29		1.4					
-30							
-31							30-35 ft bgs: SAA.
-32							
-33	5.0/ 5.0	0.9					
-34							
-35							
-36							35-40 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, brown, wet, no odor.
-37		1.1					
-38	5.0/ 5.0						
-39		1.1		SB-18 (37.5-40)			END OF BORING 40 ft bgs.
-40							

Notes:

Location was pre-cleared by vactron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-19

Page 1 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/12/13
Date Started/Completed: 11/12/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~30 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 47.17' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-----------------	--------------------	--------------	--------------------------------	-----------	---------	-----------	----------------------

0							0-0.17 ft bgs: ASPHALT
-1							0.17-3 ft bgs: FILL: medium to fine sand, 10% silt, ~10% coarse to fine rounded to subrounded gravel, <5% brick debris, <5% plant roots, brown, dry, no odor.
-2		0.3					
-3	6.0/						
-4	6.0			SB-19 (2-5) MS/MSD	SW		3-6 ft bgs: WELL GRADED SAND (SW): medium to fine sand, 10% silt, ~10% coarse to fine rounded to subrounded gravel, <5% plant roots, brown, dry, no odor.
-5		0.2					
-6							
-7							6-10 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~20% coarse sand, ~15% coarse to subrounded gravel, ~5% silt, dry, brown 6 -8 ft bgs, light brown 8-10 ft bgs, no odor.
-8	4.0/	0.0					
-9	4.0						
-10							
-11							10-15 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~15% coarse sand, ~10% coarse to fine subangular to subrounded gravel, dry, light brown, no odor.
-12							
-13	3.5/	0.0		SB-19 (10-15)			
-14	5.0						
-15							
-16					SM		15-17.5 ft bgs: SILTY SAND (SM): medium to fine sand, ~25% silt, ~5% coarse to fine subrounded gravel, brown, dry, no odor.
-17		0.2					
-18	5.0/						
-19	5.0				SW		17.5-20 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~20% coarse sand, ~5% coarse to fine subrounded gravel, light brown, moist, no odor.
-20		0.0					

Notes:

Location was pre-cleared by vactron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-19

Page 2 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/12/13
Date Started/Completed: 11/12/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~30 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 47.17' NAVD 88
Converted To Well (Y/N): No
Well ID: NA

Depth (Feet)	Recovery (Feet)	PID (ppm)	Impacts Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description
-20							
-21							
-22							
-23	3.5/ 5.0	0.0					20-25 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, ~10% coarse to fine subrounded gravel, light brown, few reddish-orange bands throughout, moist, no odor.
-24							
-25							
-26							25-30 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, 10% coarse to fine subrounded gravel, light brown with few dark brown bands throughout, moist, no odor.
-27							
-28	4.0/ 5.0	0.1					
-29							
-30							
-31		0.0					30-32 ft bgs: SAA: brown.
-32							
-33	4.2/ 5.0	0.0					32-35 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~10% coarse sand, brown, wet, no odor.
-34							
-35							
-36		0.1					35-40 ft bgs: SAA: 2- inch thick layer of fine subrounded gravel from 39'6" to 39'8".
-37							
-38	5.0/ 5.0	0.0		SB-19 (37.5-40)			
-39							
-40							END OF BORING 40 ft bgs.

Notes:

Location was pre-cleared by vacutron truck 0-5 ft bgs.
Impacts include visual and olfactory observations.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S. - Unified Soil Classification System | |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



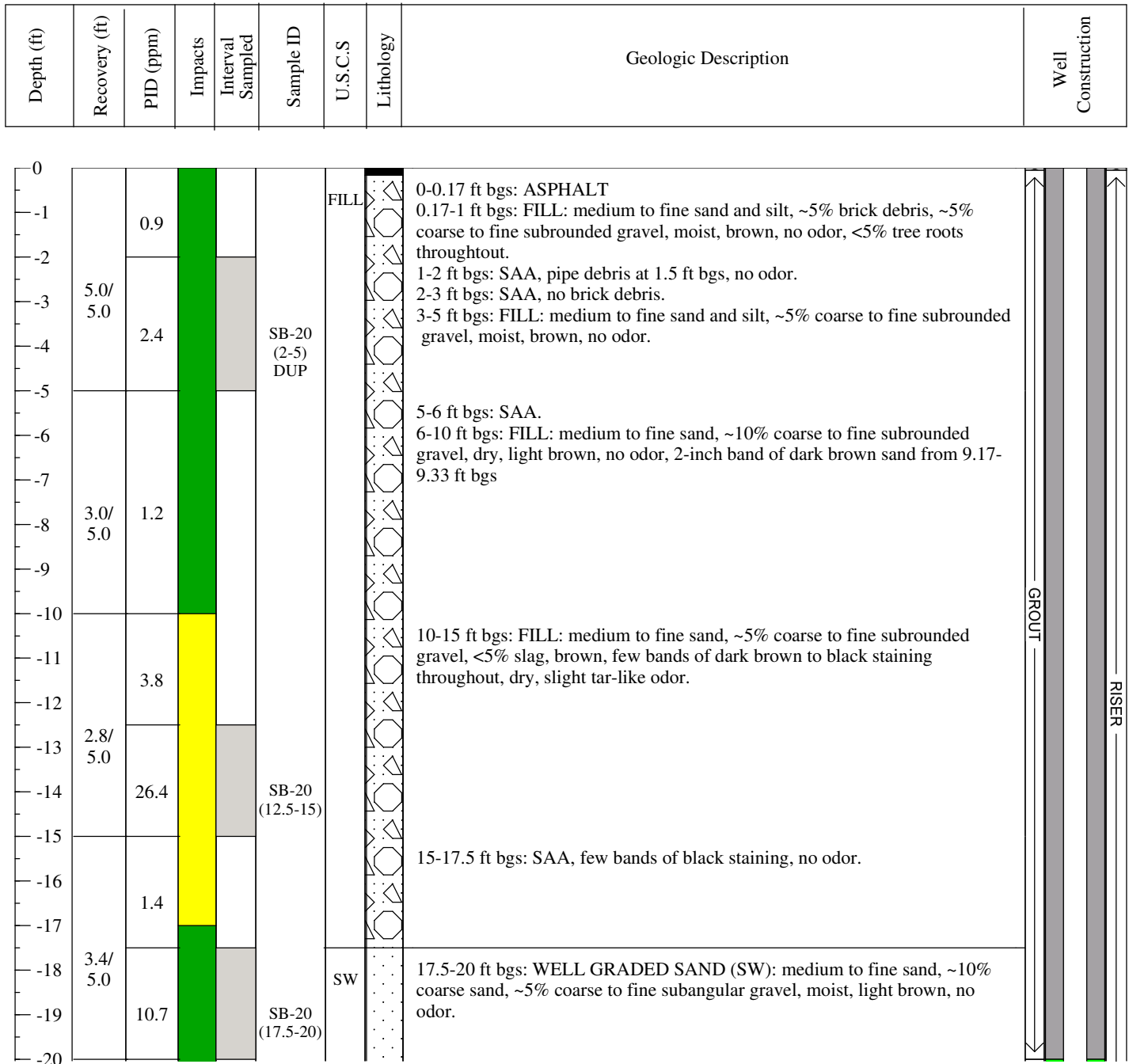
Boring ID: SB-20/MW-7

Page 1 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/12/13
Date Started/Completed: 11/13/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~27.5 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 46.06' NAVD 88
Converted To Well (Y/N): YES
Well ID: MW-7



Notes:

Location was pre-cleared by vacutron truck from 0-5 ft bgs
A 2" well was installed from 24-34 ft bgs.
Impacts include visual and olfactory.
Flush mount road box with concrete pad installed at this location.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S.- Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid
- 10) HSA - Hollow Stem Auger



Boring ID: SB-20/MW-7

Page 2 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/12/13
Date Started/Completed: 11/13/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~27.5 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 46.06' NAVD 88
Converted To Well (Y/N): YES
Well ID: MW-7

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20									
-21								20-25 ft bgs: WELL GRADED SAND (SW): medium to fine sand, 5% coarse sand, light brown, moist, no odor, reddish orange from 23-24 ft bgs.	
-22									
-23	4.6/ 5.0	16.8							
-24									
-25								25-27.5 ft bgs: WELL GRADED SAND (SW): fine sand, ~20% medium sand, <5% fine subrounded gravel, light brown, wet, no odor.	
-26		13.2							
-27									
-28	5.0/ 5.0							27.5-30 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~10% coarse sand, ~10% coarse to fine subrounded gravel, light brown, wet, no odor.	
-29		4.5							
-30								30-35 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, <5% coarse to fine subrounded gravel, brown, wet, no odor.	
-31		2.0							
-32									
-33	4.5/ 5.0								
-34		2.0							
-35								35-40 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~25% coarse sand, wet, brown, no odor.	
-36		1.8							
-37									
-38	4.0/ 5.0								
-39		0.7							
-40								END OF BORING 40 ft bgs.	

Notes:

Location was pre-cleared by vacutron truck from 0-5 ft bgs
A 2" well was installed from 24-34 ft bgs.
Impacts include visual and olfactory.
Flush mount road box with concrete pad installed at this location.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S.- Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid
- 10) HSA - Hollow Stem Auger



Boring ID: SB-21/MW-8

Page 1 of 2

Project Name: Jamaica Gas Light MGP

Project Number: 60144468-410

Client: National Grid

Date Pre-Cleared: 11/9/13

Date Started/Completed: 11/10/13

Drilling Company: Zebra Environmental

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 2 1/4"

Logged By: Jessica Ehlen

Water Level: ~28 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 45.14' NAVD88

Converted To Well (Y/N): YES

Well ID: MW-8

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
0									
-1									
-2									
-3	5.0/5.0	0.1			SB-21 (1-5)		FILL	0-0.33 ft bgs: ASPHALT 0.33-1.5 ft bgs: FILL: medium to fine sand, ~10% silt, ~5% concrete and brick debris, 5% coarse rounded gravel, moist, no odor. 1.5-3 ft bgs: SAA: moist, no odor. 3-5 ft bgs SAA.	
-4									
-5									
-6									
-7									
-8	2.6/5.0	0.3			SB-21 (5-10)			5-10 ft bgs: FILL: medium to fine sand, ~10% coarse sand, ~10% silt, ~5% brick debris, brown, dry, no odor.	
-9									
-10									
-11							SW	10-15 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~10% coarse sand, ~5% subrounded gravel, moist, no odor.	
-12	1.9/5.0	0.4			SB-21 (10-15)				
-13									
-14									
-15									
-16							SP	15-20 ft bgs: POORLY GRADED SAND (SP): fine sand, ~10% medium sand, <5% subrounded gravel, moist, light brown, no odor.	
-17									
-18	3.6/5.0	NA							
-19									
-20									

Notes:

Location was pre-cleared by vacutron truck from 0-5 ft bgs.
A 2" well was installed from 26-36 ft bgs.
Impacts include visual and olfactory observations.
Flush mount road box with concrete pad installed at this location.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S.- Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |



Boring ID: SB-21/MW-8

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Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/9/13
Date Started/Completed: 11/10/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~28 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 45.14' NAVD88
Converted To Well (Y/N): YES
Well ID: MW-8

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20								20-25 ft bgs: POORLY GRADED SAND (SP): fine sand, <5% coarse sand, light brown, dark brown 21-22 ft bgs, moist, no odor.	
-21									
-22									
-23	4.5/ 5.0	0.5							BENTONITE
-24									
-25								25-28 ft bgs: SAA.	
-26									
-27									
-28	5.0/ 5.0	0.5				SW		28-30 ft bgs: WELL GRADED SAND (SW): fine sand, ~20% medium to coarse sand, ~10% fine subrounded gravel, brown, wet, no odor.	
-29								30-35 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, brown, wet, no odor.	
-30									
-31									
-32	5.0/ 5.0	0.6							SAND
-33									
-34									
-35								35-40 ft bgs: SAA: no odor.	
-36									
-37									SUMP
-38	2.3/ 5.0	0.1			SB-21 (35-40)				
-39									
-40								END OF BORING 40 ft bgs.	

Notes:

Location was pre-cleared by vactron truck from 0-5 ft bgs.
A 2" well was installed from 26-36 ft bgs.
Impacts include visual and olfactory observations.
Flush mount road box with concrete pad installed at this location.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S.- Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid
- 10) HSA - Hollow Stem Auger



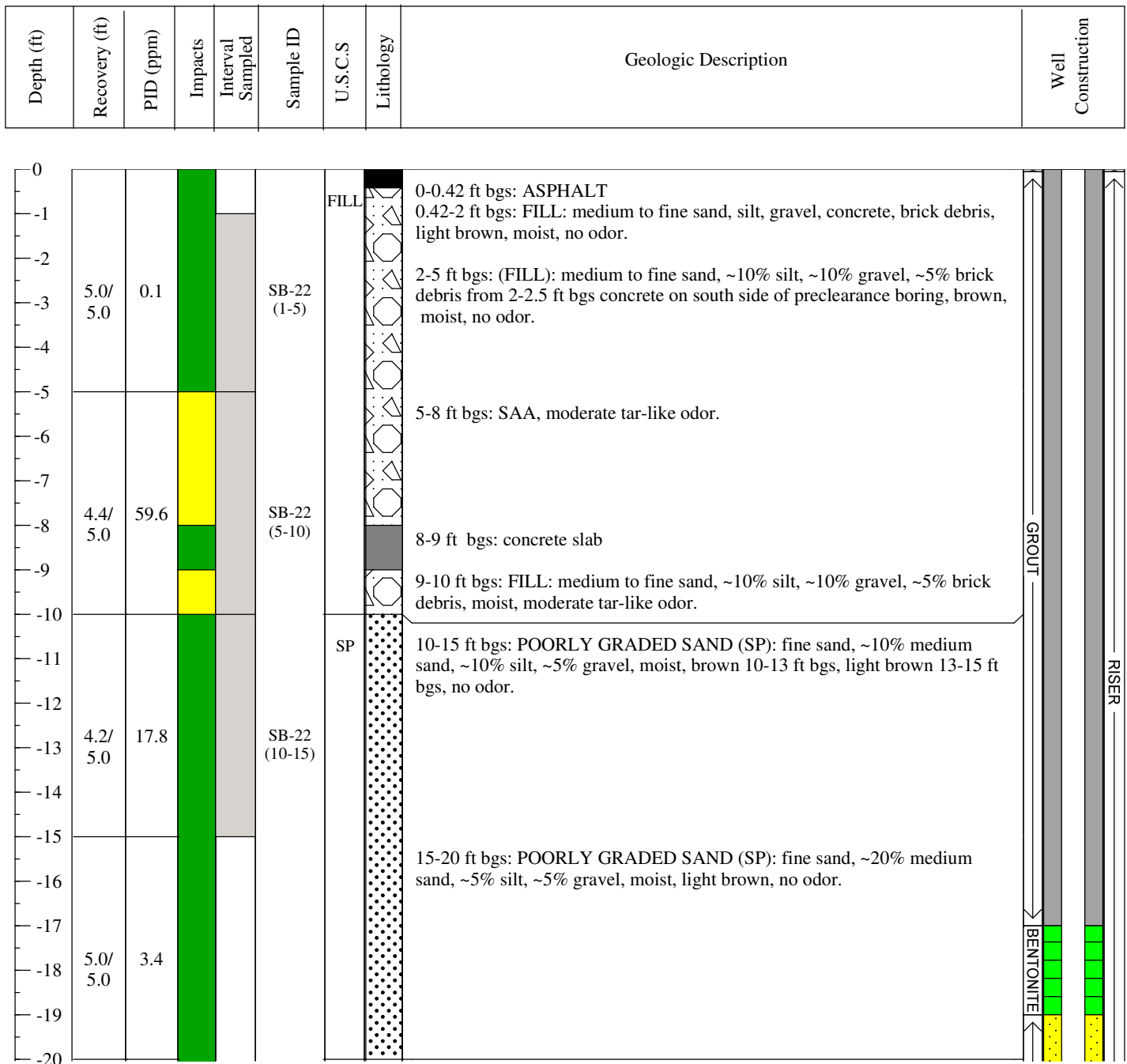
Boring ID: SB-22/MW-9

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Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/9/13
Date Started/Completed: 11/11/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~23 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 40.97' NAVD88
Converted To Well (Y/N): Yes
Well ID: MW-9



Notes:

Location was pre-cleared by vactron truck from 0-5 ft bgs
A 2" well was installed from 21-31 ft bgs.
Impacts include visual and olfactory observations.
Flush mount road box with concrete pad installed at this location.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S.- Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid
- 10) HSA - Hollow Stem Auger



Boring ID: SB-22/MW-9

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Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/9/13
Date Started/Completed: 11/11/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~23 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 40.97' NAVD88
Converted To Well (Y/N): Yes
Well ID: MW-9

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20									
-21									
-22									
-23	3.5/ 5.0	4.7						20-25 ft bgs: WELL GRADED SAND (SW): fine sand, ~25% medium to coarse sand, ~10% coarse to fine subangular gravel, light brown, no odor, moist 20-23 ft bgs, wet 23-25 ft bgs.	
-24									
-25									
-26								25-30 ft bgs: WELL GRADED SAND (SW): fine to coarse sand, <5% gravel, wet, brown, no odor.	
-27									
-28	4.6/ 5.0	0.5							
-29									
-30									
-31								30-35 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, 5% fine subangular gravel, wet, brown, no odor.	
-32									
-33	5.0/ 5.0	0.0							
-34									
-35									
-36								35-40 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~25% coarse sand, ~5% fine subangular gravel, wet, brown, no odor.	
-37									
-38	5.0/ 5.0	0.5			SB-22 (35-40)				
-39									
-40								END OF BORING 40 ft bgs.	

Notes:

Location was pre-cleared by vacutron truck from 0-5 ft bgs
A 2" well was installed from 21-31 ft bgs.
Impacts include visual and olfactory observations.
Flush mount road box with concrete pad installed at this location.

Definitions:

- 1) NA - Not Applicable
- 2) ft - feet
- 3) bgs - below ground surface
- 4) U.S.C.S.- Unified Soil Classification System
- 5) NAVD 88 - North American Vertical Datum of 1988
- 6) SAA - Same As Above
- 7) PID - Photo Ionization Detector
- 8) ppm - parts per million
- 9) NAPL - Non-Aqueous Phase Liquid
- 10) HSA - Hollow Stem Auger



Boring ID: SB-23/MW-10

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Project Name: Jamaica Gas Light MGP

Project Number: 60144468-410

Client: National Grid

Date Pre-Cleared: 11/9/13

Date Started/Completed: 11/16/13

Drilling Company: Zebra Environmental

Drilling Method: Direct Push / HSA

Sampling Method: 5 ft Macro-Core®

Boring Diameter: 2 1/4"

Logged By: Jessica Ehlen

Water Level: ~19 ft bgs

Total Depth: 40 ft bgs

Ground Elevation: 37.77' NAVD88

Converted To Well (Y/N): Yes

Well ID: MW-10

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
0									
-1									
-2									
-3	5.0/5.0	0.1			SB-23 (1-4)			0-0.08 ft bgs: Grass 0.08-2 ft bgs: FILL: fine sand, ~25% medium sand, ~10% silt, ~5% coarse rounded gravel, ~5% brick debris, dry, brown, no odor. 2-4 ft bgs: SAA, ~10% cobbles up to 6-inches in diameter.	
-4		NA						4-5 ft bgs: FILL: bricks, scattered throughout.	
-5								5-9 ft bgs: FILL: concrete and brick debris, <5% medium to fine sand, dry, no odor.	
-6									
-7									
-8	2.3/5.0	0.3			SB-23 (5-10)			9-10 ft bgs:(FILL): medium to fine sand and silt, ~20% coarse sand, ~10% coarse subrounded gravel, dry, brown, no odor.	
-9								10-15 ft bgs: FILL: medium to fine sand, ~20% coarse sand, ~15% coarse subrounded gravel, dry, brown, no odor.	
-10									
-11		0.4							
-12									
-13	4.0/5.0	0.4							
-14									
-15									
-16		0.7						15-17.5 ft bgs: FILL: fine sand, ~25% silt, ~20% coarse to fine subrounded gravel, <5% brick debris, moist, no odor.	
-17									
-18	5.0/5.0	0.5				SW		17.5-20 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~20% coarse sand, ~10% coarse to fine subrounded gravel, brown, moist 17.5-19 ft bgs, wet 19-20 ft bgs, no odor.	
-19									
-20									

Notes:

Location was pre-cleared by vactron truck from 0-5 ft bgs

A 2" well was installed from 17-27 ft bgs

Impacts include visual and olfactory observations.

Flush mount road box with concrete pad installed at this location.

Definitions:

1) NA - Not Applicable

2) ft - feet

3) bgs - below ground surface

4) U.S.C.S.- Unified Soil Classification System

5) NAVD 88 - North American Vertical Datum of 1988

6) SAA - Same As Above

7) PID - Photo Ionization Detector

8) ppm - parts per million

9) NAPL - Non-Aqueous Phase Liquid

10) HSA - Hollow Stem Auger



Boring ID: SB-23/MW-10

Page 2 of 2

Project Name: Jamaica Gas Light MGP
Project Number: 60144468-410
Client: National Grid
Date Pre-Cleared: 11/9/13
Date Started/Completed: 11/16/13

Drilling Company: Zebra Environmental
Drilling Method: Direct Push / HSA
Sampling Method: 5 ft Macro-Core®
Boring Diameter: 2 1/4"
Logged By: Jessica Ehlen

Water Level: ~19 ft bgs
Total Depth: 40 ft bgs
Ground Elevation: 37.77' NAVD88
Converted To Well (Y/N): Yes
Well ID: MW-10

Depth (ft)	Recovery (ft)	PID (ppm)	Impacts	Interval Sampled	Sample ID	U.S.C.S	Lithology	Geologic Description	Well Construction
-20									
-21								20-25 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, ~25% coarse subrounded gravel, wet, brown, no odor.	
-22									
-23	2.0/ 5.0	0.6							
-24									
-25									
-26		0.8						25-30 ft bgs: WELL GRADED SAND (SW): medium to fine sand, ~15% coarse sand, ~5% coarse to fine subrounded gravel, brown, wet, no odor.	
-27									
-28	4.2/ 5.0								
-29		0.6							
-30									
-31								30-35 ft bgs: SAA.	
-32		0.9							
-33	4.0/ 5.0								
-34		0.9							
-35									
-36		0.8						35-40 ft bgs: WELL GRADED SAND (SW): coarse to fine sand, ~10% coarse to fine subrounded gravel, brown, wet, no odor.	
-37									
-38	5.0/ 5.0								
-39		0.9			SB-23 (37.5-40)			END OF BORING 40 ft bgs.	
-40									

Notes:

Location was pre-cleared by vacutron truck from 0-5 ft bgs
A 2" well was installed from 17-27 ft bgs
Impacts include visual and olfactory observations.
Flush mount road box with concrete pad installed at this location.

Definitions:

- | | |
|--|------------------------------------|
| 1) NA - Not Applicable | 7) PID - Photo Ionization Detector |
| 2) ft - feet | 8) ppm - parts per million |
| 3) bgs - below ground surface | 9) NAPL - Non-Aqueous Phase Liquid |
| 4) U.S.C.S.- Unified Soil Classification System | 10) HSA - Hollow Stem Auger |
| 5) NAVD 88 - North American Vertical Datum of 1988 | |
| 6) SAA - Same As Above | |

APPENDIX C – EXCAVATION WORK PLAN (EWP)

C-1 NOTIFICATION

This Excavation Work Plan (EWP) pertains to all intrusive subsurface activities within the area of the Interim Site Management Plan (ISMP) for the former Jamaica Gas Light Company Manufactured Gas Plant (MGP) Site (the Site). Since the final remedy, if any, has not yet been completed, this EWP will be implemented to address any intrusive activities prior to the final remedy or any portion of the final remedy at the Site. The property owner is required to comply with this EWP. National Grid is only responsible for costs associated with MGP impacts.

There is MGP-impacted material in the soil at the Site. MGP-impacted material may include non-aqueous phase liquid (NAPL), which may be adsorbed to soil particles, soil, and groundwater. MGP-impacted areas are identified in Figure 2-3 and 2-4 of the ISMP, and note that these areas may not encompass the entire property/tax parcels. Intrusive activities may encounter impacts, and thus be managed in accordance with this EWP and the ISMP.

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the site owner or their representative will notify the NYSDEC contacts listed in the table below. Table C.1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix C.

Table C.1: Notifications*

Greta White NYSDEC Project Manager	625 Broadway Albany, NY 12233 (518) 402-2029 greta.white@dec.ny.gov
Donald Campbell Project Manager Site Investigation and Remediation National Grid	Fleet Services Building 2 Hanson Place Brooklyn, NY 11217 (347) 452-5973 donald.campbell@nationalgrid.com

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix D of this ISMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP.

C-2 SOIL SCREENING METHODS

Soil screening and utility clearance will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, while the ISMP is in effect.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Section 6 and 7 of this Appendix.

C-3 SOIL STAGING METHODS

Materials removed from the subsurface will be screened and then segregated as described above. Soils screened by the qualified environmental professional (QEP) as having visual, olfactory and instrument-based detections of impacts or potential impacts, shall be placed in roll-off containers, drums, or stockpiled on plastic sheeting, separate from unimpacted soils. Stockpiles will be segregated on-site based on the soil/material

type. These soil/material types will include (potentially) impacted soils, reuse soil, unimpacted soils, and imported fill.

Stockpiles will be located and sized to minimize potential for material or run-off to enter discharge points. At a minimum, soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. If required by NYSDEC, stockpiles of excavated material will be placed within an engineered staging area (which may include a bermed area with a continuous liner, a liquid collection sump, a stone drainage layer, and/or other requirements).

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

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

C-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are responsible for safe execution of all invasive and other work performed under this Plan, including the structural integrity of excavations and structures, such as subsurface utilities and buildings that may be affected by the work. National Grid will be responsible only for the screening of excavated material to identify MGP-impacted material, and management of such material.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment



to the planned work under this ISMP is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the site.

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

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

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

The property owner's QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed by the property owner's contractors as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

C-5 MATERIALS TRANSPORT OFF-SITE

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

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

Truck transport routes are as follows: via 158th Street, Archer Avenue, 150th Street 94th Avenue and Atlantic Avenue to appropriate arterials (see Attachment C-1). All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. It is the property owners' contractors' responsibility to follow all applicable State, local, and municipal rules, regulations, and guidelines (including New York City Department of Transportation and NYSDOT) regarding truck routes.

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

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

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

C-6 MATERIALS DISPOSAL OFF-SITE

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

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D debris recovery facility) Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

Samples of material for off-site disposal will be collected and analyzed by an Environmental Laboratory Approval Program (ELAP)-certified laboratory for analytes required by the disposal facility, but at a minimum:

- Toxicity Characteristic Leachate Procedure (TCLP) Metals via EPA Method 1311
- Ignitability via EPA Method 1030 and 1010A
- Corrosivity via EPA Method 1030 and 9040C
- Reactivity via EPA Method 1110 and SW846 Ch7.5

- Total Sulfur via American Society for Testing and Materials (ASTM) Standard D129
- TCLP Volatile Organics via EPA Method 8260B
- TCLP Semi-volatile Organics via EPA Method 8270D
- TCLP Herbicides/TCLP Pesticides via EPA Method 1311

C-7 MATERIALS REUSE ON-SITE

This section provides details for methods to be followed for materials reuse on-site. Reuse on-site means placement on the Site of material that originates at the Site and which does not leave the site during the excavation. Material reuse on-site will comply with the requirements of NYSDEC DER-10 Section 5.4(e)4.

The qualified environmental professional as defined in 6 NYCRR Part 375 will ensure that procedures defined for materials reuse in this ISMP are followed and that unacceptable material (i.e. contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Impacted soil shall not be placed below the groundwater table.

Proposed materials for reuse on-site must be sampled for full suite analytical parameters including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the latest NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event. Samples of potential on-site reuse material will be collected and analyzed by an ELAP-certified laboratory for:

- Total VOCs via U.S. Environmental Protection Agency (EPA) Method 8260



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

- Total SVOCs via EPA Method 8270C
- Polychlorinated biphenyls (PCBs) via EPA Method 8082/8082A/8080
- Total Petroleum Hydrocarbons (TPH) Diesel Range Organics/Gasoline Range Organics (DRO/GRO) via EPA Method 8015M (expanded to C44)
- Total cyanide via EPA Method 9010/9014
- Total Metals (RCRA+Cu, Ni, Zn, Va, Cn HexChrome) via EPA Method 6010B and 6010
- Total Organic Halides via EPA Method 9023B
- Total Mercury via EPA Method 7471.
- PFAS via an approved methodology.
- 1-4 Dioxane via EPA Method 8270.

Material that meets the Restricted Residential Use SCOs listed in Table 375-6.8(b)] of 6 NYCRR Part 375 meet the chemical criteria for on-Site reuse.

Soil/fill material for reuse on-site will be segregated and staged as described in Sections C-2 and C-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of site excavation activities and proximity to nearby site features. Material reuse on-site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

A Request to Import/Reuse Fill or Soil form, which can be found in Attachment C-2 and at <http://www.dec.ny.gov/regulations/67386.html>, will be prepared by the owner and submitted to the NYSDEC project manager by National Grid allowing a minimum of 5 business days for review.

C-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a State Pollutant Discharge Elimination System (SPDES) permit. Discharge of water generated during construction activities into sanitary or combined sewers will require approval from the NYSDEC and the New York City Department of Environmental Protection (NYCDEP), and may be performed only under a NYCDEP dewatering permit.

C-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other intrusive activities the cover system will be restored in a manner that complies with the ISMP and this EWP (unless a remedy is implemented, in which case the cover shall be restored in a manner that complies with the Remedial Action Work Plan (RAWP), decision document of Record of Decision (ROD), as appropriate. The existing cover system is comprised of a minimum of one inch of asphalt pavement and/or gravel. A demarcation layer, consisting of orange snow fencing material, will be installed to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this ISMP, and then backfill of a minimum thickness as specified in any NYSDEC approval of intrusive work shall be placed on top of the demarcation layer.

C-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this ISMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at <http://www.dec.ny.gov/regulations/67386.html>, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review. A copy of the form is presented in Attachment C-2.

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

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for restricted residential use. Soils that meet ‘general’ fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1, 4-dioxane. Solid waste will not be imported onto the site.

Samples will be collected from imported fill in accordance with the analytical methods and sampling frequency requirements of DER-10. At a minimum, samples will be analyzed for inorganics, pesticides, PCBs, VOCs and SVOCs in accordance with the analytes for the Restricted Residential Use SCOs listed in Table 375-6.8(a) of 6 NYCRR Part 375.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases (see Section C-3).

C-11 STORMWATER POLLUTION PREVENTION



As the site is less than one acre in size, unless work on the site becomes part of a common plan of development, it is not necessary to obtain coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity; however, if a disturbance exceeds 20,000 square feet, the requirements of the NYCDEP municipal separate storm sewer system (MS4) permitting system may apply. If the work on the property is part of a larger plan that disturbs more than 1 acre, then the property owner must obtain coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. Compliance with all relevant stormwater management rules will be required, but at a minimum the management practices below must be followed for any work disturbing soil (regardless of applicability of other regulatory programs or requirements).

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

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

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

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

Erosion and sediment control measures identified in the ISMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

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

C-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery by National Grid.

If potentially MGP-impacted materials are encountered at unexpected depth or locations, Site activities will be suspended and National Grid will be notified and will evaluate the observed conditions in a manner and timeframe that does not interfere with the construction schedule, to the extent reasonably feasible. National Grid may determine that laboratory testing is required to evaluate the observed conditions for concentrations and characteristics. If the encountered materials are determined to be MGP-impacted, then the encountered materials will be segregated and stockpiled for disposal at a National Grid approved facility.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [TAL metals, TCL volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and PCBs, and PFAS], unless the site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone within two hours to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Annual Site Inspection Report.

C-13 COMMUNITY AIR MONITORING PLAN

The Community Air Monitoring Plan (CAMP) will consist of real-time monitoring and an action level reporting system. A CAMP will be conducted during all intrusive activities on the Site that is located within areas of MGP-impacted material. Location(s) of MGP-impacted material is/are shown in Figure 2-3 and 2-4. Air sampling station locations will be chosen based on generally prevailing wind conditions and adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. If a sensitive receptor, such as a school, day care or residential area is adjacent to the site, a fixed monitoring station will be located at that site perimeter, regardless of wind direction, and discussed in the CAMP.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers within 24 hours.

C-14 ODOR CONTROL PLAN

Odors which derive from site impacts may cause a nuisance to site workers and the surrounding community, even though the impacts are at levels well below applicable safety limits. A detailed CAMP) has been developed that is applicable to any ground-disturbing work on the Site, and is included as Appendix E of the ISMP.

C-15 DUST CONTROL PLAN

Dust which derives from site impacts may cause a nuisance to some site workers and the surrounding community, even though the impacts are at levels well below the safety limits defined in the CAMP. Dust monitoring will be performed in accordance with the project-specific CAMP included in Appendix E. Real-time air monitoring will be

implemented at representative upwind and downwind locations near the intrusive activities for particulate matter less than 10 microns in diameter (PM10). Perimeter monitoring will include the use of a real-time particulate monitoring instrument. Real-time airborne particulate monitoring will be conducted continuously during intrusive activities, including soil excavation, backfilling, and related soil handling. Fugitive dust mitigation will be visually assessed during work activities, and reason able dust suppression techniques will be used during Site activities that may generate dust.

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

- Dust suppression will be achieved using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling. Water used for dust control should be only from a verified clean source; site groundwater cannot be used for dust mitigation.

If complaints are received for dust, the contractor will take the appropriate response actions for dust suppression.

C-16 OTHER NUISANCES

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

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



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

[Attachment C-1 – Truck Route](#)



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

[Attachment C-2 – Request to Import/Reuse Fill Material Form](#)



**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**



Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is:

Have Ecological Resources been identified?

Is this soil originating from the site?

How many cubic yards of soil will be imported/reused?

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone?

Does it contain less than 10%, by weight, material that would pass a size 80 sieve?

Is this virgin material from a permitted mine or quarry?

Is this material recycled concrete or brick from a DEC registered processing facility?

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

Signature

Date

Print Name

Firm



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

APPENDIX D – HEALTH AND SAFETY PLAN



Universal Health & Safety Plan

National Grid Jamaica
158-18 Beaver Road
Queens, New York

Prepared For:

Client Name: National Grid

Client Address: One MetroTech Center, Brooklyn, NY 11201

Project #: 60144468

Prepared By:

AECOM

125 Broad Street
New York, NY 10004

Preparer:

Name: Michal Kosciarz, PE

Title: Environmental Engineer

Date Prepared: January 24, 2022

Signature

Reviewer (Office SHER, Area/Regional SHEM, or Business Line SHEM)

Name: Dale "Pete" Wray, CSP, CHMM, STS

Title: SH&E Manager, AME ENV U.S East

Date Reviewed: January 27, 2022

Signature

Approver: (Project Manager, Project Director, or BL Lead)

Name: Robert Forstner, PE

Title: Project Manager

Date Approved: January 31, 2022

Signature

Expiration: **January 27, 2023**

Valid for one (1) year maximum or until the scope of work, subcontractor(s), methods and/or equipment change.



HASP Summary

Note: This Summary is intended to provide key information only and cannot be substituted for reading, understanding and complying with the full HASP, including the Emergency response section. This summary may be continually updated as tasks and personnel change. Use Continuation Sheets if necessary.

Client Name:	National Grid		
Site Name:	National Grid Former Jamaica Gas Light Company Manufactured Gas Plant		
SH&E Incident Reporting	<p align="center">SH&E Incident Hotline 1-800-348-5046</p> <p align="center">TOLL-FREE 24 HOURS PER DAY 7 DAYS PER WEEK</p> <p align="center">Immediately report all incidents including any potential work-related injuries, illnesses, discomfort/pain, property damage, security issues, regulatory inspections and environmental impacts/spills.</p>		
Medical Treatment Resources			
Identify the closest hospital to the site to be used in emergency situations. For non-emergency situations, identify the nearest Occupational Clinic to the site that accepts AECOM Workers Compensation Insurance (see Attachment A for instructions and to attach maps and directions).			
AECOM Occupation Nurse:	1-512-419-5016 24 HOURS PER DAY 7 DAYS PER WEEK		
Nearest Occupational Clinic	City MD Urgent Care		
Address:	162-21 Jamaica Avenue, Jamaica, NY 11432		
Clinic Hours of Operation:	M-F (7AM-11PM) Saturday/Sunday (8AM-8PM)	Phone Number:	718-571-9116
Nearest Hospital:	Queens Hospital Center		
Address:	82-68 164 th Street, Jamaica, NY 11432		
Hospital Hours of Operation:	24/7	Phone Number:	718-883-3090
Key Personnel			
Project Manager (PM):	Robert Forstner	Contact No.:	917-597-3866
Site Supervisor (SS):	TBD	Contact No.:	TBD
Site Safety Officer (SSO):	TBD	Contact No.:	TBD
Regional SH&E Manager:	Candice Johnson (Environment)	Contact No.:	416-407-9661
Area/Practice SH&E Manager:	Pete Wray (EBL EH&S East/REM-IAP NE)	Contact No.:	302-660-9178
Account SH&E Manager:	Not Applicable	Contact No.:	Not Applicable
Client Contact:	Donald Campbell	Contact No.:	347-452-5973



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Attachment B:	Incident Reporting Flow Chart
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Attachment D:	Applicable AECOM SHE Procedures
Attachment E:	Stretch/Flex Poster
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Attachment G:	Safety Data Sheets
Attachment H:	Work Plan/Client SH&E Requirements
Attachment I:	Project Emergency Response Plan
Attachment J:	Project Hazardous Materials Communication Plan
Attachment K:	AECOM SH&E Policy
Attachment L:	Competent Person Designation



1. Introduction

This written Health and Safety Plan (HASP) is designed to identify, evaluate, and control safety and health hazards, and to outline emergency response actions for AECOM-managed activities. This HASP must be kept on site during work activities and made available to all workers including subcontractors and other site occupants for informational purposes. AECOM subcontractors are expected to independently characterize, assess and control site hazards created by their specific scope of work.

This section of the HASP summarizes important AECOM SH&E Procedures that apply to all DCS Americas jobs. See **Attachment C** for the project Task Hazard Assessment (THA) forms and **Attachment D** for a list of applicable field SH&E Procedures. These field SH&E procedures must be readily available to the field employees (i.e. PDF, electronically, etc.).

1.1 Applicable References

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Federal Occupational Safety and Health Administration (OSHA) Code of Federal Regulation Title 29, Part 1910 (29 CFR Part 1910), Safety and Health Regulations for General Industry and 29 CFR 1926, Safety and Health Regulations for Construction.
- Title 8 of the California Code of Regulations (8 CCR), with special attention to Section 5192 Hazardous Waste Operations and Emergency Response, and Section 3202, Injury Illness Prevention Program and to Sub Chapter 4, Sections 1500 - 1938 Construction Safety Orders.
- National Institute for Occupational Safety and Health/Occupational Safety and Hazards Administration/U.S. Coast Guard/U.S. Environmental Protection Agency, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, 1985.
- The requirements in this HASP also conform to AECOM's Safety for Life Program requirements as specified in the AECOM Safety, Health and Environment (SH&E) Manual.
- National Grid Safety Procedure, N-1402 Contractor Safety Requirements, Rev. No. 16 dated 3/24/2021
- National Grid Safety Procedure, A-116 COVID-19 Health & Safety Plan, Rev. No. Initial dated 5/27/2021
- National Grid Pandemic Plan Protocol dated 3/18/2020
- National Grid Incident Reporting Requirements



2. Site Description

The Site, National Grid Jamaica, is located at 158-18 Beaver Road, Queens, New York 11432. The Former Jamaica Gas Light Company MGP Site is located in Jamaica, Queens County, New York (the Site) as shown on Figure 1-1 attached in the **Figures** section.

The Site is comprised of a single, vacant parcel located between 158th and former 159th Streets, south of Beaver Road as shown on Figure 2-1 attached in the **Figures** section. The Site is currently used for the storage of roll off waste transport containers and trash compactors.

2.1 Site Background/History

A plant located at the Site manufactured gas from coal and oil from at least 1886 to the early 1900s. Based on Sanborn maps, the plant was operated by the Jamaica Gas Light Company from sometime prior to 1897 to sometime before 1911 and by The Brooklyn Union Gas Company (BUG), a predecessor company to National Grid, from sometime prior to 1911 until the early 1970s. BUG apparently used the Site for the storage of gas from the early 1900's until approximately 1938, after which the gas storage facilities were decommissioned and demolished. Other than the presence of roll off containers and trash compactors currently stored on the Site, no other uses of the property have been identified.

2.2 Client and/or Third-Party Operations at Site

The Site is controlled by a third-party and access to the Site must be granted through National Grid. The Site is currently occupied by a waste transport company and is used for the storage of roll off containers and trash compactors.

2.3 Scope of Work

The scope of work covered by this HASP includes Site inspections.

No other activities are currently covered by this HASP. In the event the scope of work is revised to include additional activities, this HASP will be updated.

A Task Hazard Assessment (THA) for each operation being performed by AECOM must be included in **Attachment C**, while those performed by the managed subcontractors should be prepared by the subcontractor.

Task Name	Permit(s) Required		Primary Task Performed By		
			AECOM	SUB	Third-Party
Coronavirus Ground Travel THA	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Driving To and From the Site	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Site Walk – General Site Visit THA	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



2.4 Key Dates

Project Start Date:	Ongoing
Field Work Start Date:	TBA
Project Completion Date:	TBA

2.5 High Potential Hazard Activities

In general, the following tasks are considered High Potential (HiPo) Hazard Activities, as identified in [S3AM-209-PR1](#), Risk Assessment, based on the factors contributing to the severity and probability of credible outcomes resulting from ineffective mitigation of their hazards. Additional tasks or activities could be added to the list below based on a similar assessment of their hazards and associated control measures. The following HiPo tasks will be required to complete the approved scope of work.

High potential hazard activities may require additional documents such as: permit to work, site specific plans, task/equipment-specific training, pre-use inspections, a competent person, etc. These requirements are listed under the high potential hazard activities as a reminder that you must implement them prior to performing the activity.

All procedures referenced in the table below **MUST** be included in **Attachment D** for implementation into this HASP.

2.6 Physical and Biological Hazards

Physical and biological hazards are hazards that threaten the physical safety of an individual; contact with the hazard typically results in an incident or injury. The following table summarizes the physical and biological hazards present at the site and the associated procedures that address protection and prevention of harm.

If there is a potential of physical or biological hazard when performing a specific task, it must be addressed in the THA.

All checked procedures **MUST** be included in **Attachment D** for implementation and reference. The following hazards and their site-specific description are anticipated based on the scope of work and project site:

Hazard/ Activity (Note: Text in this column links to procedure)	Site Specific Description (Where, What Phase of Work, Frequency, Etc.)	Applicable Procedure
<input checked="" type="checkbox"/> Bloodborne Pathogens	First aid providers	S3AM-111-PR1
<input checked="" type="checkbox"/> Cold Stress (Continuous exposure when ambient air temperature is below 32°F (0°C) or when ambient air temperature is below 50°F (10°C) with wet/damp conditions.)	Continuous exposure when ambient air temperature is below 32 °F (0 °C) or when ambient air temperature is below 50 °F (10 °C) with wet/damp conditions.	S3AM-112-PR1
<input checked="" type="checkbox"/> Driving Safety	Driving to and from site	S3AM-005-PR1
<input checked="" type="checkbox"/> Heat Stress (Continuous exposure when ambient air temperature is above 80°F (26.6°C) and a standard work uniform is worn or when ambient air temperature is above 70°F (21.1°C) and impermeable chemical protective clothing is worn.)	Continuous exposure when ambient air temperature is above 80 °F (26.6 °C) and a standard work uniform is worn or when ambient air temperature is above 70 °F (21.1 °C) and impermeable chemical protective clothing is worn.	S3AM-113-PR1



Hazard/ Activity (Note: Text in this column links to procedure)		Site Specific Description (Where, What Phase of Work, Frequency, Etc.)	Applicable Procedure
<input checked="" type="checkbox"/>	Non-Ionizing Radiation	Frequent exposure to sunlight during daylight hours	S3AM-121-PR1
<input checked="" type="checkbox"/>	Pandemic Virus	Potential exposure during travel and field task(s)	SR1-003-PR2
<input checked="" type="checkbox"/>	Slips, Trips, Falls	Slips, trips, and falls are always an applicable hazard	S3AM-013-PR1
<input checked="" type="checkbox"/>	Wildlife, Plants and Insects	Encountered during site inspection; Pay particular attention to ticks	S3AM-313-PR1

2.6.1 COVID-19 Pandemic

COVID-19 is a disease that results from infection of the virus identified as SARS-CoV-2. SARS-CoV-2 is a Coronavirus, one of a large family of viruses found in both animals and humans, and one which has caused significant loss of life in the past year. As of early 2021, infection rates remain high, though several vaccines are now available and vaccination efforts are ongoing.

Key AECOM resources can be found at the AECOM Ecosystem Coronavirus Information Centre on the Ecosystem homepage or [at this link](#), the [Coronavirus Smart Card](#), and the AECOM Pandemic Procedure: [SR1-003-PR2](#). Additional resources can be found at the following non-AECOM websites:

- [Centre for Disease Control and Prevention \(CDC\)](#).
- [World Health Organization \(WHO\)](#).

As of August 2021, AECOM's policies require a face covering for unvaccinated individuals unless they can maintain a social distance of 6 feet at all times. However, many clients, cities, counties, regions, and states have stricter requirements. AECOM defaults to stricter requirements wherever mandates are in effect.

Effective June 1, 2021, National Grid's policy is that while outdoors, face coverings will not be required for fully vaccinated persons or where 6ft socially distancing can be accomplished. Employees that prefer to continue to mask-up even if fully vaccinated are encouraged to do so. While indoors, face coverings are required inside National Grid facilities and must be worn upon entry. They can be temporarily removed while seated alone at a desk/cubicle with 6ft of distance from others. Face coverings must be put back on when standing up, moving about or when a coworker is standing or walking in their vicinity. Face coverings can also be removed when an employee is working alone in an enclosed room with a door, such as an individual office. Face coverings cannot be removed in enclosed spaces, including individual offices, conference rooms, training rooms, huddle rooms, storm rooms, locker rooms or any other such space when occupied by more than one person, regardless of ability to social distance within the room.

2.7 Hazards/ Constituents of Concern

Based on information obtained from historical investigations and other sources, the chemicals in the table below are known or suspected to be present at the site.

Summary of Hazardous Properties of Contaminant Exposure Hazards

Notes: PEL = Permissible Exposure Limit | TLV = Threshold Limit Value | IP = Ionization Potential | eV = Electron Volt

Chemical Name	Media	Primary Routes of Exposure	PEL	TLV	IP (eV)
Metals					
Arsenic	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Dermal	0.5 mg/m ³	0.2 mg/m ³	n/a



Summary of Hazardous Properties of Contaminant Exposure Hazards

Notes: PEL = Permissible Exposure Limit | TLV = Threshold Limit Value | IP = Ionization Potential | eV = Electron Volt

Chemical Name	Media	Primary Routes of Exposure	PEL	TLV	IP (eV)
Cyanide	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Dermal	5 mg/m ³	5 mg/m ³	n/a
Lead	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Dermal	0.05 mg/m ³	0.05 mg/m ³	n/a
Other Common Site COCs					
1,1,2,2-Tetrachloroethane	<input type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	5 ppm	1 mg/m ³	~11.1
Asbestos Include S3AM-109-PR1 Asbestos in Attachment D	<input type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	0.1 f/cm ³	0.1 f/cm ³	n/a
Benzene	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	1 ppm	0.5 ppm	9.25
Coal tar pitch hydrocarbons PAH	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	0.2 mg/m ³	0.2 mg/m ³	n/a
Ethylbenzene	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	100 ppm	20 ppm	8.77
Toluene	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	200 ppm	20 ppm	8.82
Xylene	<input checked="" type="checkbox"/> Soil <input type="checkbox"/> Groundwater <input type="checkbox"/> Vapour	Inhalation	100 ppm	100 ppm	8.45, 8.56

Notes: 1. Exposure limits based on DDT.
2. Exposure limits based on Chlordane. No PELs are set for alpha or gamma chlordane.

2.8 Decontamination

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities. Decontamination steps are outlined in the Hazardous Waste Operations procedure [S3AM-117-PR1](#).

All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ).

Decontamination Procedures & Equipment	
Procedure	Equipment Needed
<ul style="list-style-type: none"> Remove all equipment, sample containers, and field notes to the CRZ. Obtain decontamination solutions and decontaminate the tools (shovels, auger flights, etc.) by brushing them under a water rinse. A high-pressure steam cleaner also may be used for decontamination. All waste and spent decontamination solutions will be properly contained. Remove disposable booties, or scrub boots with a stiff bristle brush and water, when necessary. Washtubs and chairs will be provided. Remove outer gloves (and boot covers, if used). Remove Tyvek® coveralls; discard in provided container. Remove hardhat and eye protection. Remove respirator. 	<ul style="list-style-type: none"> Alconox solution Deionized water Brushes Plastic sheeting



<ul style="list-style-type: none"> Remove inner gloves. Wash hands and face.	
---	--

Equipment Decontamination Procedures		
Type Equipment	Decontamination Solution	Procedure
Respirator	Alconox, solution and deionized water	<p>Washing: Disassemble and wash with an Alconox solution in deionized water. A stiff bristle (not wire) brush may be used.</p> <p>Rinsing: Rinse in deionized water to remove all traces of detergent. This is important to prevent dermatitis.</p> <p>Disinfecting: Thoroughly rinse or immerse in a sanitizer provided by the manufacturer.</p> <p>Final Rinsing: Rinse thoroughly in clean water to remove all traces of disinfectant.</p> <p>Drying: Drain and dry by hanging by the straps from racks or by towel drying with clean, soft cloths or paper towels.</p>
Water quality probe, oil water interface probe, down-hole water sampling pumps, reusable sampling tools/equipment	Alconox, solution and deionized water	<p>Washing: Disassemble and wash with an Alconox solution in deionized water.</p> <p>Rinsing: Rinse in deionized water to remove all traces of detergent.</p>

2.9 Air Monitoring

2.9.1 Real Time Exposure Measurements/Equipment

Monitoring shall be performed within the work area on site to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE. Monitoring shall be conducted as specified in the work permit and THA as work is performed. All instrumentation needs to be rated intrinsically safe to prevent fire or explosion.

Instrument	Manufacturer/Model	Substances Detected
<input type="checkbox"/> Photo Ionization Detector (PID)	<input checked="" type="checkbox"/> RAE Systems mini-RAE	<input checked="" type="checkbox"/> Petroleum hydrocarbons

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		<ul style="list-style-type: none"> ■ Photovac Microtip ■ HNu Model Hnu (min. 10.6 eV bulb) 	<ul style="list-style-type: none"> ■ Organic Solvents
<input type="checkbox"/>	Multi or 4 Gas Detectors	<ul style="list-style-type: none"> ■ RAE Systems Multi-RAE 	<ul style="list-style-type: none"> ■ Lower Explosive Limit ■ Oxygen ■ Carbon Monoxide ■ Hydrogen Sulfide
<input type="checkbox"/>	Combustible Gas Indicator (CGI) <i>May be combined with individual or multi-gas detectors.</i>		<ul style="list-style-type: none"> ■ Explosivity
<input type="checkbox"/>	Particulate Monitor	<ul style="list-style-type: none"> ■ MIE Model PDM-3 mini-RAM 	<ul style="list-style-type: none"> ■ Aerosols, mist, dust, and fumes
<input type="checkbox"/>	Noise Meter	<ul style="list-style-type: none"> ■ 3M 	<ul style="list-style-type: none"> ■ dB

2.9.2 Monitoring Procedures

The monitoring procedures shown below are general guidelines for sampling activities. In general, readings are considered actionable if sustained readings are observed for 5 minutes or more or if intermittent peaks are seen in excess of 1 time the action level. A reading in excess of action level outlined below will require additional ventilation (natural or mechanical) for 30 minutes, followed by re-monitoring.

Monitoring Procedures and Action Levels

	Parameter	Zone Location and Monitoring Interval	Action Level	Response Activity
<input checked="" type="checkbox"/>	Volatile Organic Compounds (VOCs) and Volatile Hydrocarbons (total by PID)	Breathing zone, continuously during tasks where exposure to VOCs and volatile hydrocarbons is possible	< 5 ppm	<ul style="list-style-type: none"> ■ Continue monitoring, may continue work in required PPE
			5- 25 ppm (sustained for 5 minutes)	<ul style="list-style-type: none"> ■ STOP WORK and notify PM. Investigate the cause of elevated VOC measurements and identify measures to reduce concentrations (cover impacted soils, ventilation, etc.). Work activities shall only continue once levels have decreased to or below 5 units above background. If levels continue above 5 units, only individuals who are medically qualified to wear respiratory protection are permitted to continue work activities with Project Manager approval. Don Level C PPE (organic vapour respirator cartridges), continue monitoring, and initiate continuous air monitoring for benzene.
			> 25 ppm (sustained for 5 minutes)	<ul style="list-style-type: none"> ■ Cease work, exit, and contact the Site Safety Officer, Site Supervisor, and Project Manager.
<input checked="" type="checkbox"/>	Particulates (PM-10)	Breathing zone during intrusive activities	100 µg/m ³ above upwind level	<ul style="list-style-type: none"> ■ Continue monitoring, modify work methods or implement dust control techniques. Continue work in the required PPE
			150 µg/m ³ above upwind level	<ul style="list-style-type: none"> ■ STOP WORK and notify PM. Investigate the cause of elevated VOC measurements and identify measures to reduce concentrations (cover impacted

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Monitoring Procedures and Action Levels

	Parameter	Zone Location and Monitoring Interval	Action Level	Response Activity
				soils, ventilation, etc.). Work activities shall only continue once levels have decreased to or below 5 units above background. If levels continue above 5 units, only individuals who are medically qualified to wear respiratory protection are permitted to continue work activities with Project Manager approval. Don Level C PPE (organic vapour respirator cartridges), continue monitoring, and initiate continuous air monitoring for benzene.



3. Personnel Responsible for Safety

Enter the personnel responsible for safety:

Role	Person Assigned to Role (Required)	Contact No. ^{Primary} (Required)	Contact No. ^{Alt} (Recommended)
AECOM Project Manager:	Robert Forstner	917-597-3866	
AECOM Site Supervisor:	TBD	TBD	
AECOM Site Safety Officer:	TBD	TBD	
AECOM SH&E Manager:	Pete Wray	302-660-9178	



4. Subcontractor Management

4.1 Subcontractor Pre-Qualification

Performance of the project scope of work does **NOT** involve the use of subcontractors. If it becomes necessary to use one or more subcontractors to complete the project scope of work, they will be evaluated in advance by the AECOM Project Manager and approved by the AECOM Project Manager and Regional SH&E Manager, as appropriate, prior to mobilizing to site, and listed in the Subcontractor section of this HASP Summary.



5. Training and Documentation

All personnel at this site must be qualified and experienced in the tasks they are assigned. SH&E Training Procedure [S3AM-003-PR1](#) establishes the general training requirements for AECOM employees.

5.1 Site-Specific Training Requirements

Check all required training on the table below. Verify training records of employees and subcontractors.

Site Specific Training Requirements

Training		Applies to
<input checked="" type="checkbox"/>	ERP/HASP and Site Orientation	All Employees and Subcontractors
<input checked="" type="checkbox"/>	Vehicle/Driver Safety & Defensive Driving	All Employees who drive on behalf of AECOM
<input checked="" type="checkbox"/>	Field Safety	Employees visiting the field that does not require HAZWOPER
<input checked="" type="checkbox"/>	Speak Up/Listen Up (SULU)	All AECOM field employees and supervisors
<input type="checkbox"/>	First Aid / CPR	Designated employees or employees performing high risk activities and medical attention is more than 4 minutes away
<input type="checkbox"/>	Respiratory Protection & Fit Test	Employees needing to wear respirators
<input type="checkbox"/>	OSHA 10-Hr. Construction Safety (or CSTS 2020 in Canada)	All employees working on jobsites with construction type hazards
<input type="checkbox"/>	OSHA 30-Hr. Construction Safety	All employees supervising/overseeing jobsites with construction type hazards
<input checked="" type="checkbox"/>	HAZWOPER 40-Hour and 8-Hr. Annual Refresher	On HAZWOPER sites, in EZ, exposed to hazardous contamination
<input checked="" type="checkbox"/>	HAZWOPER Supervisor	Employees managing others in HAZWOPER activities or at HAZWOPER Sites
<input type="checkbox"/>	Hazardous Materials Shipping (U.S.)	Employee responsible for shipping HZM/HZW/DG and/or signing manifests
<input type="checkbox"/>	Hazardous Materials Communication	When hazardous or toxic chemicals are being used on site.
<input type="checkbox"/>	Transportation of Dangerous Goods (CAN)	Employees responsible for shipping/transporting regulated hazardous materials that exceed regulatory requirements
<input type="checkbox"/>	Under Bridge Inspection Unit (UBIU) AECOM University module	Employees working in a UBIU
<input type="checkbox"/>	Local and/or Client Requirements:	N/A
<input checked="" type="checkbox"/>	Other: All-Hands Coronavirus Training	All Employees performing work during the COVID-19 Pandemic



6. Site Control

6.1 Site Work Zones

Site layout and site control need to be coordinated to achieve a productive work environment and efficient work process while minimizing exposure of employees and the public to hazards associated with the work. Consider the following items when planning the site layout and controls. Check the description of the site controls **already** in place:

- ☒ Work area is within a facility/property with secure and restricted access provided by client or third party
- ☐ Work area is enclosed within a facility/property, but access is not restricted via locks, guards, or gates
- ☐ Work area is on a property that is open, but access by the public is unlikely
- ☐ Work area is on a property that is open and access by the public is likely
- ☐ Work area is in a roadway or right of way of a roadway (Traffic Control/Protection Plan required [S3AM-306-PR1](#))
- ☐ Work area is in a parking lot or driveway
- ☐ Work area is on or near railroad, including right of way, active lines and crossings
- ☐ Other: N/A

Consider the following items when planning the site layout and controls:

- "Line of Fire" hazards- overhead utilities, falling/ tipping equipment, release of energy/ pressure, flying debris
- Noise, dust, odor suppression
- Contamination containment and decontamination area layout
- Traffic control for site vehicles/ equipment (public traffic control requires Traffic Control Plan)
- Restricted access for areas requiring special training, skills, or certifications
- Restriction of work near railroads
- Presence or creation of excavations
- Loading/unloading areas
- Portable restrooms
- Dumpsters and bins
- Equipment lay down
- Heavy equipment parking
- Overnight safety and security needs

Check and describe the site controls that need to be added to protect the public and the AECOM work team.

Control Item	Description of Type and Application
<input type="checkbox"/> Fence	N/A
<input type="checkbox"/> Locks	N/A
<input type="checkbox"/> Barricades	N/A
<input type="checkbox"/> Cones	N/A
<input type="checkbox"/> Tape	N/A
<input type="checkbox"/> Hole Covers	N/A
<input type="checkbox"/> Other:	N/A



6.2 Simultaneous Operations

Simultaneous and neighboring operations, including activities performed by the general public, our clients, and other workers or contractors working near our employees, often present a need for added co-ordination and communication to address hazards that are presented by multiple operations.

Simultaneous Operations – Within the Site

☒ Yes, see table below for details
☐ None, not applicable

Activity	Company	Contact Person (Activity Lead)	Contact's Phone Number	Addressed in THA(s)	
Vehicle and equipment movement	Contact via National Grid PM	Contact via National Grid PM		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No

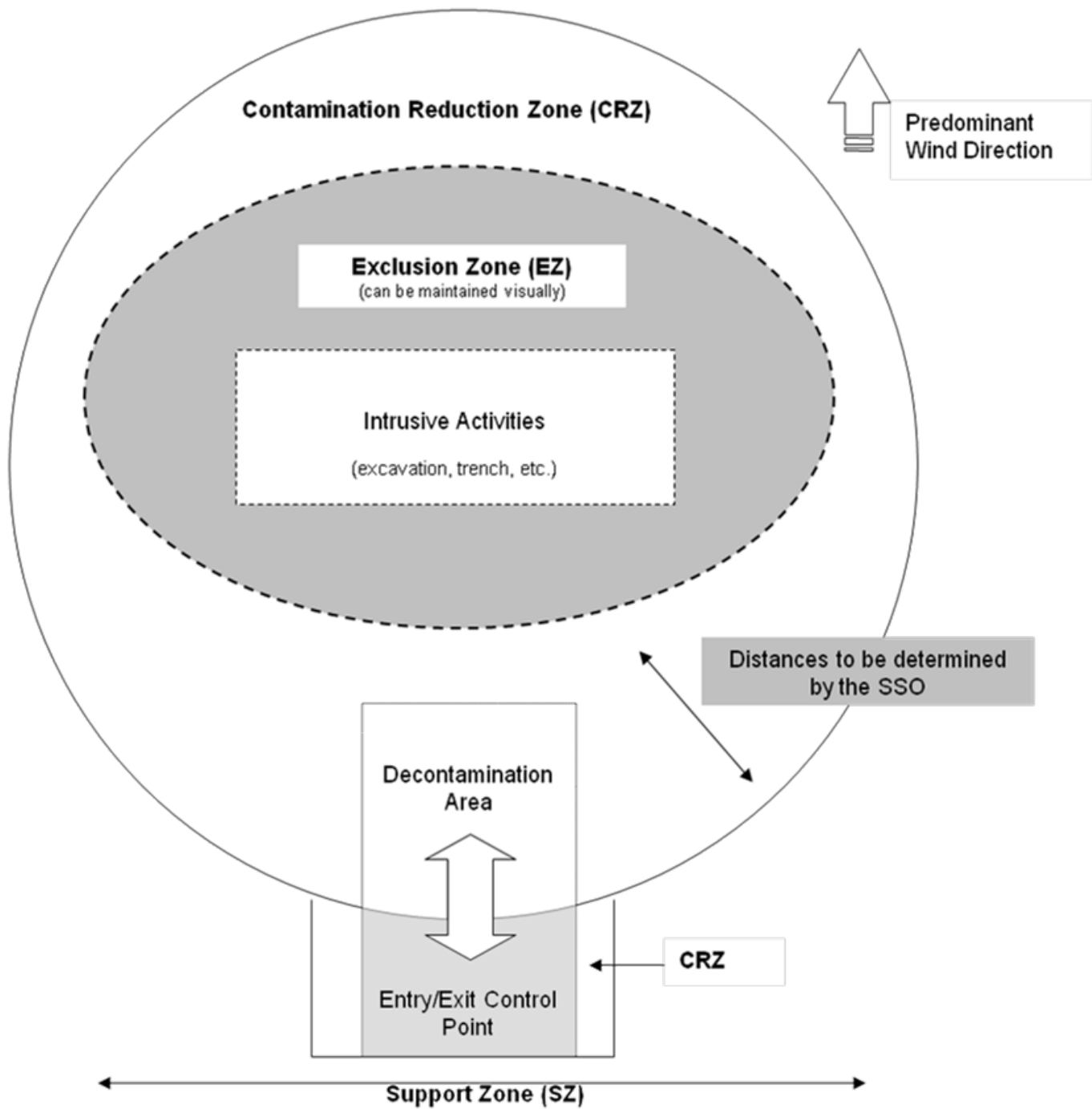
Simultaneous Operations – Neighboring Sites

☐ Yes, see table below for details
☒ None, not applicable

Activity	Company	Contact Person (Activity Lead)	Contact's Phone Number	Addressed in THA(s)	
				<input type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No
				<input type="checkbox"/> Yes	<input type="checkbox"/> No



6.3 Site Control Maps/Diagrams





6.4 Lone Worker

AECOM discourages employees from working alone (i.e., where AECOM personnel are out of visual and audio range of others) when performing field tasks (see Working Alone SHE Procedure [S3AM-314-PR](#)). If lone work is to be performed, a communications/check-in plan must be developed and implemented using the table below.

Lone Worker:	TBD
Justification:	Site inspections may require a Lone Worker.
Check-In Requirement:	Check-in via voice call on arrival on-Site, every 30 minutes on-Site and on departure from Site.
Check-In Contact:	Robert Forstner, Project Manager; 917-597-3866
Hazard Summary:	As the Site is located in a higher crime area, it is preferable that two persons attend Site inspections, or the Lone Worker is escorted by a Site representative
Response Plan:	If lone worker cannot be reached, check-in contact will attempt to reach lone worker again through voice call and follow-up with text. If lone worker still cannot be reached, a backup employee (TBD) will be dispatched. If still cannot be reached, emergency services (911) will be contacted



7. Emergency Contact Information

For more information on emergency management, see the Emergency Contact Information in this HASP Summary.

7.1 Emergency Management

7.1.1 *Emergency Response Plan*

A Project Emergency Response Plan must be developed by the AECOM Project Manager for its staff as per the project location like remote areas, industrial areas, city areas, etc. This plan and any alterations to this plan will be communicated to all AECOM project staff, subcontractors and visitors. Depending on the duration of the project, AECOM shall perform mock drills accordingly.

Subcontractors will provide their own Project Emergency Plan to AECOM for review and acceptance. Any alterations to this plan must be communicated to all parties. Both AECOM and the subcontractor shall perform mock drills periodically in accordance with the length of the project.

Refer to the **AECOM Project Emergency Response Plan (Attachment I)**. For additional information on Emergency Response Planning, please review the Emergency Response Planning procedure, [S3AM-010-PR1](#).

7.1.2 *Emergency Planning*

AECOM requires that all projects, plan for reasonably foreseeable emergencies. Prior to the start of site mobilization, all AECOM personnel shall review the site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.



8. Personal Protective Equipment

The use of Personal Protective Equipment (PPE) forms the final barrier of protection between the employee and the hazard and applies to all employees at the work site, including Subcontractors, visitors and client or customer representatives. For additional information on PPE, please review the Personal Protective Equipment, [S3AM-208-PR1](#).

The minimum PPE required on an AECOM project is as follows: hard hat, safety toe boots, high visibility vest, safety glasses, long pants and shirts with sleeves that cover the shoulders. If any materials are to be handled, then gloves shall be worn as well.

Specific PPE shall also be specified in Task Hazard Analyses (THAs) such as glove type (i.e. material, level of protection, etc.). Where possible, hazards will be eliminated or controlled to reduce the risk associated with a specific task.

These controls include:

- Elimination of the hazard
- Isolation of the hazard
- Engineering Controls
- Administrative Controls

With the exception of prescription safety eyewear and safety toed boots (there may be allowances for the purchase of these items), AECOM will make available all required PPE for its employees. All employees will receive training in the use, care, maintenance and storage of the PPE issued to them.

All personal protective equipment will meet the requirements of local, state, federal, client and AECOM SH&E regulations and procedures. Where site-specific PPE requirements exist, all AECOM employees, Subcontractors and visitors, who work on the Project, will follow those requirements.

PPE will **not** be modified or changed.

All PPE that is damaged or in need of service or repair will be removed from service immediately.

All PPE that has been removed from service will be tagged "OUT OF SERVICE" and will not be returned until repaired and inspected by a qualified person. Defective PPE must be removed from site to prevent it from being used.

8.1 SH&E Technology

At AECOM, we encourage the use of new technology to eliminate or reduce the risk our employees are exposed to. Mark the technology you will be using in this project (if any):

- ☐ **Wearable Technology/Smart PPEs** (e.g. clothes, helmets, glasses, harness)
- ☐ **Ergonomics Technology** (e.g. tracking or managing ergonomics data, use of technology to make a task safer ergonomically)
- ☐ **Site Sensors** (e.g. Movement, angle, noise, carbon monoxide, Dust)
- ☐ **Fatigue Monitoring**
- ☐ **Vehicle related Technology** (e.g. Telematics, Driver Training, backing cameras/sensors, collision avoidance)
- ☐ **Phone/Tablet Applications** or software: N/A

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- ☐ **Connected Worksites** (i.e., connection between employees or project elements to be successful)
- ☐ **Drones**
- ☐ **Virtual Reality (VR) or Augmented Reality (AR)**
- ☐ **GPS** – Location devices: N/A
- ☐ **Radio Frequency Identification (RFID)**
- ☐ **Autonomous Equipment**
- ☐ **Other:** N/A
- ☒ **None of these:** We will not use any technology in this project to reduce hazards

Find available tools and/or share the tools you will be using in the AECOM Technology Toolbox or let us know what would be interesting to assess by [clicking here](#).





9. Safety, Health and Environment Program

9.1 AECOM SH&E Policy

AECOM's Safety, Health and Environment Policy, which establishes the framework to attain best-in-class Safety, Health and Environmental (SH&E) performance in the interest of benefitting AECOM's employees and stakeholder in the global marketplace, is available on AECOM's Ecosystem (intranet).

9.2 Safety for Life

"Safety for Life" is a comprehensive integrated AECOM Safety Management System that drives our employees toward AECOM's commitment to achieving zero work-related injuries and/or illnesses; preventing damage to property and the environment; and maintaining an environmentally friendly and sustainable workplace. Our Safety for Life program is supported by nine Life Preserving Principles that apply to all AECOM activities.



9.3 Life Preserving Principles

AECOM has adopted these "Life-Preserving Principles" to help demonstrate the commitment of our Safety for Life program. We firmly believe these "Life-Preserving Principles" will enable AECOM to achieve its goal of zero employee injuries, property damage and an environmentally friendly and sustainable workplace. The nine Life-Preserving Principles, along with their descriptions, can be found on AECOM's Ecosystem (intranet).

 <p>Commitment: Managers will lead on safety, continuously demonstrating commitment to the highest standards.</p>	 <p>Recognition and Rewards: Employees are rewarded for safety excellence and we share best practices..</p>
 <p>Participation: All employees are encouraged to engage in helping to control the risks we face.</p>	 <p>Orientation and Training: Our employees will be provided with effective safety training in order to identify and mitigate hazards in the workplace to prevent injuries to themselves and others who may be affected by their actions.</p>
 <p>Budgeting and Staffing for Safety: The costs of managing SH&E are budgeted into every project. Our safety staff are fully trained to provide expert guidance.</p>	 <p>Incident Investigation: We investigate recordable incidents and serious near misses to understand the causes and take action to prevent recurrence.</p>
 <p>Pre-planning: We assess risks and produce detailed plans to control them during design, planning, and execution of work.</p>	 <p>Fit for Duty: All staff come to work each day fit and well, so they do not pose a hazard to themselves or others.</p>
 <p>Contractor Management: We carefully select and collaborate with all our partners to create a safe working environment.</p>	

9.4 Fitness for Duty

One of AECOM's nine Life-Preserving Principles is Fitness for Duty (see Fitness for Duty procedure ([S3AM-008-PR1](#))). Fitness for Duty means that individuals are in a state (physical, mental, and emotional) that enables them to perform assignments competently and in a manner that does not threaten the health and safety of themselves or others. On certain projects or for specific tasks, fit for duty certifications may be requested of medical providers by SH&E Managers or Human Resources (HR). Employees should ensure they are fit for duty prior to leaving home and unimpaired by substances or fatigue, and if necessary,



contact your supervisor rather than attempting to report to work in unfit condition. Supervisors must observe their employees and work with the employee, SH&E staff, and HR to address deficiencies. AECOM will **NOT** tolerate retaliation against any employee for filing a complaint or concern regarding their fitness for duty or participating in any way in an investigation.

9.5 Proactive Health

AECOM is committed to promoting proactive health activities in addition to the planning for prevention of safety and environmental incidents. Proactive health activities will be completed on an on-going basis at AECOM on a corporate-wide basis (i.e., the wellness program associated with employee benefits), at offices, and at this project site. Management will be actively involved in providing and encouraging opportunities for health and wellness education and improvement. Health initiatives and education will be discussed periodically during office-based meetings as the safety moment or during the daily tailgate meeting as a toolbox talk. Topics may be related to, but are not limited to, the following:

- | | | |
|---------------------|-----------------------|---------------------|
| ✓ Heart health | ✓ Smoking cessation | ✓ Diet |
| ✓ Stress management | ✓ Diabetes prevention | ✓ Exercise benefits |

Topics and educational materials can be located on the AECOM Wellness page, National Institutes of Health website, Centers for Disease Control and Prevention website, and other reputable sources online.

In addition, the field team will be encouraged to participate in a daily stretch and flex routine (a standardized way to avoid soft tissue damage from work activities) to the best of their abilities, given their own personal limits. It is particularly beneficial to warm and loosen muscles before repetitive work, manual handling of loads, and when working in cold temperatures or with static postures. The Stretch and Flex manual and poster (**Attachment E**) serve as guidance for the leader to follow.

9.6 Fatigue

One aspect of fit for duty is fatigue management. AECOM has developed procedures that limit work periods or requires additional rest under certain circumstances, including during long-distance travel or when working at high altitudes. These procedures also set limits on extended work periods of 14 hours per day or 60 hours per week. A fatigue management plan is required if longer working hours are necessary (see Fatigue Management Procedure [S3AM-009-PR1](#)).

9.7 Driving and Vehicle Safety

The proper operation of vehicles is critical to protecting the safety of AECOM employees and subcontractors. Drivers face numerous hazards while operating vehicles. Some of the hazards include collision with another vehicle, collision with a fixed object, vehicle break down or failure, or falling asleep or becoming otherwise incapacitated while driving. All employees will adhere to Driving procedure [S3AM-005-PR](#), which includes the following key practices:

1. Authorized Drivers

Managers must authorize drivers following evaluation of driver criteria to drive and maintain an AECOM-owned, leased or rented vehicle, a client or customer-owned vehicle, or a personal vehicle operated in the course of conducting AECOM business.

2. Electronic Devices Prohibited

AECOM prohibits use of all portable electronic devices while operating a motor vehicle/ equipment, which includes being stopped at a traffic light or stop sign. Electronic devices include, but are not limited to, all mobile phones, two-way radios, pagers, iPods, MP3s, GPS, DVD players, tablets laptops, and other portable electronic devices that can cause driver distraction. Hands-free device use is **NOT** allowed.

- GPS units and devices used for navigation may only be used if factory installed or secured to the vehicle with a bracket that allows the driver to view the image without having to take their eyes off the road. Electronic devices shall be setup for operation prior to commencing driving activities and shall NOT be changed by the driver while driving.



3. Vehicle Inspections

The driver shall conduct pre-trip vehicle inspections prior to each trip. A vehicle inspection checklist, [S3AM-005-FM2](#), can be used to guide and document the inspection process. Vehicle inspection is to include a 360-degree walk around and visual inspection under the vehicle for leaks and obstructions prior to moving the vehicle.

4. Training

All drivers shall complete defensive driver training. Additional training (i.e., hands-on defensive driver training) may apply for medium and high-risk drivers; see Driving procedure [S3AM-005-PR](#) and SHE Training procedure [S3AM-003-PR](#) for more details.

5. Journey Management Plan

Drivers who undertake trips in excess of 250 miles (400 kilometers) one way, drive in remote or hazardous areas, or when otherwise deemed necessary, shall develop and document a Journey Management Plan using [S3AM-005-FM1](#) or equivalent.

6. Secure Loads

Cargo is only to be carried within the passenger compartment of a vehicle when segregated and restrained to prevent objects from becoming distractions, obstructions, or projectiles to occupants should emergency vehicle maneuvers be required (e.g., harsh braking or crash). All goods transported on flatbed trucks or in pickup beds must be securely fastened to prevent them from becoming hazards. All applicable laws and regulations regarding securing of loads must be met. It is prudent to check the load after a few miles to ensure that load has not shifted or loosened prior to completing the remainder of the trip.

9.8 Fatigue and Driving Safety

The effect of fatigue is both physiological and psychological and can severely impair a driver's judgement. Fatigue can cause lapses in concentration which could prove fatal. Fatigue is not just a problem for drivers on long trips, as drivers can also suffer from fatigue on short trips.

- ✓ After strenuous fieldwork, consider overnight accommodation or vehicle sharing for staff who are not acclimatized to the type of work.
- ✓ Microsleep can occur with a limited warning, and may be linked to several factors, for example:
 - Microsleep is most likely to occur during times when the circadian rhythm dictates the body should be asleep, such as at dawn, late at night, or in the mid-afternoon (e.g., 1 and 4 am and 1 and 4 pm.).
 - Potential to feel drowsy after a meal.
 - Driving long distances (considered potentially monotonous) even with sufficient sleep.
 - Prolonged sitting and warm ambient temperature may also increase the feeling of sleepiness.
- ✓ If safe to do so, consider undertaking actions to disrupt the microsleep event while identifying a safe place to stop, e.g., open a vehicle window, listen to upbeat music/change music source or ask the passenger (if present) to engage in conversation.
- ✓ Ensure field staff are familiar with the signs of fatigue and mitigation factors.

The most common visible signs of microsleep include the following:

- | | | |
|-------------------|----------------------------|----------------------|
| ■ Eyelid drooping | ■ Head nodding | ■ Wandering thoughts |
| ■ Eyelid closure | ■ Brief periods of snoring | |

If any of the above become apparent, immediately pull over to a safe location and contact your PM or SH&E representative.



9.9 Hand Safety

The hands are exposed to hazards more than any body part. SH&E Hand Safety Procedure [S3AM-317-PR](#) describes requirements and best practices including these notable practices:

- **All personnel shall have gloves in their immediate possession 100%** of the time when in a shop or on a work site. Gloves that address the hazard shall be worn when employees work with or near any materials or equipment that present the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc. Use the Gloves Needs Assessment ([S3AM-317-FM1](#)) to help determine the appropriate glove for the hazard(s).
- **Fixed open-blade knives are prohibited** from use during the course of AECOM work. Examples of fixed open-blade knives include pocket-knives, multi-tools, hunting knives, and standard utility knives. For more information about cutting tools, see [S3AM-317-ATT1](#) Safe Alternative Tools.

9.10 Substance Abuse

Drug and alcohol abuse pose a serious threat to the health and safety of employees, clients, and the general public as well as the security of our job sites, equipment and facilities. AECOM is committed to the elimination of illegal drug use and alcohol abuse in its workplace and regards any misuse of drugs or alcohol by employees to be unacceptable. AECOM Substance Abuse Prevention Procedure ([S3AM-019-PR1](#)) prohibits the use, possession, presence in the body, manufacture, concealment, transportation, promotion or sale of the following items or substances on company premises. Company premises refer to all property, offices, facilities, land, buildings, structures, fixtures, installations, aircraft, automobiles, vessels, trucks and all other vehicles and equipment - whether owned, leased, or used.

- Illegal drugs (or their metabolites), designer and synthetic drugs, mood or mind altering substances, and drug use related paraphernalia unless authorized for administering currently prescribed medication;
- Controlled substances that are not used in accordance with physician instructions or non-prescribed controlled substances; and
- Alcoholic beverages while at work or while on any customer- or AECOM-controlled property.

This policy does not prohibit lawful use and possession of current medication prescribed in the employee's name or over-the-counter medications. Employees must consult with their health care provider about any prescribed medication's effect on their ability to perform work safely and disclose any restrictions to their supervisor.

Although some states may pass laws legalizing medical or recreational marijuana use, the use, sale, distribution and possession of marijuana are violations of federal law and AECOM policy, and will subject an employee to disciplinary action up to and including termination in accordance with controlling law. In Canada, where medical and recreational marijuana use is legal, employees must still follow Federal and Provincial laws, and AECOM policy with regards to use and possession. Employees found to be in contravention of legal requirements or AECOM policy will be subject to disciplinary action up to and including termination.

9.11 Rewards and Recognition

One of AECOM's Life Preserving Principles is Recognition and Rewards for proactive safety, health and environmentally focused behaviors. All projects are expected to participate in the rewards and recognition programs available on the Corporate and DCS Americas SH&E ecosystem pages. Large, long term projects are encouraged to establish a project specific rewards and recognition program which incorporates project specific goals and activities ([template available S3AM-020-FM1](#)). **All rewards and recognition programs must emphasize the 9 Life Preserving Principles and proactive SH&E activities NOT solely the achievement of lagging metrics ("injury/incident-free" hours, etc.) as those may discourage incident reporting.**



There are several possible appropriate methods of rewarding and recognizing employees and contractors:

1. **Informal** – recognition via verbal acknowledgement, email, spot awards, luncheons, etc.

2. **Formal** – recognition via DCS Americas Programs:

- AECOM Safety Star Recognition Program
- AECOM Making a Difference (MAD) Award
- Executive Challenge Coins



9.12 Stop Work Authority

AECOM empowers and expects all employees to exercise their Stop Work Authority (see Stop Work Authority Procedure ([S3AM-002-PR1](#)) if an incident appears imminent, or when hazardous behaviors or conditions are observed. A stop work request can be informal if the situation can be easily corrected or may require shutting down operations if revised procedures are necessary to mitigate the hazard. If an AECOM employee observes an imminently hazardous situation on a site controlled by others (i.e., a client-managed contractor), the employee can always stop work for themselves by removing themselves from the situation. Employees also may attempt to stop work to avoid allowing the contractor to come to harm by immediately notifying the contractor foreman or site engineer, or if necessary, the client or party managing the contractor.

No employee should object to the issuance of a stop-work request, nor can any disciplinary action be levied against the employee. All employees must agree that the situation has been mitigated before resuming work. No employee will be disciplined for refusing to work if they feel it is unsafe.





10. Roles and Responsibilities

10.1 AECOM Project Manager

The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The PM will provide the site supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations. Some of the PM's specific responsibilities include:

- Develop a defined scope of work and project schedule with clear objectives and reasonable milestones.
- Budget and allocate the appropriate resources to safely and efficiently complete the work, including technical, safety and quality reviews.
- Prepare a project risk register to support project planning and risk management.
- Identify requirements and expectations applicable to the scope of work, site access, client and host facility.
- Assemble qualified project and field teams, including subcontractors, with the appropriate training, education and experience.
- Ensure subcontractors are approved in support and obtain variances for those that have been conditionally approved.
- Review and approve the AECOM safe work plan (SWP) or health and safety plan (HASP) and task hazard assessments (THAs).
- Obtain and review subcontractor SWP/HASP and THAs or equivalent task risk assessment documents.
- Conduct a project kick-off meeting to convey information, requirements, and expectations to the field team.
- Ensure the field team has all the tools, equipment, instruments, and supplies, including PPE, to perform the work safely.
- Coordinate field activities with the client and/or host facility.
- Be visible to and maintain regular communication with the field team.
- Verify that technical, safety, and quality reviews are completed as planned.
- Verify that AECOM's SH&E policies and procedures are fully implemented.
- Coordinate the management of changes identified by the field team.
- Address and correct unsafe acts/behaviors and conditions.
- Confirm observation, near miss and incident notification and reporting are completed internally, to site and client, as required.
- Conduct a post project review.
- Lead by example – walk the talk.

10.2 AECOM Site Supervisor

The Site Supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans and HASP. The Project Manager may act as the Site Supervisor while on site. The Site Supervisor's responsibilities include:

- Verify the personnel, equipment/machinery and instruments anticipated to mobilize to site.
- Communicate project roles and responsibilities.
- Discuss planned activities for the day and any potential simultaneous operations (SIMOPs).
- Establish staging and work areas for planned activities.
- Confirm crews have reviewed and updated, as necessary, task hazard assessments prior to beginning the task.



- Coordinate and document project activities.
- Monitor for deviations and changes in scope, personnel, methods, materials, equipment/machinery, instrumentation, and site conditions.
- Notify the AECOM project manager of changes and coordinate change management.
- Escort or delegate the escorting of site visitors.
- Serve as AECOM's point of contact with the host facility and person-in-charge for simultaneous operations (SIMOPs).
- Delegate stop work authority to all project employees and report all unsafe acts/behaviors and conditions, near misses and incidents to the AECOM project manager.
- Lead by example – walk the talk.

10.3 AECOM Site Safety Officer

The Site Safety Officer supports the Site Supervisor in providing a safe work environment. Not all sites will have a designated Site Safety Officer; the decision should be made by the Project Manager and SH&E Manager taking into consideration the complexity and risks of the scope of work. The Site Supervisor may act as the Site Safety Officer on sites without one. The Site Safety Officer's responsibilities include:

- Conduct the site safety orientation for the entire field team, including subcontractors, and site visitors.
- Lead the tailgate safety meeting.
- Discuss hazards present at the site and/or within environmental media and their control measures.
- Communicate air monitoring methods and action levels.
- Explain emergency response and reporting procedures, including emergency contacts and muster and shelter-in-place locations.
- Establish exclusion and contamination reduction zones, as needed.
- Verify SWP/HASP, THA and safety requirements and expectations are being met.
- Confirm hazard control measures are in-place and effective.
- Perform housekeeping and site inspections to ensure a safe working environment.
- Engage outside safety, health & environment resources, as needed, to allow for the safe performance of the work.
- Assist in incident investigations and identification and implementation of corrective actions.
- Lead by example – walk the talk.

10.4 AECOM SH&E Manager

Responsibilities of the SH&E manager is to:

- Promote the AECOM Safety for Life Program and our Nine Life Preserving Principles.
- Understand the application of SH&E regulatory requirements relevant to SH&E in the company's operations and be aware of changes in regulations which may affect the company.
- Be formally trained, licensed or certified where the regulations require.
- Assist with the budgeting and staffing process to ensure project teams have the knowledge and resources needed to perform their work safely.
- Be aware of all incidents, near misses, observations, unsafe acts and unsafe conditions that are reported and participate in the investigation process where required.
- Verify incidents are reported to regulatory bodies in accordance with local legislation.
- Review investigation findings to confirm identified corrective actions are appropriate and subsequently implemented.



- Review and accept site-specific SH&E Plans and Task Hazard Analyses (THAs).
- Assist in the preparation of risk assessments.
- Assist in the review of SH&E training needs.
- Verify necessary training as required by AECOM policies and procedures and/or the regulations.
- Assist in the setting of SH&E expectations at project level and review them periodically.
- Perform project SH&E audits on a periodic basis.
- Monitor the corrective actions taken, where audits identify non-conformance or opportunities for improvement, for confirmation of their completion and effectiveness.
- Lead by example, walk the talk.

10.5 AECOM Employees

Responsibilities of employees associated with this project include, but are not limited to:

- Arrive onsite fit for duty and dressed for weather conditions.
- Actively participate in tailgate safety meetings and crew THA reviews.
- Perform only assigned tasks consistent with training & competency.
- Follow SWP/HASP, THA and safety requirements & control measures.
- Use 4-sight as a last-minute risk assessment tool.
- Notify the AECOM site supervisor prior to any deviation from the planned activity (i.e., change in personnel, methods, materials, equipment, etc.).
- Use stop work authority and report all unsafe acts/behaviors and conditions, near misses and incidents to the AECOM site supervisor.
- Always conduct yourself in a professional and ethical manner.

10.6 Visitors

Authorized visitors (e.g., client representatives, regulators, AECOM management staff, etc.) requiring entry to any work location on the site will be briefed by the Project Manager, Site Supervisor, or Site Safety Officer on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and PPE that are required for entry to any controlled work area; visitors must comply with these requirements at all times.

If the site visitor requires entry to any exclusion zone (EZ), but does not comply with the above requirements, the visitor will be denied access to the EZ. If the visitor disregards instructions to remain outside the EZ, work activities will be immediately suspended, and the situation reported and documented.

Unauthorized visitors, and visitors not meeting the specified qualifications, will **NOT** be permitted within established controlled work areas. If unauthorized visitors and/or visitors not meeting the specified qualifications enter a controlled work area and/or EZ, work activities will be immediately suspended, and the situation reported and documented.



11. Subcontractor Management

11.1 AECOM Roles/Responsibilities for Sub Management

When managing an AECOM Subcontractor of any tier, AECOM management and supervision will follow the requirements in [S3AM-213-PR1](#) and are responsible for the following:

- Direct all activities of the facility, site, or project location.
- Ensure appropriate training and experience of AECOM personnel responsible for overseeing subcontractor work.
- Verify subcontractors have the appropriate trained and competent personnel to perform their activities in a safe, healthful, and environmentally responsible manner.
- Pre-qualification of Subcontractor – Prior to performing work on an AECOM project, management and supervision must verify the Subcontractor has been pre-qualified. AECOM's preferred method of prequalification is Subport, but there are other ways to prequalify a subcontractor.
- Ensure all subcontractor employees attend the AECOM daily tailgate safety meeting.
- If you have any questions about subcontractor pre-qualification, reach out to an AECOM SH&E professional.

11.2 Subcontractor Roles/Responsibilities for Safety

Subcontractors must provide AECOM with a designated Subcontractor Safety Representative (SSR). Their responsibilities are as follows:

- Direct employees' means and methods of work and how to work safely.
- Be knowledgeable of and understand the safety requirements of the subcontractor's activities.
- Staff the project with employees that are trained and knowledgeable of the tasks they will be performing.
- Have the ability to recognize hazards and the authority to take prompt corrective actions.
- Implement the subcontractor safety program.
- Serve as the direct contact with AECOM regarding resolution of SH&E issues.
- Immediately report all work-related injuries/illnesses/incidents, environmental incidents and regulatory inspections/violations to AECOM according to AECOM procedures and/or client requirements.

11.3 Subcontractor HASP/THAs

If the subcontractor's scope of work includes hazards that are not covered by the AECOM Health and Safety Plan (HASP), the subcontractor will need to provide AECOM with their site-specific HASP and task-specific Task Hazard Analyses (THAs). All subcontractor procedures must at a minimum comply with client and AECOM requirements to ensure that hazards associated with the performance of their work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to AECOM for review prior mobilization to the site.



12. Training and Documentation

The following sections describe the standard practices or programs that AECOM will establish to prepare employees to perform work safely and consistent with AECOM policy and Procedures. For additional information on SH&E Training, review the Safety, Health and Environment Training, [S3AM-003-PR1](#).

12.1 HASP/Site Safety Orientation

The Project Manager shall conduct a project/site-specific HASP orientation prior to the start of field operations, with support as needed by the SH&E Manager, Site Safety Officer, or Site Supervisor. This meeting will involve representatives from all organizations with a direct contractual relationship with AECOM on the job site. Minimum items to be covered are listed in **Attachment F**. Participants will then sign the HASP Personnel Acknowledgement register at the end of the HASP.

12.2 Worker Training and Qualifications

All personnel at this site must be qualified and experienced in the tasks they are assigned. SH&E Training Procedure [S3AM-003-PR1](#) establishes the general training requirements for AECOM employees.

See **Section 5.1** of this HASP for site-specific required safety training and documentation.

12.3 Competent Person(s)

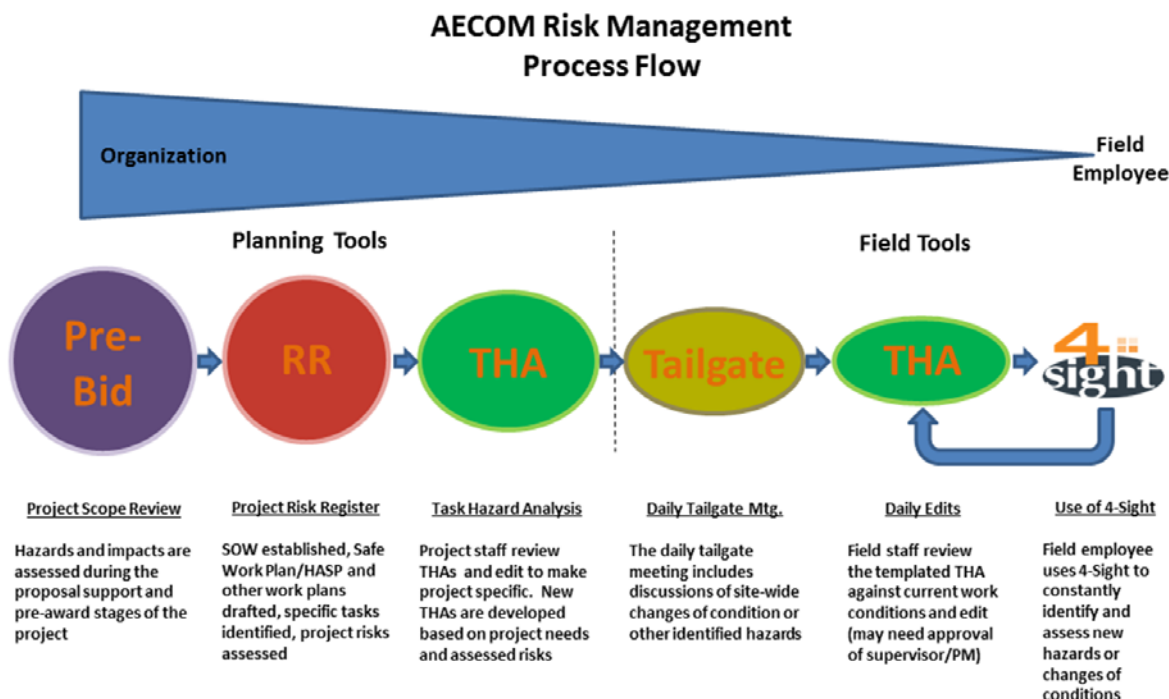
A competent person is an employee who, through education, training, and experience, has knowledge of applicable regulatory requirements, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

AECOM's Competent Person Designation Procedure, [S3AM-202-PR1](#), explains the roles, responsibilities and procedures of naming a competent person. Review **Attachment L** of this HASP for a list of site-specific competent person(s) required for this scope of work.



13. Hazard Assessment and Control

AECOM has adopted an approach to hazard assessment and control that incorporates both qualitative and quantitative methods to identify hazards and the degree to which they may impact employees and AECOM operations. See [S3AM-209-PR1](#), Risk Assessment and Management, for details regarding AECOM's process. This approach is illustrated below and described in the following section.



AECOM has adopted an approach to hazard assessment and control that incorporates both qualitative and quantitative methods to identify hazards and the degree to which they may impact employees and AECOM operations. See [S3AM-209-PR1](#), Risk Assessment and Management, for details regarding AECOM's process. This approach is illustrated below and described in the following section.

13.1 SH&E Procedures

All AECOM SH&E procedures, in their controlled copy version, are available on the [Internal SH&E Policy and Procedures ecosystem page](#). Programmatic procedures referenced in this document (for example SH&E Training) do not need to be printed for inclusion in this HASP. The applicable field procedures checklist is in the Physical Hazards section below and procedures are included in **Attachment D**.

13.2 Task Hazard Assessments and Daily Tailgate Meetings

THA forms (a blank version is located in [S3AM-209-PR1](#)) shall be prepared for each task to be performed as part of the scope of work. This includes driving to the site, parking, and walking as well as the hazards, associated risk, and appropriate controls for all other work activities. The [DCS Americas Templated THA Library](#) may also be used to find previously approved THAs, though these should be modified to be project and site-specific. The preparer shall have one THA form for each task in the Scope of Work found in this work plan (**Attachment C**) and shall also include blank copies.



In the field, all employees and visitors shall review the daily THAs and conduct and attend the daily tailgate meeting. When employees arrive on site, conditions may be different than originally planned or additional job steps may be required. The THA requires workers to update or 'dirty up' the THA in the 'On-Site Edits' rows to assess the risks presented by the changed condition(s) and requires the worker to describe steps to reduce the risk. If the hazard(s) cannot be successfully mitigated, the work will **NOT** proceed.

A Site Safety Officer (SSO) or field supervisor shall conduct a daily tailgate meeting to review the specific requirements of this HASP prior to the commencement of daily project activities. Attendance at the daily tailgate meeting is mandatory for all employees and subcontractors at the site covered by this HASP. Simultaneous operations are encouraged to attend each other's tailgate meetings or at the very least the supervisors shall discuss the coordination of activities and associated hazards of each other's tasks. The tailgate meeting must be documented by the field Supervisor or SSO, using the New Daily Tailgate Meeting App. Use the appropriate QR code to download the App and/or go to the [Daily Tailgate Meeting App Ecosystem page](#) for details, guides, training sessions and/or other information:



[iOS](#)









[Android](#)







As an alternative you can also use or the Daily Tailgate Meeting form ([S3AM-209-FM5](#)), a blank copy of which is included in **Attachment C**.

13.3 Hazard Categories

THAs should include consideration of the following hazard categories when identifying hazards and task specific controls:

Category	Definition
	A biological hazard is any living organism that could cause irritation, allergic reaction, bites, stings, illness, infection, or other injury.
	A chemical hazard is any chemical substance that could potentially cause harm to humans, equipment, or the environment either through contact, ingestion, absorption, inhalation, or reaction.
	Electrical hazards are present whenever there is potential for contact with an electric charge.
	Gravitational force can cause tools, equipment, materials, and people to fall either to the same level or from heights to the earth or a lower surface.
	A mechanical hazard when there is energy within the components of a mechanical system within an otherwise stationary piece of equipment/machinery.
	Objects or substances that can move or are moving not due to gravity create a motion hazard. Motion hazards also include body motions and positioning such as bending, stretching, kneeling, etc.



Category	Definition
	Noise hazards are sounds that may prevent effective communication or cause hearing loss.
	Any physical matter such as gases, liquids, and springs that is compressed or under a vacuum creates a pressure hazard.
	Radiation hazards include both ionizing and non-ionizing energy emitted from radioactive elements or sources.
	Thermal hazards can cause injury or damage due to their temperature.

13.4 4-Sight

When preparing hazard assessments and throughout the day workers should use 4-Sight. This is a mental process through which workers ask themselves (and each other) four questions designed to effectively assess hazards. Using these questions during each task, especially those without established THAs, will help workers identify hazards and condition changes so that they can control them or stop work to seek assistance.



- What am I about to do?
- What could go wrong?
- What could be done to make it safer?
- What have I done to communicate the hazard?

13.5 Speak Up/Listen Up

All AECOM employees have a responsibility to help create the environment where the expectation is Safety for Life. Speak Up/Listen Up (SULU) is a technique to steward jobsite safety by utilizing 4-Sight as a basis for safety feedback conversations. SULU has two main parts:

- **Speak Up** where employees use three simple steps when providing feedback to others about unsafe acts:
 - Ask to discuss their hazard assessment or 4-Sight for the task;
 - Get a commitment from the employee to apply the hazard controls and perform the task according to the accepted procedures; and
 - Follow up to ensure the employee is working safely
- **Listen Up** where employees use two simple steps when responding to safety feedback:
 - Listen – Focus on the message, not the messenger; and
 - Commit to performing the task the safer way

SULU conversations should happen consistently throughout the workday to create clear expectations of how work should be performed. All employees should recognize safe work behaviors in order to reinforce them and keep them going. An occasional correction is much more effective when employees are frequently encouraged and positively recognized for their safe actions. Managers and supervisors should be having SULU conversations during site visits and ensure peer to peer and site supervisor to crew SULU conversations are being held.



14. Incident Reporting

14.1 Incident Notifications and Reporting

NOTE! In the event of a life-threatening emergency, call 911 FIRST. A life-threatening emergency can include:

- | | | | |
|------------------------------|----------------------------|------------------------------|------------------------|
| ■ Loss of consciousness | ■ Seizures | ■ Uncontrolled loss of blood | ■ Heat Stroke |
| ■ Head or spinal cord injury | ■ Severe allergic reaction | ■ Abdominal trauma | ■ Difficulty breathing |
| ■ Cardiac arrest | ■ Broken bones | | |

Once immediate actions have been taken, if safe to do so, notifications (verbal) must be completed immediately and the involved employee, site supervisor or site safety officer must call the **AECOM Incident Reporting Hotline** at 1-800-348-5046. Notifications serve to engage additional resources in the management of the emergency and initiate additional processes such as medical case management, spill response, incident investigation, etc. Reporting initiates the formal documentation process and supports the development of key learnings to prevent a reoccurrence.

14.1.1 AECOM Internal Notifications

For any incident or near miss, the involved employee must notify their site supervisor or site safety office. The site supervisor or site safety officer must notify their Project Manager. Depending on the severity of the incident, the Project Manager may need to notify the following individuals:

- Regional, area, business line, practice group or account SH&E manager.
- Program Manager or Client Account Manager
- Senior Leaders

14.1.2 Client Specific Notifications

Notify our clients of incidents in accordance with their incident notification requirements.

See client contact information in the Key Personnel table at the bottom of the **HASP Summary** on Page i.

14.1.3 Incident Investigation

All incidents and near misses will be investigated and documented to determine the contributing and root causes. The investigation will verify the need for corrective actions and identify opportunities for Lessons Learned and continuous improvement. For more information in incident investigations, please review the Incident reporting, Notifications and Investigation procedure, [S3AM-004-PR1](#).

As soon as it is safe to do so after an incident occurs, the following information will be gathered:

- | | |
|---------------------------|---|
| ■ An incident timeline; | ■ Police reports, if applicable; |
| ■ Witness statements; | ■ Any additional information that will assist in the investigation; and |
| ■ Photos of the incident; | ■ Copies of daily safety documentation and/or field notes. |



14.2 Incident and Near Miss Reporting

All incidents and near misses (i.e., incidents without consequences), regardless of type and perceived severity, must be reported in accordance with the Incident Reporting, Notifications and Investigation, [S3AM-004-PR1](#) and entered into **IndustrySafe** (AECOM's SH&E Database) within the timeframes listed below:

Incident Type	IndustrySafe Reporting Timeframe
Significant Incident, including any injury to an AECOM employee or Subcontractor	Within 4 hours
All Other Incidents	Within 24 Hours

Note: Only the basic facts, who, what, when, where and how, are needed to complete the initial IndustrySafe report. SH&E Managers will assist you in updating the report as additional information becomes available.

Significant incidents include:

- Fatality;
- Amputation;
- Hospitalization for treatment for more than 24 hours (admission);
- Any single event resulting in more than one employee requiring medical treatment or more than one employee being away from work for more than 3 days;
- Any SH&E-related Consent Agreement/Order/Lawsuit or enforcement action seeking more than \$10,000 or alleging criminal activity;
- Any spill or release of a hazardous material that is reportable to a regulatory agency;
- Any Notices of Violation resulting from not operating within a regulatory agency permit/license or consent;
- Any incident resulting in property damage expected to exceed \$10,000 United States dollars (USD);
- Any security-related incident that could have caused significant harm to an AECOM employee; and/or
- Any near miss event that may have resulted in any of the above consequences, but because of "luck" did not result in harm to persons, property or the environment.

Other incidents include:

- Any injury or illness to an AECOM employee or subcontractor, even if it does not require medical attention, including non-work-related injuries/illnesses that have become significantly aggravated by the work environment;
- An injury to a member of the public or client representative occurring on an AECOM-controlled work site;
- Re-occurring conditions such as back pain or cumulative trauma disorders (e.g., carpal tunnel syndrome);
- Fire, explosion or flash that is not an intended result of a planned event (e.g., remediation process, laboratory procedure);
- Any incident involving company-owned, rented or leased vehicles (including personal vehicles used for company business); and/or
- Any failure to comply with requirements of a regulatory permit issued to AECOM.



14.2.1 Motor Vehicle Incidents

Collisions:

All vehicles should be rented through Trip Actions (accessible via Ecosystem) to ensure that AECOM insurance is included in the rental rate. All other insurances should be declined. AECOM's rental vehicle insurance policy for National/Enterprise or Avis can be found on the DCS Americas [United States](#) or [Canada](#) travel pages. **Drivers MUST print and carry the applicable insurance policy for the rental. For company owned vehicles, drivers MUST also print and carry proof of insurance.**

Breakdowns:

If safe to do so, remove the car from the traveled way. To the extent possible, AECOM personnel should **NOT** change flat tires or perform similar repairs.

- For rental vehicles, contact the rental company
- For fleet vehicles, contact **ARI Fleet Management: 1-800-422-7647**
 - Prompt 1 – Roadside Assistance
 - Prompt 3 – Maintenance Management
- For personal vehicles used on AECOM business, contact an emergency provider.

14.2.2 Safety Observation Reporting

All safety observations must be entered into **IndustrySafe™** or **Lifeguard™** (AECOM's SH&E Databases).

14.2.3 SH&E Database Access

Incidents, near misses, and audits/inspections must be entered into **IndustrySafe™**, which is one of AECOM's SH&E Databases. Safety observations may also be entered into **IndustrySafe™** at the AECOM Project Manager's discretion. **IndustrySafe™** can be accessed via the SH&E Page on Ecosystem when you are in the office or connected to the AECOM network via VPN. IndustrySafe may also be accessed from your smartphone/device, if equipped with a QR Code Reader App, using the QR Code to the right.

Safety observations may also be entered into **Lifeguard™**, which is one of AECOM's SH&E Databases, at the AECOM Project Manager's discretion. **Lifeguard™** can be accessed via the SH&E Page on Ecosystem when you are in the office or connected to the AECOM network via VPN. **Lifeguard™** may also be accessed from your smartphone/device, if equipped with a QR Code Reader App, using the QR Code to the right.



↑ Incidents, Near Misses, Audits/Inspections and Safety Observations ↑



14.2.4 Reporting Assistance

If your field schedule, access to internet, and/or limited cellular phone coverage have the potential to impact timely incident, near miss, and/or safety observation reporting, please contact your AECOM Project Manager and/or SH&E Manager for assistance.



15. Environmental Management

15.1 Scope

AECOM implements policies and procedures to reduce risk of land and/or water pollution and other environmental concerns during the life of the project. The AECOM Project Manager will ensure compliance with all local, state, federal and client environmental laws and/or regulations. For additional information on Environmental Management, please review the Environmental Compliance procedure, [S3AM-204-PR1](#).

15.2 Roles and Responsibilities

All AECOM staff through the leadership of the AECOM Project Manager are responsible for reducing or eliminating environmental impacts by AECOM personnel. The site supervisor and/or the site safety officer will be immediately notified of any spills, leaks, or other impacts to the ground and/or water, or other environmental emergencies, after emergency respondents have been called, if necessary. The Project Manager will be responsible for making any further notifications as required.

15.3 Staffing and Awareness

AECOM staff will receive relevant awareness training to ensure proper knowledge and training when performing activities with the potential to impact the environment, as well as the requirement of this plan for proper preparedness and response.

15.4 Pollution Prevention

Pollution/impact to the environment could be caused by the following sources:

- | | |
|-----------------------|------------------------------------|
| ■ Air emissions | ■ Solid waste |
| ■ Wastewater | ■ Hydrocarbons |
| ■ Hazardous materials | ■ Storm water and sediment/erosion |

AECOM will employ prevention and control measures to prevent impacts to the environment. In addition, a spill kit consisting of sorbent socks, pads, shovels and personal protective equipment (PPE) will be maintained on site by AECOM and each subcontractor.

Solid waste will be collected, segregated (recyclable, non-flammable, and flammable) and removed on a regular basis.



16. AECOM Audits and Inspections

The AECOM audit and inspection process establishes the protocol for the assessment the Safety, Health and Environment (SH&E) program and its application, as well as the process to identify and monitor corrective actions. The goal is to minimize risk and enhance operational SH&E performance. For more information on audits and inspections, please review the Compliance Assurance procedure, [S3AM-216-PR1](#).

16.1 Project Manager Self Assessments

AECOM Project Managers will perform quarterly SH&E site audits using the DCSA Project Manager Self-Assessment form (available in IndustrySafe).

16.2 Senior Management Activities (SMAs)

AECOM Senior Managers will perform Senior Management Activity inspections on the projects under their area of responsibility. These SMAs will be entered into Lifeguard.

16.3 Project Safety Reviews (PSRs)

AECOM SH&E Managers will perform periodic Project Safety Reviews on projects in their area of responsibility. These PSRs will be entered into IndustrySafe.

16.4 Site Safety Inspections (OSHA Type)

AECOM Project Managers and SH&E Managers will perform periodic site safety inspections (OSHA type) on projects in their area of responsibility as required. These site safety inspections will be entered into IndustrySafe.

16.5 External Regulatory Inspections

If a regulatory inspector shows up on site, AECOM will follow the requirements in our Regulatory Inspections procedure [S3AM-211-PR1](#).



17. Project Closeout

Completing a project requires procedures to close out Project Contractual and Administrative activities. The closeout process ensures all documentation is finalized and any Contractual Obligations are met. The Project is ready for close-out once it has been accepted by the end user organization. Project close-out is complete after all physical, regulatory, contractual, and financial close-out activities are complete.

17.1 Health and Safety File

The Health and Safety File will normally include:

- Brief description of the work carried out.
- Residual hazards which remain and how they have been dealt with (e.g. surveys, or information on asbestos, contaminated land, water bearing strata, buried services etc.).
- Key structural principles incorporated in the design (e.g. bracing) safe working loads etc.
- Any hazards associated with the materials used.
- Nature, location and markings of significant services including underground cables, gas supplies, firefighting etc.
- Information and 'as built' drawings including safe access to and from confined spaces etc.
- Daily Tailgate Meeting Forms
- Lessons Learned



18. Personal Acknowledgement

By signing below, the undersigned acknowledges that he/she has reviewed the AECOM Health and Safety Plan for the Click here to enter SITE NAME site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work and will comply with the provisions contained therein. The employee understands that they are **NOT** to perform any work that they have not been adequately trained for and that they are to stop work if it is unsafe to proceed. Finally, the employee understands to notify the Site Supervisor and the **Incident Hotline at 800-348-5046** for any incident, **including ANY injury even if no first aid or medical treatment is required.**

Print Name Clearly	Signature	Organization	Date

18.1 Disclaimer

This HASP, and each of its provisions, is applicable only to, and for use only by, AECOM, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third-party contractors on industrial sites or projects where AECOM is providing engineering, construction management, or similar services, without the express written permission of AECOM, will be at that party's sole risk, and AECOM Corporation shall have no responsibility. The existence and use of this Plan by AECOM shall not be deemed an admission or evidence of any acceptance of any safety responsibility by AECOM for other parties unless such responsibility is expressly assumed in writing by AECOM in a specific project contract.

Attachment **A**

Hospital/Clinic Maps



Attachment A: Hospital/Clinic Maps

A-1: NEAREST HOSPITAL

Queens Hospital Center 1-718-883-3090

Address:	82-68 164 th Street		
City:	Jamaica		
State/Province:	New York	Postal/Zip Code:	11432
Estimated Travel Time:	11 minutes	Distance:	1.5 miles

DRIVING DIRECTIONS

- Head west on Beaver Rd toward 158th St
- Turn right onto 158th St
- Turn right onto Archer Ave
- Turn left onto Parsons Blvd
- Turn right onto Highland Ave
- Turn left onto 164th St
- Turn left onto 82nd Rd, destination on left

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica

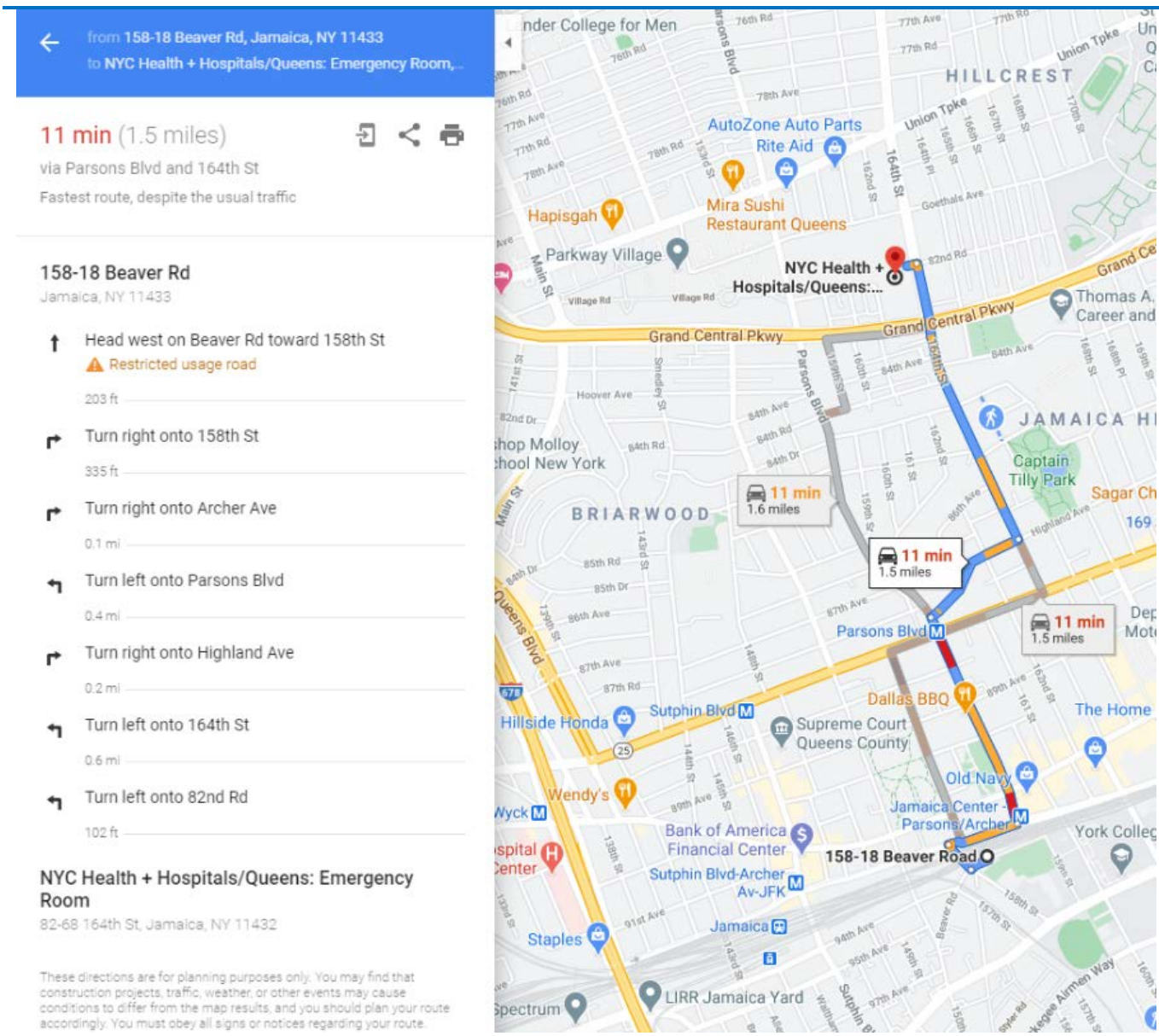


MAP TO HOSPITAL

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica



A-2: NEAREST OCCUPATIONAL CLINIC

City MD Urgent Care 1-718-571-9116

Address:	162-21 Jamaica Avenue		
City:	Jamaica		
State/Province:	New York	Postal/Zip Code:	11432
Estimated Travel Time:	6 minutes	Distance:	0.5 miles
Business Hours:	M-F (7AM-11PM) Saturday/Sunday (8AM-8PM)		
DRIVING DIRECTIONS			

- Head west on Beaver Rd toward 158th St

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica



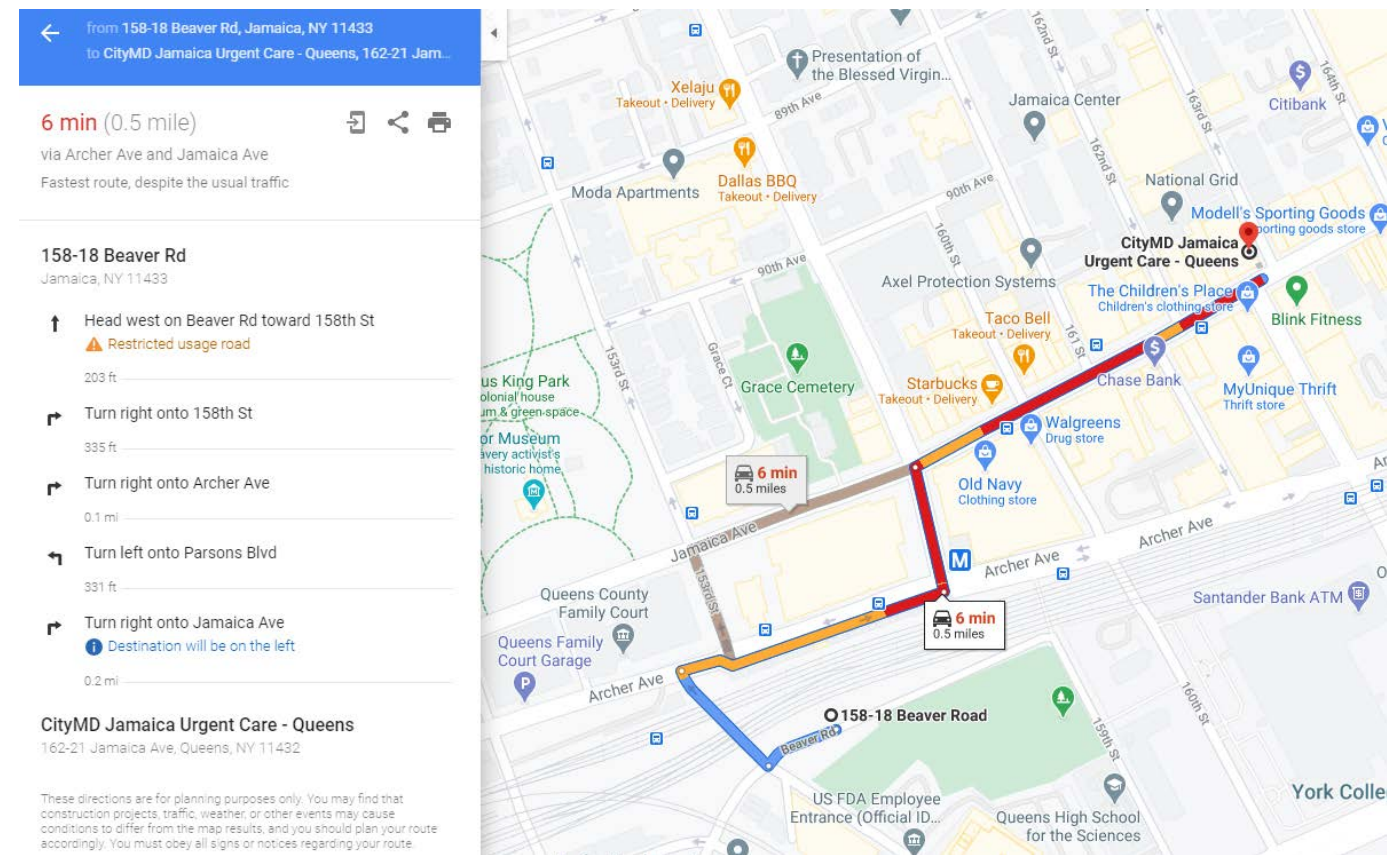
-
- Turn right onto 158th St
 - Turn right onto Archer Ave
 - Turn left onto Parsons Blvd
 - Turn right onto Jamaica Avenue, destination on left.

MAP TO OCCUPATIONAL CLINIC

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica

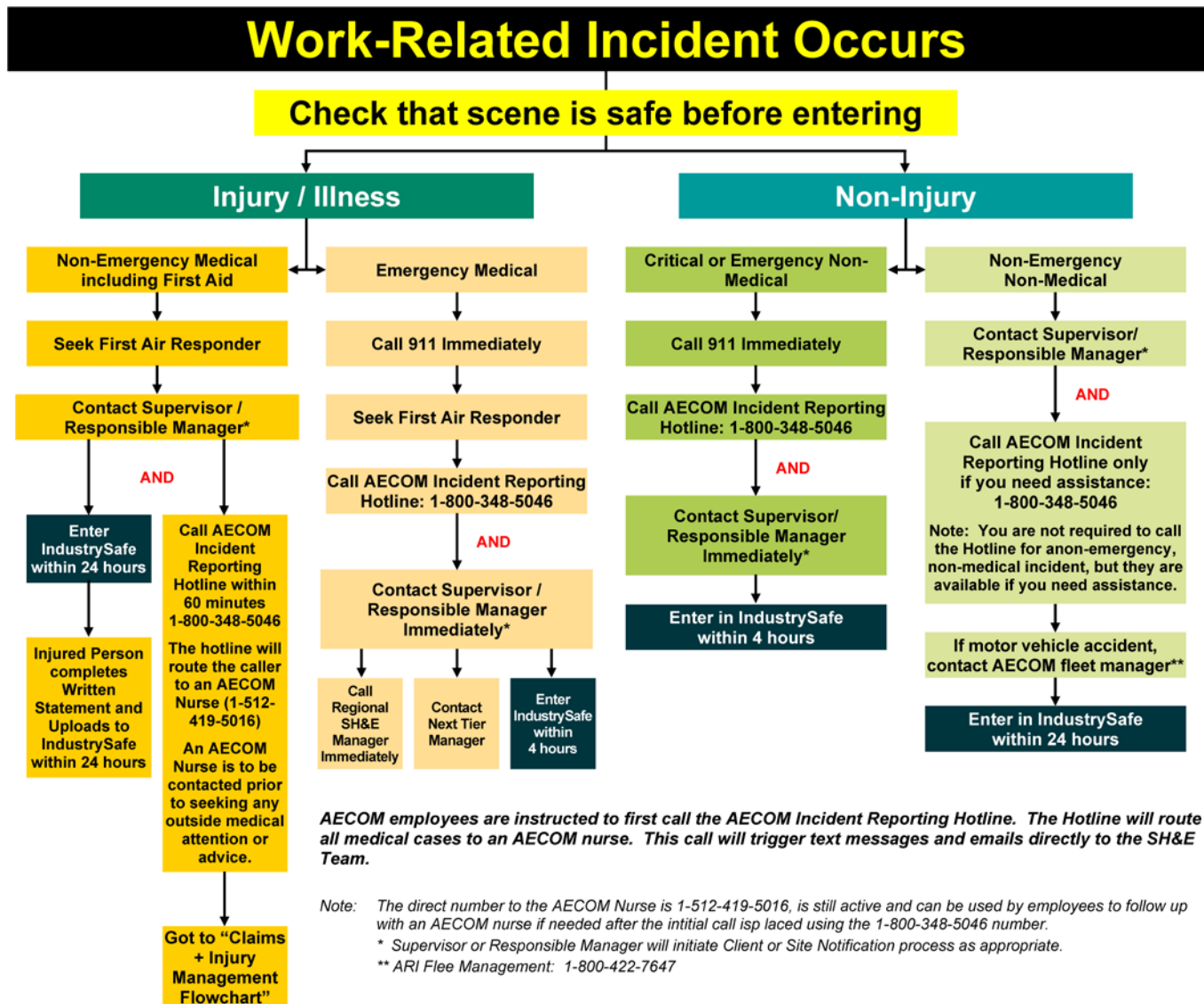


Attachment **B**

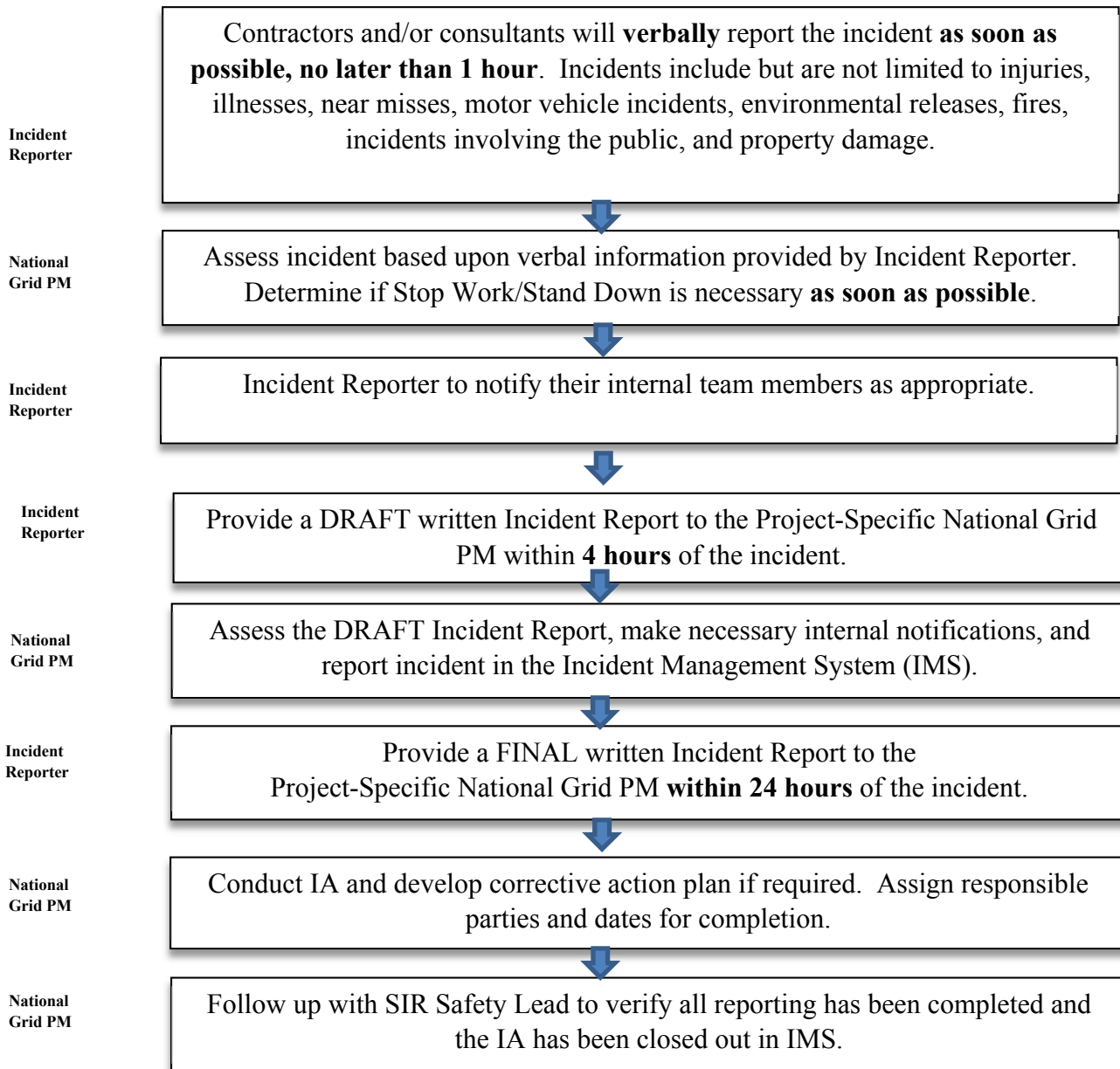
Incident Reporting Flow Chart



Attachment B: Incident Reporting Flow Chart



Flow Chart for Accident Reporting



Attachment **C**

THA Forms, and Tailgate Safety Meeting Form



Attachment C: THA Forms, and Tailgate Safety Meeting Form

Each discrete task being performed during the project (i.e., Driving, Inspection, Sample Collection, etc.) requires a [Task Hazard Assessment](#). If you don't have a THA for a task, obtain or develop one. The [DCS Americas Templated THA Library](#) may also be used to find previously approved THAs.

The THAs **MUST** be reviewed at the location the work will take place, just prior to beginning each task, and signed by all staff involved in the operation. The THAs should be consulted and updated throughout the day if conditions change using the 'On-Site Edits' lines.

Insert Task Hazard Analyses here. Include these documents after this cover sheet in the final SWP.

The preparer shall download a sufficient number of blank copies of the Task Hazard Analysis (THA) form as well as the Tailgate Meeting Form ([S3AM-209-FM5](#)) to use each day of field work, and insert after this cover sheet in the final SWP.

Task Hazard Assessment Instructions:

Each unique task or work group should have their own THAs. If workers have a THA for their task(s) in hand, they should simply review it and document the site-specific edits in the appropriate section. If workers do **not** have a THA for all tasks to be performed, a THA must be [obtained](#) or drafted *prior to starting work* on that task. Use additional pages as needed.

- Identify the basic steps of the task that must be performed in order and their associated hazards. Identify controls or barriers to mitigate each identified hazard.
- Clearly identify any **STOP WORK** triggers.
- Document stop work and change management if conditions/ scope changes.
- Use 4-Sight to identify and mitigate site-specific hazards throughout the day. Modify the THA as needed. Contact site supervisors or the PM for any significant scope changes or changes of expected conditions.
- All THAs shall be 3 pages (maximum) or less (preferred). If they are longer, the task is too broad.
- All hazards will use standardized nomenclature (Hazard Wheel), should be specific, detail how someone could be hurt and what the outcome could be.
- All actions to mitigate hazards must be specific, clearly aligned with its respective hazard and not generic. Avoid words such as "*proper*", "*correct*", or "*appropriate*". Use specifics and numerical values (i.e., wear disposable nitrile gloves, stand back 6 feet/1.8 meters, take a 10-minute break every hour).
- PPE cannot be the only line of defense - PPE is always the last line of defense, so think through what other controls (engineering, administrative, etc.) could mitigate hazards.

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica



Discuss as Applicable and Modify THA as Needed	Severity					
	Probability	5 - Catastrophic	4 - Critical	3 - Major	2 - Moderate	1 - Minor
Check <input checked="" type="checkbox"/> if reviewed or mark N/A	5 - Frequent	25	20	15	10	5
<input type="checkbox"/> Biological / Chemical / Electrical Hazards	4 - Probable	20	16	12	8	4
<input type="checkbox"/> Decontamination Procedures	3 - Occasional	15	12	9	6	3
<input type="checkbox"/> Ergonomics – Lifting, Body Position	2 - Remote	10	8	6	4	2
<input type="checkbox"/> Lock Out / Tag Out	1 - Improbable	5	4	3	2	1

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & Safety Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & Safety Director

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>\$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>\$250K to \$1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost/Restricted Work	> \$10K to \$250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> \$1K to \$10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	<=\$1K USD	Small chemical release contained onsite	Individual complaint

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

Using the Matrix:

- Identify basic steps of the task and associated hazards.
- Calculate the initial risk rating.
- Identify control measure to eliminate or reduce the hazard's risk and calculate the residual risk rating.
- If the risk rating (after controls are implemented) cannot be reduced to 4 or lower, additional approvals are needed before the activity can begin.

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:

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 9 January 15, 2019

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

Task Hazard Assessment

Task Name:	Site Walk – General Site Visit	Control #:	01-01-10-06
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Project Name:	Former Jamaica Gas Light Company MGP	Client:	National Grid	Date:	06/08/21
Permits Required? (list):	No – permission to access site must be obtained via National Grid	Work Location:	Vacant parcel located between 158th and former 159th Streets, south of Beaver Road		

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	<input checked="" type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> Safety Glasses <input checked="" type="checkbox"/> HiVis Vest <input checked="" type="checkbox"/> Safety Toe Boots <input checked="" type="checkbox"/> Gloves: leather <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Other: PPE for expected weather conditions				
Tools & Equipment:	camera	notebook/pen			

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!					
Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>	Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions To Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>	
1. Plan the site walk	1a. Personal injury from not having proper PPE	4	1a. Determine what the basic PPE requirements are in advance and have available or know that they will be available to you to borrow once on site.	4	
	1b. Vehicle getting stuck or damaged due to terrain/site conditions	4	1b. Determine what type of vehicle is needed for site conditions (4-wheel drive, truck or car).	4	
	1c. Heat/cold stress, insect bites, sunburn from inadequate materials/supplies	4	1c. Determine what materials and supplies you must bring versus what is available on site such as insect spray, sunscreen, drinking water, food, etc.	4	
	1d. Lack of site escort if needed	4	1d. Prearrange trip in advance where possible, determine who will be meeting you on site and when.	4	
	1e. Inclement weather	6	1e. Plan for the anticipated weather conditions. Check the predicted weather for the worksite prior to departing. Reschedule site visit if severe weather such as lightning storms, sleet/ice storms, blizzards, etc., are predicted.	2	
	1f. Lone Worker	6	1f. Check in with PM on arrival to Site, every 30 minutes and on departure.	2	
On-Site Edits:					

Task Hazard Assessment

Task Name: Error! Reference source not found. **Site Visit**

Control #: Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>		Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions To Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
2. Arriving at site		2a. Getting stuck or sustaining slip/trip/fall injuries from parking in inappropriate areas	6	2a. Know where you are supposed to park prior to arrival or check in at site. Park in an area with firm, level surface, and with a good surface (avoiding wet/muddy conditions, poor walking surfaces, etc) available when you exit the vehicle.	2
		2b. Injuries from being struck due to 3 rd party or client operations	10	2b. Park that you do not subject yourself or your vehicle to site hazards such as construction vehicle traffic, forklifts or other equipment, passing motorists, etc.,	2
On-Site Edits:					
3. Walking Site/Observing Work		3a. Vehicle and equipment movement	10 4 4 6	3a. Do not walk on roadways. Walk on designated walkways only. When crossing the road, look both ways before crossing. Make contract with drivers (wave, eye contact) so they're aware of your presence.	2
		3b. Biological hazards		3b. There are many different types of biological hazards that can be encountered on a work site. These include ticks, spiders, mosquitoes, chiggers, poisonous or other noxious plants, alligators, bears, small mammals, bird droppings, small mammals, snakes, etc. Do not attempt to pick up, handle, or otherwise handle stray or wild animals such as dogs, cats, raccoons, squirrels, etc., no matter how tame they may appear.	2
		3c. Slips/trips/falls		3c. Be aware of walking surfaces at all times, wear footwear with good tread and ankle support, use handrails where available, avoid walking in muddy or wet areas when possible, identify and mark or have removed any obstructions that may be present in predicted walking paths.	2
		3d. Crossing roads, bridges, etc		3d. Keep to pathways appropriate for pedestrian traffic – sidewalks, walkways with handrails, etc. If no sidewalk is present, stay off the side of the shoulder, behind guardrails where possible, etc. Walk facing traffic. Never take photographs while walking to reduce risk of inadvertently wandering into traffic.	3
On-Site Edits:					
4. Leaving the site		4a. Transporting biological hazards into vehicle	4	4a. Inspect self for ticks before entering vehicle. If it possible that clothing and personal items such as jackets, backpacks, lunch bags, and so on have been exposed to	2

Task Hazard Assessment

Task Name:	Error! Reference source not found. Site Visit	Control #:	Error! Reference source not found.
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REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!					
Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>		Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions To Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
		4b. Hitting object when leaving causing vehicle or property damage	6	poisonous plant oils or may harbor ticks or other insects, bag such items until they can be appropriately treated. 4b. Before moving the vehicle, perform a 360° walk around of the vehicle to verify that no changes have been made that may impact exit.	4
On-Site Edits:					
5.		5a.		5a.	
On-Site Edits:					
6.		6a.		6a.	
On-Site Edits:					
7.		7a.		7a.	
On-Site Edits:					

Task Hazard Assessment

Task Name:	Error! Reference source not found. Site Visit	Control #:	Error! Reference source not found.
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Additional Notes:

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Task Hazard Assessment

Task Name: Error! Reference source not found. **Site Visit**

Control #: Error! Reference source not found.

All Employees:

STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

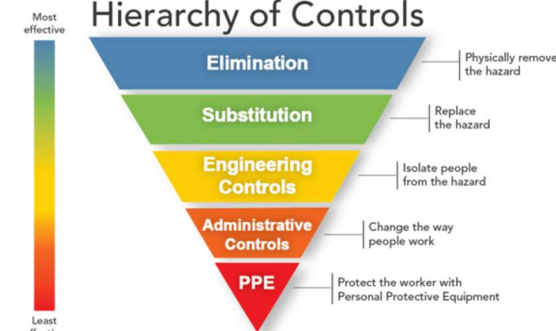
Use **4-Sight**, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ▶ **What am I about to do?**
- ▶ **What can go wrong?**
- ▶ **What can be done to make it safer?**
- ▶ **What have I done to communicate the hazards?**

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



Hierarchy of Controls



- ▶ **Most hazards need more than one control**
- ▶ **What should you do? Stack your controls**
- ▶ **PPE can NEVER be your only means of protection**

Worker Sign On	
I participated in the on-site review and fully understand the content of this Task Hazard Assessment.	
Printed Name	Signature
1. Supervisor:	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com

Task Hazard Assessment

Task Name:	Error! Reference source not found. Site Visit	Control #:	Error! Reference source not found.
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Include a copy of the new THA or a photo of the THA modifications as appropriate.

Task Hazard Assessment – DCSA

Task Name:	Control #:
-------------------	-------------------

Project Name:	National Grid Jamaica Gas & Light	Client:	National Grid	Date:	
Permits Required? (list):		Work Location:	158 Beaver Road, Jamaica, Queens		

This THA must be fully reviewed with all staff members. All job steps, hazards, work practices, and PPE are clearly understood and have been implemented. All necessary revisions have been written on the THA.

Required PPE:	<input checked="" type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> Safety Glasses <input checked="" type="checkbox"/> HiVis Vest <input checked="" type="checkbox"/> Safety Toe Boots <input checked="" type="checkbox"/> Gloves: _____ <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Other: _____
Tools & Equipment:	

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!					
Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>		Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions To Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
1.		1a.		1a.	
On-Site Edits:					
2.		2a.		2a.	
On-Site Edits:					
3.		3a.		3a.	
On-Site Edits:					

Task Hazard Assessment – DCSA

Task Name: _____	Control #: _____
-------------------------	-------------------------

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!					
Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>		Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions To Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
4.		4a.		4a.	
On-Site Edits:					
5.		5a.		5a.	
On-Site Edits:					
6.		6a.		6a.	
On-Site Edits:					
7.		7a.		7a.	
On-Site Edits:					

Additional Notes:

Task Hazard Assessment – DCSA

Task Name: _____

Control #: _____

All Employees:

STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

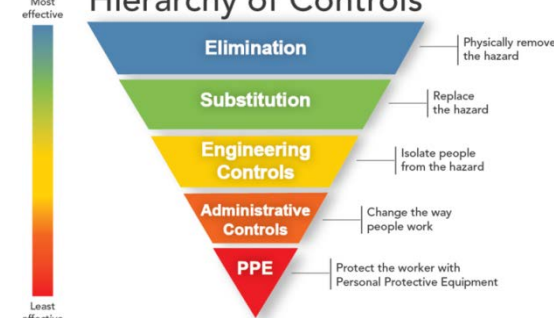
Use **4-Sight**, AECOM's last minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ▶ **What am I about to do?**
- ▶ **What can go wrong?**
- ▶ **What can be done to make it safer?**
- ▶ **What have I done to communicate the hazards?**

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



Hierarchy of Controls



- ▶ **Most hazards need more than one control**
- ▶ **What should you do? Stack your controls**
- ▶ **PPE can NEVER be your only means of protection**

Worker Sign On

I participated in the on-site review and fully understand the content of this Task Hazard Assessment.

Printed Name	Signature
1. Supervisor:	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Visitor Acknowledgement

Visitors review task hazards and acknowledge understanding

1.
2.
3.
4.
5.
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7.
8.
9.
10.

Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com

Include a copy of the new THA or a photo of the THA modifications as appropriate.

Task Hazard Assessment

Task Name:	Preparations for Travel when Driving (fleet, rental and personal vehicles) to Minimize Coronavirus Exposure	Control #:	Rev # 1 (6/12/2020)
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Project Name:	Various	Client:	Various	Date:	
Permits Required? (list):		Work Location:			

THIS THA MUST BE FULLY REVIEWED AND ACKNOWLEDGED DAILY BY ALL AECOM STAFF and AECOM SUBS ON-SITE

All job steps, hazards, work practices & PPE are to be clearly understood and implemented. All necessary revisions have been written on the THA.

Required PPE:	<input type="checkbox"/> Hard Hat <input type="checkbox"/> Safety Glasses <input type="checkbox"/> HiVis Vest <input type="checkbox"/> Safety Toe Boots <input checked="" type="checkbox"/> Gloves: <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Other: _____
	Additional materials and supplies required: Potable water and soap (preferable) or hand sanitizer w/ 70% alcohol Disinfectant wipes Tissues Disposable gloves Face coverings/face masks One Gallon Zip Lock Bags Safety goggles Disinfectant spray List of Cleaning Products to Kill Coronavirus
Tools & Equipment:	

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>	Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions to Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
1. Planning the trip	1a. Potential exposure to Coronavirus	4	1a. Map route in advance to utilize the least populated route of travel. Avoid entering public places. If traveling more than 250 miles in one direction, develop a Journey Management Plan and be sure to add controls for protection against Coronavirus.	2
On-Site Edits:				
2. Preparing vehicle for driving	2a. Possible exposure from touching contaminated surfaces, tools, equipment and materials in vehicle.	8	2a. If feasible, use your personal vehicle or procure a fleet vehicle or a rental car (contact rental car company in advance) that hasn't been driven in the past 72 hours and always clean and disinfect the vehicle in accordance with the Vehicle Cleaning THA prior to driving. If possible, park the vehicle with the windows closed facing the sun (on sunny days), to allow the vehicle to heat up for 2-3 hours.	4

Task Hazard Assessment

Task Name:	Preparations for Travel When Driving	Control #:	Error! Reference source not found. Rev # 1 (6/12/2020)
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On-Site Edits:					
3.	Driving to and from destination	3a. Possible exposure from passengers	8	3a. Limit to one person per vehicle whenever possible. If a passenger must ride with you, limit to one passenger and have them sit in the rear passenger side seat. Crack and/or open windows and use fan to recirculate air.	4
On-Site Edits:					
4.	Stopping for fuel, restroom breaks and food	4a. Possible exposure due to contact with members of the general public at gas stations, convenience stores, restrooms, etc.	12	4a. Plan trip to eliminate the need to stop for food, fuel or restroom breaks. If you must stop, avoid entering public places if possible. For refueling, don face covering and disposable gloves. When finished, doff disposable gloves, dispose of in trash receptacle and wash hands with soap and water or hand sanitizer with at least 70% alcohol. If you must enter public places, practice social distancing and wear a face covering. If you must use public restrooms, don disposable gloves prior to entering, doff and dispose of in trash receptacle when exiting. Wash hands with soap and water for at least 20 seconds or use a hand sanitizer before and after entering public places and restrooms. Have soap and water, antibacterial hand wipes or spray, 70% + alcohol hand sanitizer available.	4
On-Site Edits:					
5.	Out of town work	5a. Exposure at hotels	12	5a. Where logistically feasible, if a project extends beyond a day's duration, plan on traveling home rather than staying in a hotel if this can be done within AECOM's fatigue management program. Book through CWT and in known chains to ensure maximum cleanliness, even if the hotel needs to be a further distance from the site. Call the hotel ahead of your stay to find out what controls (i.e. cleanliness, disinfection, face cover required, etc.) they have in place for their guests. If long stay, there may be other options to consider such as Airbnb (full house) to minimize contact with people. Ask for room on the first floor to avoid using the elevator if possible. Maintain social distance (minimum six feet) with people. Do not touch anything if not needed in your hotel or room as the first measure. If in doubt of cleanliness of the accommodation, bring it up to the accommodation responsible person. Wipe down all touch point surfaces in hotel room with disinfectant or alcohol wipes. Put a "do not disturb" sign on door handle to prevent hotel staff from entering room to clean during the day. If possible, open window(s) for circulation. Wipe down window handles prior to opening and use gloves to open. Refrain from using hotel room coffee machines. Wash hands frequently.	4

Task Hazard Assessment

Task Name: Preparations for Travel When Driving

Control #: Error! Reference source not found. **Rev # 1 (6/12/2020)**

On-Site Edits:					
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Additional Notes:

Where required, supplies (i.e., disinfectant spray/wipes, soap/hand sanitizer, nitrile gloves) should be made available prior to starting work. Request re-supply if stock runs low.

Use disinfectant products that contain at least 70% alcohol. Use alcohol-based hand sanitizer that contains at least 60% alcohol. Wash hands with soap and water whenever available. Remember that soap (including bar soap) is generally available and is considered superior to hand sanitizer or disinfectant wipes/spray. If disinfectants are unavailable, prepare diluted bleach solution as described in Step 6 and use in their place.

If any staff are showing any possible symptoms of or have been in recent direct contact with others showing symptoms of CORONAVIRUS, **STOP WORK**. Notify the site supervisor and the project manager and go home and/or stay home. Contact the AECOM Incident Reporting Hotline (1-800-348-5046) and/or the AECOM Nurse Line (1-512-419-5016).

A list of common symptoms to look out for can be found here:

[AECOM Guidance for Coronaviruses](#)

Visit the CDC webpage on cleaning and disinfecting procedures: [CDC Guidance for Community and Residential Cleaning-Disinfection for Coronavirus](#)

A list of approved disinfectants for use against SARS-CoV-2, the cause of CORONAVIRUS, is available here: [US EPA List of Disinfectants Effective Against Coronaviruses](#)

Revision Log

Version	Issued / Revised By	Date	Revision Summary
THA Revisions			
0	Scott Dietz	June 1, 2020	Original version
1	Scott Dietz	June 12, 2020	Added "Out of town work"

Task Hazard Assessment

Task Name:	Preparations for Travel When Driving	Control #:	Error! Reference source not found. Rev # 1 (6/12/2020)
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Project-Specific Revisions			

Task Hazard Assessment

Task Name: Preparations for Travel When Driving

Control #: Error! Reference source not found. **Rev # 1 (6/12/2020)**

All Employees:

STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

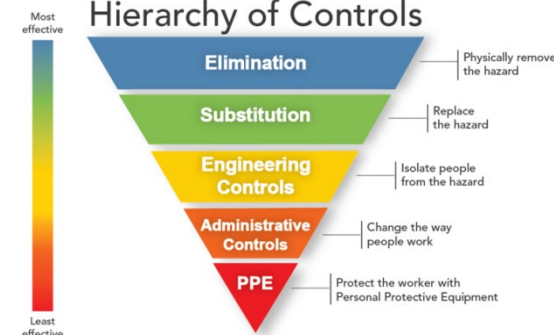
Use **4-Sight**, AECOM's last-minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ▶ **What am I about to do?**
- ▶ **What can go wrong?**
- ▶ **What can be done to make it safer?**
- ▶ **What have I done to communicate the hazards?**

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



Hierarchy of Controls



- ▶ **Most hazards need more than one control**
- ▶ **What should you do? Stack your controls**
- ▶ **PPE can NEVER be your only means of protection**

Worker Sign On	
I participated in the on-site review and fully understand the content of this Task Hazard Assessment.	
Printed Name	Signature
1. Supervisor:	
2.	
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Visitor Acknowledgement
Visitors review task hazards and acknowledge understanding
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Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com

Task Hazard Assessment

Task Name:	Preparations for Travel When Driving	Control #:	Error! Reference source not found. Rev # 1 (6/12/2020)
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Include a copy of the new THA or a photo of the THA modifications as appropriate.

Task Hazard Assessment

Task Name: Field and Field Office – Precautions for Coronavirus	Control #: Rev # 6 (6/17/2020)
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Project Name:	Various	Client:	Various	Date:	
Permits Required? (list):	Essential Services Letter required for travel if required by ocal ordinance	Work Location:			

THIS THA MUST BE FULLY REVIEWED AND ACKNOWLEDGED DAILY BY ALL AECOM STAFF and AECOM SUBS ON-SITE

All job steps, hazards, work practices & PPE are to be clearly understood and implemented. All necessary revisions have been written on the THA.

Required PPE:	<input checked="" type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> Safety Glasses <input checked="" type="checkbox"/> HiVis Vest <input checked="" type="checkbox"/> Safety Toe Boots <input type="checkbox"/> Gloves: <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Other: _____
	<p>For certain tasks (see THA below) the following are required: Potable water and soap (preferable) or hand sanitizer w/ 60% alcohol Disinfectant wipes Tissues Nitrile gloves Safety goggles Coveralls Disinfectant spray List of Cleaning Products to Kill Coronavirus</p> <p>Face covering when you are not able to maintain 6' social distance or where required by client or government order. Face coverings can be made from household materials by using needles, thread, cloth, tee-shirts, bandanas, etc. KN95, N95, dust/face masks are also acceptable. Local requirements may vary. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html</p> <p>PPE Note: Consider checking sources such as gas stations and specialty markets, as these may have equipment or materials not available at general grocery stores.</p>
Tools & Equipment:	

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>	Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions to Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
1. Fitness for Duty check (performed at home prior to work)	1a. Being unfit for duty – impacted by illness including coronavirus	12	1a. Ensure you are fit for duty Are you or have you been in any of these situations? ➤ I have had close contact with a confirmed case or a symptomatic person under investigation for coronavirus in the last 14 days. ➤ A doctor requested me to be tested for coronavirus or instructed me to self-quarantine? ➤ A member of my household or someone I was in close contact within the last 14 days experienced some of the following symptoms: fever, cough, shortness of breath, fatigue, sore throat, chills, gastro-intestinal disease or diarrhea, loss of taste/smell. ➤ I have or previously had some of the following symptoms in the last 7 days: fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body ache, headache, new loss of taste/smell, sore throat, congestion or runny nose, nausea or vomiting, or diarrhea..	4

Task Hazard Assessment

Task Name:	General Field Work and Office Work	Control #:	Error! Reference source not found.
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			<p>➤ Where required, my temperature check today shows a fever, without the use of fever reducing medications in the last 24 hours? (100.4 F [37.8C] or above or exceeding criteria required by local order or client requirements).</p> <p>If response is a YES, then do not access the workplace. If AECOM employee, contact your Supervisor and the AECOM Nurse at 512-419-5016 for advice.</p> <p>If response is a NO or Yes, but released by AECOM nurse, you can proceed to work. You may be asked to check your temperature again when you arrive to your workplace.</p>		
On-Site Edits:					
2.	Travel by vehicle or air required	2a. Being in an enclosed space with poor air circulation in close contact with other people.	12	2a. For Vehicle travel, review the “Preparations for Travel when Driving (fleet, rental and personal vehicles) to Minimize Coronavirus Exposure” THA for driving and the “Preparations for Travel when flying to Minimize Coronavirus Exposure” for flying.	4
On-Site Edits:					
3.	General Field Work	3a. Working Around Others	12	3a. Personnel must maintain at least 6-foot distance from each other (see note below if this seems to be unachievable). Practice social distancing at tailgate meetings, in break rooms and job trailers. Completely avoid (if possible) or limit the number of people in job trailers and other confined areas at any one time so that this distance can be maintained. If possible, hold meetings outside. If indoors, open window(s) for circulation. Wipe down window handles prior to opening. Even when practicing social distancing, we must limit the amount of people in any one group to less than 10 people.	4
				Clean all surfaces of your hands often with soap and water for at least 20 seconds. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands, including around and under fingernails and rub them together until they feel dry. When using hand sanitizer, be sure your hands are completely dry prior to touching any objects or surfaces.	
				Wear safety glasses or goggles and avoid contact/touching of face, eyes, nose, and mouth. Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. Throw used tissues in the trash. Immediately wash or sanitize your hands.	
				NOTE: . Face coverings will also be worn where clients, states or municipalities require them. If you feel your task cannot be performed by maintaining social distancing, face coverings will be worn in combination with additional behavioral or PPE controls. If additional guidance is required, contact your SH&E manager to discuss the use of additional controlsPlease keep in mind, face coverings alone will not protect you from Coronavirus, so additional controls must be added.	
				If the need arises to enter a personal residence, prepare a separate task specific THA for this task.	
		3b. Handling Shared Equipment and Tools	12		

Task Hazard Assessment

Task Name:	General Field Work and Office Work	Control #:	Error! Reference source not found.
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	3c. Exposure during Lunch and Bathroom Breaks	12	3b. Wipe down and disinfect equipment before use with soap/water or disinfectant wipes. Wear disposable gloves when wiping surfaces down with disinfectant. Regularly wash hands when handling tools or equipment. Wash hands before eating or drinking.	4
	3d. Lack of food/water/supplies	4	3c. Be sure to wash hands with soap/water whenever a bathroom is nearby. At minimum, do so during bathroom and lunch breaks. Use a paper towel to open door handle when exiting bathroom. If using outside toilet facilities (i.e. Porta Johns), wash hands with soap and water or hand sanitizer both before and after opening/closing the door. Where possible, employees are encouraged to pack meals and snacks as needed for the project duration and avoid visiting stores and restaurants. If necessary, modify your schedule to avoid restaurants and public restrooms during peak, i.e., crowded, periods to minimize contact with the public. Use drive-through service for food pick-up if available. Avoid eating lunch as a group, if you must, do so outside or in a space with windows open (wipe down windows prior to opening). Maintain 6 feet or more and do not share dishes (e.g., bag of chips, communal salad bowl, etc.) Refrain from sharing a field office coffee pot. Many locations may have shortages of food, water, or supplies or closed restaurants. Bring food, water, and supplies to allow you to work a full shift without additional provisions.	1
On-Site Edits:				
4. Office Work	4a. Working around others	12	4a. Work from home when possible. Clean hands often with soap and water for at least 20 seconds after using the restroom, after you have been in a public place, before and after eating or after blowing your nose, coughing, or sneezing. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands, including around and under fingernails, and rub them together until they feel dry. Cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow. Throw used tissues in the trash. Immediately wash or sanitize your hands. Sit at least six feet apart from others. Change workstations and meeting room setup to accommodate this social distancing. Even if you are practicing social distancing, we must still limit groups of people to less than 10. Do not eat or hang out in common areas. Maintain social distancing during tailgate meetings and/or THA reviews, supervisor should seek verbal agreement from all and note this rather than passing pen and clipboard around for signature. Avoid passing round other items such as sign-in sheets as well. Make hand-sanitizers, sanitizing wipes, and other hygienic supplies readily available.	4
	4b. Encountering frequent "touch points" and handling shared equipment	12	4b. Wipe down keyboards, mouse, phone, headset/headphones, any other "touch points". Limit contact of shared items. Wipe down surfaces before contacting them. Wash hands after handling or wear disposable gloves.	4

Task Hazard Assessment

Task Name:	General Field Work and Office Work	Control #:	Error! Reference source not found.
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			<p>In reception areas, use your own pen to sign in and out of offices. Remove unnecessary items such as business card holders, communal candy jars, etc.</p> <p>Work with facilities to assign someone to clean AND disinfect frequently touched surfaces daily. Follow the manufacturer's instructions for all cleaning and disinfection products (e.g., concentration, application method and contact time.</p>	
On-Site Edits:				

Additional Notes:

Where required, supplies (i.e., disinfectant spray/wipes, soap/hand sanitizer, nitrile gloves) should be made available prior to starting work. Request re-supply if stock runs low.

Use disinfectant products that contain at least 70% alcohol. Use alcohol-based hand sanitizer that contains at least 60% alcohol. Wash hands with soap and water whenever available. Remember that soap (including bar soap) is generally available and is considered superior to hand sanitizer or disinfectant wipes/spray.

Common touch points and surfaces include but are not limited to:

- Arms on chairs
- Tabletops
- Doorknobs and handles
- Countertops
- Elevator Buttons
- Coffee Pots
- Refrigerator / microwave / dishwasher / toaster handles
- Water Dispensers
- Cabinet and file drawer knobs / handles
- Shared office supplies such as staplers, paper cutters, scissors, packaging tape dispensers, writing utensils
- Phone receivers, keypads
- Copier / printer / fax control buttons
- Sink faucets
- Light switches

Task Hazard Assessment

Task Name: General Field Work and Office Work

Control #: Error! Reference source not found.

If any staff are showing any possible symptoms of or have been in recent direct contact with others showing symptoms of CORONAVIRUS, **STOP WORK**. Notify the site supervisor and the project manager and go home and/or stay home. Contact the AECOM Incident Reporting Hotline (1-800-348-5046) and/or the AECOM Nurse Line (1-512-419-5016), and notify the Area SH&E Manager. A list of common symptoms to look out for can be found here: [AECOM Guidance for Coronaviruses](#)
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Revision Log

Version	Issued / Revised By	Date	Revision Summary
THA Revisions			
0	Amanda Lanning & Kelly Dwyer	March 23, 2020	Original version
1	Patrick Walz	March 26, 2020	Added new Step 1, Fitness for Duty Check. Modified language related to stopping work when PPE supplies are unavailable. Added instructions for making diluted bleach solution. Modified vehicle use instructions to allow long-term rental and fleet vehicle use.
2	Scott Dietz	April 2, 2020	Added new Step 5, Traveling/Out of Town Work
3	Patrick Walz & Joan Root	April 13, 2020	Modified language related to hotel stays. Moved instructions for making diluted bleach solution from PPE section to Step 6 and added hazards and mitigations. Added note regarding requirements for face coverings to PPE section, and added tips for obtaining sources of PPE.
4	Scott Dietz, Kelly Dwyer, Patrick Walz, & Devon Molitor	May 1, 2020	Added revision log. Modified language related to office cleaning to clarify that facilities should be contacted to arrange office cleaning. Modified Step 3 to clarify social distancing requirements and added "note" with steps to take when not possible.
5	Walz, Dietz, Dwyer, Indorato, Gregory, Molitor, Cooter	May 5, 2020	Modified the Fit for Duty language, removed requirement to wear nitrile gloves when driving and opening/closing doors and windows, modified language if AECOM personnel must enter a personal residence.
6	Walz, Dietz, & Shelley Brown	June 17, 2020	Modified the symptoms of coronavirus, removed language regarding travel and hotel stays and provided link to new travel THAs which cover those topics in greater detail. Various additional minor modifications to text and formatting. Modified initial risk ratings.
Project-Specific Revisions			

Task Hazard Assessment

Task Name: General Field Work and Office Work

Control #: Error! Reference source not found.

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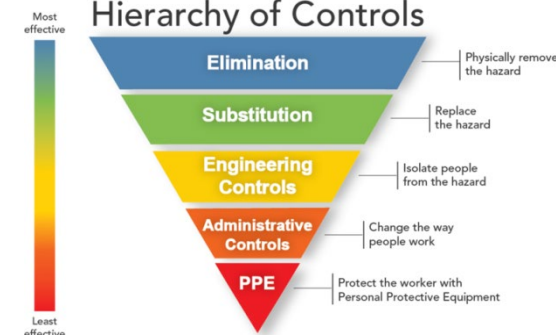
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- ▶ **What have I done to communicate the hazards?**

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



Hierarchy of Controls



- ▶ **Most hazards need more than one control**
- ▶ **What should you do? Stack your controls**
- ▶ **PPE can NEVER be your only means of protection**

Worker Sign On

I participated in the on-site review and fully understand the content of this Task Hazard Assessment.

Printed Name	Signature
1. Supervisor:	
2.	
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Visitor Acknowledgement

Visitors review task hazards and acknowledge understanding

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Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com

Task Hazard Assessment

Task Name:	General Field Work and Office Work	Control #:	Error! Reference source not found.
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Include a copy of the new THA or a photo of the THA modifications as appropriate.

Task Hazard Assessment

Task Name: Coronavirus Vehicle Cleaning THA	Control #: Rev # 1 (6/1/2020)
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Project Name:	Various	Client:	Various	Date:	
Permits Required? (list):		Work Location:			

THIS THA MUST BE FULLY REVIEWED AND ACKNOWLEDGED DAILY BY ALL AECOM STAFF and AECOM SUBS ON-SITE

All job steps, hazards, work practices & PPE are to be clearly understood and implemented. All necessary revisions have been written on the THA.

Required PPE:	<input type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> Safety Glasses <input type="checkbox"/> HiVis Vest <input type="checkbox"/> Safety Toe Boots <input checked="" type="checkbox"/> Nitrile <input type="checkbox"/> Hearing Protection Gloves: <input type="checkbox"/> Other: See list below _____
	Disposable gloves, in proper size for operator(avoid latex due to allergy concerns) Face coverings or mask Safety Glasses
Tools & Equipment:	Paper towels Trash container/bags Safety glasses Small bucket of water Dish soap Disinfectant spray or wipes List of Cleaning Products to Kill Coronavirus
	<p>Note: Many of the same household cleaners (such as non-bleach, unscented, non-chlorinated disinfectant cleaners and wipes) that kill coronaviruses on hard surfaces at home can also clean most car interiors without causing damage. Alcohol solutions that contain at least 70 percent alcohol are effective against coronavirus, according to the CDC. Nearly every interior surface of a vehicle can be cleaned with isopropyl alcohol. Vigorous washing with soap and water can also destroy the coronavirus. Soap and water are safe for most car interiors.</p> <p><u>Warning!</u></p> <ul style="list-style-type: none"> • Don't use bleach or hydrogen peroxide on the inside of the vehicle. • Don't use scented wipes or wipes containing bleach. • Don't use ammonia-based cleaners on car touch screens or dashboards, as they can damage anti-glare and anti-fingerprint coatings. • Never combine cleaning chemicals as doing so may lead to toxicity. • If using alcohol, avoid any potential source of sparks/ignition. DO NOT SMOKE!

Task Hazard Assessment

Task Name: Coronavirus Vehicle Cleaning THA

Control #: Error! Reference source not found.

REMINDER: Use 4-Sight at the start of, and continuously throughout the job/task to identify additional and/or hazards to act on!

Job Steps <i>List all steps required to perform a task in the sequence they are performed</i>		Potential Hazards <i>How could you be hurt? What would the injury be?</i>	Risk <i>(initial)</i>	Critical Actions to Mitigate Hazards <i>List control measures required to eliminate, control or protect against the potential hazards associated with each job step to minimize the risk of injury or environmental impact. Identify any 'Stop Work' triggers.</i>	Risk <i>(final)</i>
1. Plan for cleaning/disinfecting		1a. Exposure to harsh disinfectants	8	1a. Read the Safety Data Sheet or warnings/precautions on the label. Wear the PPE specified. At a minimum, gloves and safety glasses shall be worn.	4
		1b. Not having the supplies necessary to perform the task (inadequate cleaning)	8	1b. Confirm that you have the necessary supplies and equipment before proceeding. If possible, prepare a supply kit with all necessary cleaning/disinfecting prior to travel.	4
		1c. Damaging vehicle interior surfaces	8	1c. Consult the owners manual to verify how to clean the various surfaces. Some surfaces may be adversely impacted by certain cleaners and by an excess application of water.	4
	On-Site Edits:				
2. Prepare the vehicle for cleaning		2a. Inadequate cleaning because of obstructed surfaces	6	2a. Don gloves and safety glasses. Open all vehicle doors and remove all trash, water bottles, tools, equipment, etc., that are not part of the vehicle. Clean or discard as appropriate.	4
	On-Site Edits:				
3. Inspect the vehicle and clean if necessary		3a. Insufficient cleaning due to excessively soiled surfaces	8	3a. Inspect the vehicle interior for any visibly soiled surfaces. If these are identified, clean those surfaces with a few drops of dish detergent in a bucket of water using a clean cloth.	4
		3b. Damaging electronics	6	3b. Avoid using excess water onto the surfaces	4
	On-Site Edits:				
4. Disinfect frequent touch points (see Additional Notes section for list)		4a. Accidental transfer of coronavirus to others.	8	4a. Disinfect all frequently touched surfaces using the disinfectant identified. Consult the Additional Notes section for a list of surfaces to be considered.	4
		4b. Improperly applying disinfectant and ruining vehicle surfaces	10	4b. Test on small, inconspicuous surface first. Apply disinfectant in accordance with the instructions. Avoid excessive application.	4
	On-Site Edits:				

Task Hazard Assessment

Task Name:	Coronavirus Vehicle Cleaning THA	Control #:	Error! Reference source not found.
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	4c. Eye, skin, or inhalation exposure to disinfectant	10	4c. Apply disinfectant in accordance with the directions. Wear PPE as required.	4
On-Site Edits:				
5. Hold time	6a. Eye, skin or lung irritation from residual disinfectant	8	6a. Keep the vehicle doors open for 10-15 minutes after disinfecting to allow the vehicle to air out. If possible, park the vehicle with the windows closed facing the sun (on sunny days), to allow the vehicle to heat up for 2-3 hours.	2
	6b. Frequent changeover of vehicles	8	6b. To the extent feasible, all vehicles should have a 72-hour wait/hold time between different drivers. Currently, the Coronavirus is believed to survive up to 72 hours on certain hard surfaces. Waiting 72-hours further minimizes the risk of exposure.	4
On-Site Edits:				

Additional Notes:

Surfaces can be a source of COVID-19 exposure and sharing vehicles can result in different people touching the surfaces of the vehicle. Vehicles should be cleaned and disinfected **before use, after use, and when changing drivers.** The cleaning should be conducted by the **vehicle operator.** Cleaning supplies shall be stored in each vehicle to allow for periodic cleaning before and after use and during the day, as needed.

Common touch points and surfaces on vehicles include but are not limited to the following:

- Center console
- Dashboard surface
- Glove box,
- Inside door handles
- Keys/key fob
- Outside door handles
- Overhead console
- Parking brake handle

Task Hazard Assessment

Task Name:	Coronavirus Vehicle Cleaning THA	Control #:	Error! Reference source not found.
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<ul style="list-style-type: none">• Rear view mirror• Seat belts buckles• Seat control• Shift lever• Steering wheel• Sun visors• Radio controls• Touch screens <p>If any staff are showing any possible symptoms of or have been in recent direct contact with others showing symptoms of CORONAVIRUS, STOP WORK. Notify the site supervisor and the project manager and go home and/or stay home. Contact the AECOM Incident Reporting Hotline (1-800-348-5046) and/or the AECOM Nurse Line (1-512-419-5016).</p> <p>A list of common symptoms to look out for can be found here: AECOM Guidance for Coronaviruses</p> <p>Visit the CDC webpage on cleaning and disinfecting procedures: CDC Guidance for Community and Residential Cleaning-Disinfection for Coronavirus</p> <p>A list of approved disinfectants for use against SARS-CoV-2, the cause of CORONAVIRUS, is available here: US EPA List of Disinfectants Effective Against Coronaviruses</p>
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Revision Log

Version	Issued / Revised By	Date	Revision Summary
THA Revisions			
1	Lisa Rygiel	June 1, 2020	Original version
Project-Specific Revisions			

Task Hazard Assessment

Task Name:	Coronavirus Vehicle Cleaning THA	Control #:	Error! Reference source not found.
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Task Hazard Assessment

Task Name: Coronavirus Vehicle Cleaning THA

Control #: Error! Reference source not found.

All Employees:

STOP WORK if uncertain about safety or if a hazard or additional precaution is not recorded on the THA.

Be alert, recognize and communicate any changes in scope, personnel or conditions at the worksite to the supervisor.

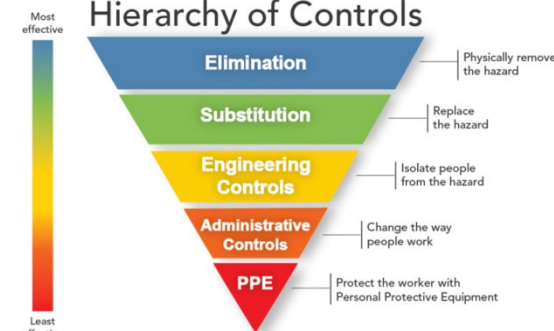
Use **4-Sight**, AECOM's last-minute risk assessment process continuously throughout the day by asking yourself and your co-workers to assess your task, hazards, and mitigations. Amend the THA when needed.

- ▶ **What am I about to do?**
- ▶ **What can go wrong?**
- ▶ **What can be done to make it safer?**
- ▶ **What have I done to communicate the hazards?**

For a more thorough identification of hazards, ask "What else could go wrong?" using the Hazard Categories



Hierarchy of Controls



- ▶ **Most hazards need more than one control**
- ▶ **What should you do? Stack your controls**
- ▶ **PPE can NEVER be your only means of protection**

Worker Sign On	
<i>I participated in the on-site review and fully understand the content of this Task Hazard Assessment.</i>	
Printed Name	Signature
1. Supervisor:	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Visitor Acknowledgement
<i>Visitors review task hazards and acknowledge understanding</i>
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Submit a new THA for addition to the DCSA THA Library or send THA improvement suggestions to DCSA.THA.Library@AECOM.com

Task Hazard Assessment

Task Name:	Coronavirus Vehicle Cleaning THA	Control #:	Error! Reference source not found.
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Include a copy of the new THA or a photo of the THA modifications as appropriate.

Attachment **D**

Applicable AECOM SHE Procedures



Attachment D: Applicable AECOM SHE Procedures

Review the list below, check the boxes for hazards or activities planned as part of this project, and attach the applicable procedures, as needed for use in the field. All AECOM SH&E Procedures, in their controlled copy version, are available on the [internal SH&E Policy and Procedures Ecosystem page](#).

Programmatic procedures referenced in this document (for example SH&E Training) DO NOT need to be printed for inclusion in this HASP. Only procedures that are needed for field activity reference and application MUST be printed in full and included in this section.

Hazard/ Activity (Note: Text in this column links to procedure)		Applicable Procedure	Hazard / Activity (Note: Text in this column links to procedure)		Applicable Procedure
<input type="checkbox"/>	Abrasive Blasting	S3AM-335-PR1	<input type="checkbox"/>	Highway and Road Work	S3AM-306-PR1
<input type="checkbox"/>	Aerial Work Platforms	S3AM-323-PR1	<input type="checkbox"/>	Hoists Elevators and Conveyors	S3AM-343-PR1
<input type="checkbox"/>	All-Terrain Vehicles	S3AM-319-PR1	<input type="checkbox"/>	Hot Work	S3AM-332-PR1
<input type="checkbox"/>	Blasting and Explosives	S3AM-336-PR1	<input type="checkbox"/>	Ladders	S3AM-312-PR1
<input checked="" type="checkbox"/>	Bloodborne Pathogens	S3AM-111-PR1	<input type="checkbox"/>	Lockout Tagout	S3AM-325-PR1
<input type="checkbox"/>	Cofferdams	S3AM-344-PR1	<input type="checkbox"/>	Machine Guarding Safe Work Practice	S3AM-326-PR1
<input checked="" type="checkbox"/>	Cold Stress	S3AM-112-PR1	<input type="checkbox"/>	Marine Safety and Vessel Operations	S3AM-333-PR1
<input type="checkbox"/>	Compressed Air Systems & Testing	S3AM-337-PR1	<input type="checkbox"/>	Material Storage	S3AM-316-PR1
<input type="checkbox"/>	Compressed Gases	S3AM-114-PR1	<input type="checkbox"/>	Mine Site Activities	S3AM-341-PR1
<input type="checkbox"/>	Concrete Work	S3AM-338-PR1	<input type="checkbox"/>	Mining Operations	S3AM-345-PR1
<input type="checkbox"/>	Confined Spaces	S3AM-301-PR1	<input type="checkbox"/>	Non Ionizing Radiation	S3AM-121-PR1
<input type="checkbox"/>	Corrosive Reactive Materials	S3AM-125-PR1	<input type="checkbox"/>	Overhead Lines	S3AM-322-PR1
<input type="checkbox"/>	Cranes and Lifting Devices	S3AM-310-PR1	<input type="checkbox"/>	Powder-Actuated Tools	S3AM-327-PR1
<input type="checkbox"/>	Demolition	S3AM-339-PR1	<input type="checkbox"/>	Powered Industrial Trucks	S3AM-324-PR1
<input type="checkbox"/>	Diving (scientific and commercial)	S3AM-334-PR1	<input type="checkbox"/>	Radiation	S3AM-120-PR1
<input type="checkbox"/>	Drilling, Boring & Direct Push Probing	S3AM-321-PR1	<input type="checkbox"/>	Railroad Safety	S3AM-329-PR1
<input type="checkbox"/>	Electrical Safety	S3AM-302-PR1	<input type="checkbox"/>	Respiratory Protection	S3AM-123-PR1
<input type="checkbox"/>	Excavation	S3AM-303-PR1	<input type="checkbox"/>	Scaffolding	S3AM-311-PR1
<input type="checkbox"/>	Fall Protection	S3AM-304-PR1	<input type="checkbox"/>	Steel Erection	S3AM-340-PR1
<input type="checkbox"/>	Flammable and Combustible Liquids	S3AM-126-PR1	<input type="checkbox"/>	Temp. Floors, Stairs, Railings, Toe-boards	S3AM-342-PR1
<input type="checkbox"/>	Gauge Source Radiation	S3AM-122-PR1	<input type="checkbox"/>	Underground Utilities	S3AM-331-PR1
<input type="checkbox"/>	Hand and Power Tools	S3AM-305-PR1	<input type="checkbox"/>	Underground Work	S3AM-330-PR1
<input type="checkbox"/>	Hazardous Waste Operations	S3AM-117-PR1	<input checked="" type="checkbox"/>	Wildlife, Plants and Insects	S3AM-313-PR1
<input checked="" type="checkbox"/>	Heat Stress	S3AM-113-PR1	<input checked="" type="checkbox"/>	Working Alone	S3AM-314-PR1
<input type="checkbox"/>	Heavy Equipment	S3AM-309-PR1	<input type="checkbox"/>	Working On and Near Water	S3AM-315-PR1
<input type="checkbox"/>	High Altitude	S3AM-124-PR1			

Pandemic Procedure

SR1-003-PR2

1. Purpose and Scope

Providing the requirements for preparation and planning for potential pandemic emergencies that may occur while AECOM staff are working.

Applies to all AECOM staff working inside and outside an AECOM office, including location and project environments as well as business related travel.

2. Background

2.1 Pandemic

A pandemic virus emerges because of a process called antigenic shift, which causes an abrupt or sudden and major change in flu-like viruses. Public health officials closely monitor the movement of flu-like viruses through avian and swine populations. The public health fear is that the virus may obtain the ability to shift and incorporate the ability to infect humans directly through human-to-human contact. At that point, the threat of a regional epidemic, or a global pandemic may be realized.

Flu-like viruses can weaken the immune system, making the person more vulnerable to serious infections such as pneumonia, or can worsen chronic medical conditions. Public health officials watch both avian and swine flu outbreaks closely to monitor potential for an antigen shift and progression to a human transmissible disease.

Government health agencies continually monitor flu-like viruses and other diseases worldwide. Human cases are reported and updated by the World Health Organization (WHO) and U.S. Centers for Disease Control (CDC). This information is used by responsible government agencies for planning and response actions as required to minimize the spread and effects of disease outbreaks. It is important that information provided by CDC or WHO is made available to employees when there is potential for impact on work conditions or local community health.

2.1.1 Swine Influenza

Influenza A (H1N1) is a flu virus of swine origin that first caused illness in March and April, 2009. Influenza A (H1N1) flu spreads in the same way that regular seasonal influenza viruses spread, mainly through the coughs and sneezes of people who are sick with the virus, but it may also be spread by touching infected objects and then touching your nose or mouth. Influenza A (H1N1) is now established in human populations as a seasonal influenza virus. There is an Influenza A vaccine available for humans.

2.1.2 Avian Influenza

Avian influenza (bird flu) occurs mainly in wild birds but can spread to domestic birds and can cause outbreaks. Human cases are rare but have occurred from direct close contact with infected birds and poultry or contaminated materials. There is no vaccine available for humans related to this virus at this time.

2.1.3 Coronavirus

Coronavirus (COVID-19) is the result of a virus identified as SARS-CoV-2. Coronaviruses are large family of viruses found in both animals and humans. Some infect people and are known to cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) with symptoms such as fever, cough and shortness of breath. There currently is no human vaccine available for this virus.

2.2 Flu-Like Contingency Planning

2.2.1 Roles & Responsibilities of Governing Agencies

2.2.1.1 Global Health Monitoring

The WHO coordinates health issues for the United Nations and provides leadership on global health matters. The WHO assists member nations with recommendations regarding global pandemics and declares global pandemic phases to help organizations to plan for the impacts. The major phases are:

a. Phase 1:	No viruses circulating among animals have been reported to cause infections in humans.
b. Phase 2:	An animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans and is therefore considered a potential pandemic threat.
c. Phase 3:	An animal or human-animal flu-like reassortment virus (the process by which viruses swap gene segments) has caused sporadic cases or small clusters of disease in people but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver.
d. Phase 4:	There is verified human-to-human transmission of an animal or human-animal flu-like reassortment virus able to cause "community-level outbreaks." The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk for a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed, and a decision made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.
e. Phase 5:	There is human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.
f. Phase 6:	The pandemic phase is characterized by community level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in Phase 5. Designation of this phase will indicate that a global pandemic is under way.
g. Post-peak period:	During the post-peak period, pandemic disease levels in most countries with adequate surveillance will have dropped below peak observed levels. The post-peak period signifies that pandemic activity appears to be decreasing; however, it is uncertain if additional waves will occur and countries will need to be prepared for a second wave.
h. Post-pandemic period:	Flu-like disease activity will have returned to levels normally seen for seasonal flu-like illness. At this stage, it is important to maintain surveillance and update pandemic preparedness and response plans accordingly. An intensive phase of recovery and evaluation may be required.

2.2.1.2 Country Specific Pandemic Plans

Most nations have developed pandemic plans that include monitoring the regional spread of disease, the recommended medical practices, and related guidance. AECOM operations outside the US must keep abreast of country specific requirements and recommendations.

2.2.1.3 United States

The federal government is responsible for coordinating a nationwide flu-like pandemic response.

- a. The U.S. Department of Homeland Security coordinates all non-medical support and response actions.

- b. The Department of Health and Human Services (HHS) coordinates overall public health and medical emergency response. Under Executive Order 13295 (revised April 1, 2005), the Secretary of Health and Human Services has the authority for apprehension, detention and conditional release of individuals to prevent the spread of a flu-like illness caused by a novel or re-emergent flu-like virus that causes or has the potential to cause a pandemic. Under HHS, the CDC is responsible for controlling the introduction and spread of infectious diseases and provides information to help health care providers, public health officials and the public. CDC's Division of the Strategic National Stockpile (SNS) distributes antiviral drugs, personal protective equipment, and respiratory protection devices to all 50 states and U.S. territories to help them respond to outbreaks.
- c. Under the Department of Defence (DOD) Directive 6200.3, military facilities require identification of a Public Health Emergency Officer who coordinates Military Treatment Facilities emergency response plans with local emergency planning.

2.2.1.4 State and Local Governments

Each state has authority to manage and respond to pandemic conditions. It is important that projects and offices contact their local and state governments for emergency contact information.

3. Procedure and Responsibilities

AECOM Managers, HR (Human Resources), SH&E (Safety, Health and Environment) including Occupational Health, Legal Counsel, and Resilience Coordinators will collaborate and drive efforts to plan for, respond to, manage and recover from pandemic disruption to the business. This collaboration may also require input and cooperation from various other support functions who should be consulted in a timely fashion in order to expedite a return to normal business operations or to provide alternate solutions such as remote work. In the event of a declared Stage 5 or Stage 6 of a Pandemic event, the AECOM Managers, HR, SH&E, Occupational Health, Legal Counsel and Resilience Coordinators will make decisions and take necessary steps to protect the business from the pandemic, up to, and including, travel bans to/from certain areas, telecommuting, and other decisions as needed for business continuity with a focus on the health and welfare of the employee. Local Resilience Teams will take the lead in responding to pandemic-related business disruptions with overarching guidance provided by Global Resilience.

3.1 Corporate Roles and Responsibilities

AECOM offices will be prepared to respond to either a global, national or regional pandemic condition in accordance with the Organizational Resilience Standard - AECOM Global. The standard provides the common platform to organize mission-critical, Resilience Teams to prepare for, actively navigate and / or recover from significant business disruptions. It also provides the context for plans and procedures to minimize any impact on AECOM's business in terms of severity and duration.

3.1.1 Prevention and Containment

- a. If a pandemic condition exists or is imminent within a local office or field location, consult the location specific Emergency Response Plan (ERP) or Business Continuity Plan for immediate response guidelines.
- b. Upon notification from State Emergency Planning agency that a national or regional pandemic condition exists or is reasonably expected to occur, the facilities and administration teams working with the SH&E Department will provide sufficient and accessible infection control supplies in all local affected business locations in keeping with AECOM's [Infectious Disease and Pandemic Cleaning Instruction - AECOM Global](#).
- c. Face masks may be supplied, if recommended by WHO/CDC. Supplies of anti-viral medications will not be stockpiled, distributed, or administered unless specified by community health administrators.
- d. Annual influenza vaccinations are encouraged.

- e. As applicable, communications through email or intranet, training programs, or work place postings may be utilized to provide information concerning prevention and containment. Information may include, but is not limited to:
 - i. Initial symptoms of the disease, disease prevention techniques, how to respond if an individual suspects infection and when return to work is appropriate after the illness.
 - ii. Personal practices and habits for minimizing exposure, such as: frequent hand washing, avoiding exposing other employees when sick, annual flu vaccinations if appropriate, and consulting a personal physician to determine personal risk.
 - iii. Social distancing techniques such as minimizing large group gatherings, reducing employee face-to-face meetings through the use of video / phone conferencing/ Microsoft Teams, and eliminating unnecessary travel during severe outbreaks.
 - iv. Flexible worksite and flexible work hours options should be implemented as appropriate.
 - v. Employees shall notify their supervisor if they are going to miss work because of illness. Information concerning sick leave and health benefits can be obtained through the employee's HR representative, by consulting applicable policies and procedures specific located on the [AECOM Integrated Management Systems \(IMS\) platform](#), and through [MyHR](#).
 - vi. As applicable, business and meeting travel may be limited to "business essential" only.
 - vii. Management will notify any applicable clients or suppliers of potential business impacts that may be experienced as a result of a pandemic. Management will update clients/suppliers once operations are restored to full capacity.

3.1.2 Anti-Viral Medication

- a. Media coverage of flu-like outbreaks has focused on the availability of oral anti-viral medications (not vaccines). These prescription medications are known to help with treating uncomplicated flu-like virus effects in limited applications. There are potential side effects of the drugs, and some viruses have shown resistance to the drug.
- b. Based on this information, unless legally mandated by a country's government, AECOM will not attempt to stockpile sources of anti-viral drugs to be used for employees in the event of a pandemic. Resources of these drugs may be maintained by a country's National Strategic Stockpile.
- c. Employees should contact their personal health care provider regarding recommendations for support medications that may be necessary in the event of a flu pandemic.

3.2 General AECOM Employee Guidelines

3.2.1 Employee Illness

- a. Employees should report the illness to your Supervisor immediately.
- b. Employees who are ill with flu-like symptoms (Fever >100.4 F/38 C, cough, shortness of breath) should stay home. If they have a fever, they should stay home until at least 24 hours after they are free of fever without the use of fever reducing medications.
- c. Employees should not travel if they are ill.
- d. Employees who become sick during work hours should immediately go home.
- e. Employees at higher risk of complications, or who become seriously ill, should contact their health care provider immediately.

3.2.2 Employee Family Member Illness

- a. Employees who are well but who have a family member at home with the flu may choose to stay home or can go to work as usual. Employees with ill family members should monitor their health daily before coming to work and stay home if they become ill.
- b. Employees who choose to stay home to care for ill family members should contact their supervisor or HR representative to discuss flu-related issues such as using sick time/paid time off or if telecommuting is an option.
- c. Employees should not bring an ill family member with them to the office, even for brief periods.

3.2.3 Supervisors

- a. If an employee calls in sick because of the flu or a flu-like illness, the supervisor is to advise them to stay home. Expect employees to be out of work for 3-5 days (in most cases). Additional quarantine may be required based on the recommendations of CDC / WHO.
- b. Should the supervisor be informed by the employee that he/she has the flu or flu-like symptoms, the supervisor should report the employee illness to HR and SH&E representative only, maintaining the employee's privacy.
- c. Because symptoms may not appear until after an incubation period, (24 hours prior to symptoms), the supervisor should try to account for any close contacts (3ft/1m for 30 minutes) the affected employee might have had in order to evaluate if co-workers may have been exposed. Report the potential exposure of co-workers to your HR or SH&E representative.
- d. Do not allow employees with the flu or flu-like symptoms to remain at work. In-office quarantine (isolation) of an employee with flu-like symptoms (e.g., work in a secluded office area) is not permitted.

Important Reminder: The names of employees who are ill with the flu are **CONFIDENTIAL** and can only be discussed with HR representatives or company nurses.

3.2.4 HR or SH&E Representatives

- a. During Phase 5 and 6 of a potential / actual Pandemic, the SH&E representative will track cases of flu illness at your location using the Coronavirus Affected Employee Form obtained from the AECOM Occupational Health Nurse and submit to nurse@aecom.com upon identification of employee/s who are confirmed positive for the virus, exhibiting symptoms of the virus or on self-quarantine and provide updates at least weekly. These numbers also to be reported to your Local Resilience Coordinator (LRC) to allow Resilience Teams (RT) to assess appropriate responses in accordance with the [Disruptive Event Response Instruction - AECOM Global](#). Each state/country has specific resilience reporting contacts located on the [Global Resilience Team contact list](#).
- b. Inform fellow employees if a co-worker possibly exposed them to a flu-like illness, while maintaining strict confidentiality regarding the identity of the co-worker, so that employees can self-monitor for symptoms and stay home if they become sick. (Sample notification: We have been notified that there has been a potential exposure to the coronavirus in this office/building. As a precaution, it is recommended that all employees potentially affected begin self-monitoring for symptoms and to stay home if you become ill. Ensure that you follow the office procedure for notification of management of unexpected absences). For additional information, refer to the AECOM Global update through the Ecosystem
- c. A medical release of a clearance to return to work (following an extended absence) may not be available because of a busy health care system. Requiring a physician's release to return to work should be considered in cases of hospitalization or medical leave of absence in line with local HR protocols.
- d. Address staff rumours immediately through investigation and follow-up, then inform management of communication with employee and onward reporting to the Local Resilience Coordinator.

3.2.5 HR Representative

- a. Advise employees and supervisors regarding sick time or paid time off options.
- b. Discuss with supervisors if telecommuting is an option for the employee.

3.2.6 Managers/SH&E Representative

- a. Provide information to staff regarding good hygiene, including cough and sneeze etiquette and proper hand washing. Hold periodic meetings to refresh awareness of prevention measures.
- b. Remind employees to check with their health care provider to determine if flu inoculations are recommended.
- c. Follow-up with facilities and office managers to provide tissues, disinfectant wipes, hand sanitizers and no-touch receptacles for disposal.
- d. Coordinate with facilities managers to arrange for commonly touched surfaces such as doorknobs and countertops to be cleaned frequently in accordance with AECOM's [Infectious Disease and Pandemic Cleaning Instruction - AECOM Global](#).

3.3 Travel Worldwide to Areas Affected by a Pandemic

AECOM's Global Security & Resilience (GSR) shall be consulted to obtain advice, approvals or restrictions, and support, for employees traveling worldwide to and returning from areas affected by a pandemic or potential pandemic. Travel to high risk locations as defined by the [Country Risk Score Index](#) will also require approval. AECOM's [Corporate guidance can be found on the Ecosystem](#) and is updated weekly.

Persons visiting areas with reports of outbreaks of concern can reduce their risk of infection by observing the following measures:

3.3.1 Before Traveling to an Affected Area

- a. Educate yourself and others who may be traveling with you through consultation with AECOM's GSR Travel Security Portal ([Drum Cussac](#)) and AECOM's policies and procedures located on the [AECOM Integrated Management Systems \(IMS\) platform](#).
- b. Confirm applicable and routine vaccinations are current. See your doctor or health-care provider, or (for employees) follow the international business and travel requirements on the [International Travel Procedure](#). When traveling from the US, contact our travel resource, WorkCare Travel Consultant directly at 800-455-6155 and outside the US, contact iSOS (International SOS) at +1 215 942 8226 (Membership # 11BMMS000147), ideally 4-6 weeks before travel, to get any additional vaccination medications or information you may need. In many cases, a medical examination may be required prior to travel.
- c. Assemble a travel health kit containing basic first aid and medical supplies. Be sure to include a thermometer and alcohol-based hand gel or wipes for hand hygiene. See the [AECOM Travel Health- Pack Smart Checklist](#).
- d. Identify in-country health-care resources in advance of your trip. Employees may contact iSOS, HR or WorkCare for assistance in identifying available resources.

3.3.2 During Travel to an Affected Area

- a. As with other infectious illnesses, one of the most important preventive practices is careful and frequent hand washing for at least 20 seconds. Cleaning hands often with soap and water removes potentially infectious material from skin and helps prevent disease transmission. Waterless alcohol-based hand gels or wipes may be used when soap is not available, and hands are not visibly soiled.

- b. If an employee becomes sick with symptoms such as a fever accompanied by cough and sore throat, or difficulty breathing or if they develop any illness that requires prompt medical attention, a consular officer (refer to the country's representatives on the GSR Travel Portal-Drum Cussac) or iSOS can assist you in locating approved medical services and informing your family or friends. The employee should defer any further travel until they are free of symptoms, unless traveling locally for medical care or instructed to evacuate by your project management, security, or upon advice of occupational health nurses. AECOM employees on foreign travel should notify their HR representative of any serious illness. Local employees should contact their supervisor according to their specified reporting policy.
- c. In the event of a flu outbreak, avoid all direct contact with birds or swine and avoid farms and markets. There is the possibility that other animal groups may become reservoirs of the infection in the future so current information from WHO/CDC should be checked for updated guidance.

3.3.3 After Return from Travel

- a. Monitor your health for 14 days after return for any fever or breathing difficulties.
- b. If you become ill with a fever plus a cough and sore throat, or trouble breathing during this 14-day period, consult your primary care physician. Do not come into work until advised by your primary care physician that it is safe to do so. Communicate the following:
 - i. your symptoms;
 - ii. where you travelled; and
 - iii. if you have had direct contact with animals, birds, or severely ill persons.
- c. Do not travel while ill, unless you are seeking medical care. Limiting close physical contact (<3ft/1 meter) with others as much as possible can help prevent the spread of an infectious illness.

4. Help & Training

The following resources provide an overview of AECOM's Organizational Resilience framework and process (titles also available at AECOM University).

- a. [Global Resilience Team Framework](#)
- b. [Organizational Resilience: Redefining What's Possible](#)
- c. [Powering Organizational Resilience through Functional Readiness](#)
- d. [Resilience Coordinator Overview](#)
- e. [Resilience Readiness: Disruptive Event Guidance](#)

5. Terms and Definitions

- | | | |
|----|------------------------------|--|
| a. | Local Resilience Coordinator | A manager designated as the Office or Worksite lead for local level organizational resilience who may or may not be the emergency response coordinator. The LRC is the point of contact with the Region Resilience Team in determining further action, including notifications, following an initial emergency response. |
| b. | Pandemic | An epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people as declared by the World Health Organization |

- c. Resilience Team (RT) Interdependent networks of necessary and essential business functions collaborating at the enterprise, region and/or local levels to achieve organizational resiliency. Functions include but are not limited to communications, facilities, finance, human resources (HR), information technology, legal, procurement, safety, health, and environment, and security. Refer to the [Organizational Resilience Standard - AECOM Global](#)

6. References

This procedure forms a sub-set of AECOM's overall Organizational Resilience framework and should be read and executed as such. This procedure is to be applied in conjunction with the following Procedures and Instructions.

- a. [Organizational Resilience Standard - AECOM Global – SR1-003-PR1](#)
- b. [Disruptive Event Response Instruction - AECOM Global – SR1-003-WI2](#)
- c. [Infectious Disease and Pandemic Cleaning Instruction – AECOM Global - SR1-003-WI4](#)

7. Appendices

The following appendices are designed to assist business leads, people managers, HR partners, SH&E representatives and Resilience Coordinators assess processes to follow when presented with potentially symptomatic employees, visitors, locations and provide useful resources for communicating prevention methods in the workplace.

- a. Appendix 1 – Manager Resilience Checklist.
- b. Appendix 2 – Virus Prevention Posters and Flyers

8. Change Log

Rev #	Change Date	Description of Change	Location of Change
0	March 11, 2020	Initial Release as SR1-003-PR2	

Appendix 1 – Manager Resilience Checklist

AECOM Managers Guideline on 2019-nCoV Scenarios						
	CASE	SUB-CASE	What Business Leader should ask the “Case” Employee to do	What Business Leader should ask other employees potentially affected by “Case” Employee	What Admin should do to the Office	Notice and Announcement (To ensure privacy, any notifications/announcements regarding specific cases must be approved by AECOM Legal)
1	Employee confirmed to have contracted COVID-19.		Employee to stay away from the office and seek medical treatment. Employee may not return to work without medical clearance.	Without disclosing the identity of the infected employee, persons with workstations within 1m/ 3 ft of the “Case” Employee are to observe 14-day quarantine or as recommended by the governing health agency.	Sanitization of whole floor.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.
2A	Employee having close contacts (2) with a person of a clinically diagnosed/confirmed case.	Not feeling well/ Exhibiting Sign/symptoms (5).	Employee to not attend work and seek medical attention and observe any quarantine as instructed by governing health agency.	Persons with workstations within 1m/ 3 ft of the “Case” Employee to observe 14-day quarantine in accordance with governing health agency recommendations or provide medical clearance to return to work prior to the end of the quarantine period.	Sanitization of the whole floor.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.
2B		Feeling Well/ not exhibiting any signs/symptoms.	Employee to observe 14-day quarantine or as instructed by governing health agency.	Persons with close contact with the “Case” employee to self-monitor. If begin having any symptoms see 2A.	Sanitization over an area of 6m (18 ft) radius from the workstation of the “Case” Employee.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.

AECOM Managers Guideline on 2019-nCoV Scenarios

	CASE	SUB-CASE	What Business Leader should ask the "Case" Employee to do	What Business Leader should ask other employees potentially affected by "Case" Employee	What Admin should do to the Office	Notice and Announcement (To ensure privacy, any notifications/announcements regarding specific cases must be approved by AECOM Legal)
3	Employee being a suspected case (1).		Employee to seek medical attention and observe 14-day quarantine. If at work they should obtain a suitable face-mask as available, notify their supervisor and leave straight away.	Persons with close contact with the "Case" Employee are to observe 14-day quarantine in accordance with governing health agency recommendations or provide medical clearance to return to work prior to the end of the quarantine period.	Sanitization over an area of 6m (18 ft) radius from the workstation of the "Case" Employee.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.
4A	Employee visited a location (3) of a confirmed case but had no contact with the confirmed person.	Not feeling well/ Exhibiting Sign/symptoms (5).	Employee to seek medical attention and observe 14-day quarantine or provide medical clearance to return to work prior to end of the quarantine period.	Persons in close contact with the "Case" Employee put under observation – self-observe for COVID-19 Symptoms (6).	Sanitization of the work stations of the "Case" Employee and of persons with close contact.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.
4B		Feeling Well/ not exhibiting any signs/symptoms.	Employee put under observation – self-observe for COVID-19 Symptoms.	Persons in close contact with the "Case" Employee put under observation – self-observe for COVID-19 Symptoms.	Sanitization of the work stations of the "Case" Employee and of persons with close contact.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions.

AECOM Managers Guideline on 2019-nCoV Scenarios

	CASE	SUB-CASE	What Business Leader should ask the "Case" Employee to do	What Business Leader should ask other employees potentially affected by "Case" Employee	What Admin should do to the Office	Notice and Announcement (To ensure privacy, any notifications/announcements regarding specific cases must be approved by AECOM Legal)
5A	Employee having close contact with a suspected case, i.e. with a person having symptoms of COVID-19.	Not feeling well/ Exhibiting Sign/symptoms (5).	Employee to seek medical attention and observe self-quarantine until outcome of the suspected case is confirmed and symptoms resolved.	Persons in close contact with the "Case" Employee put under observation – self-observe for COVID-19 Symptoms.	Sanitization of the work station of the "Case" Employee, and of those persons in close contact with the "Case" Employee.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.
5B		Feeling Well/ not exhibiting any signs/symptoms.	Employee observes self-quarantine until outcome of the suspected case is confirmed.	Persons in close contact with the "Case" Employee put under observation – self-observe for COVID-19 Symptoms.	Sanitization of the work station of the "Case" Employee.	<ul style="list-style-type: none"> Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions.
6A	Employee having visited a location of a suspected case.	Not feeling well/ Exhibiting Sign/symptoms (5).	Employee to seek medical attention and stay home until symptoms resolved.	Persons in close contact with the "Case" Employee put under observation – self-observe for COVID-19 Symptoms or until outcome of the suspected case is confirmed as negative. If "Case" employee confirmed positive, refer to 5A.	Sanitization of the work station of the "Case" Employee.	<ul style="list-style-type: none"> *Resilience Team to Inform Organizational Resilience Executive resilience@aecom.com and to issue internal announcement reporting the case and our actions. Use the Tracking Form to communicate information to Corporate Occupational Injury Management Team by submitting to nurse@aecom.com. Business Leaders to inform stakeholders who may have employees in contact with a confirmed case.
6B		Feeling Well/ not exhibiting any signs/symptoms.	Employee put under observation – self-observe for COVID-19 Symptoms.	Observe general hygiene.		If condition changes, see above.
7	Employee not of the above cases having fever or feeling unwell but without symptoms of COVID-19.		Employee to stay home until symptoms resolved. Seek medical attention if necessary.	Observe general hygiene.		

Note:

For Cases 1-6, the Employee shall report to the People Manager, HR and Business Unit Leader. The Business Unit Leader shall report to the Regional Resilience Coordinator.

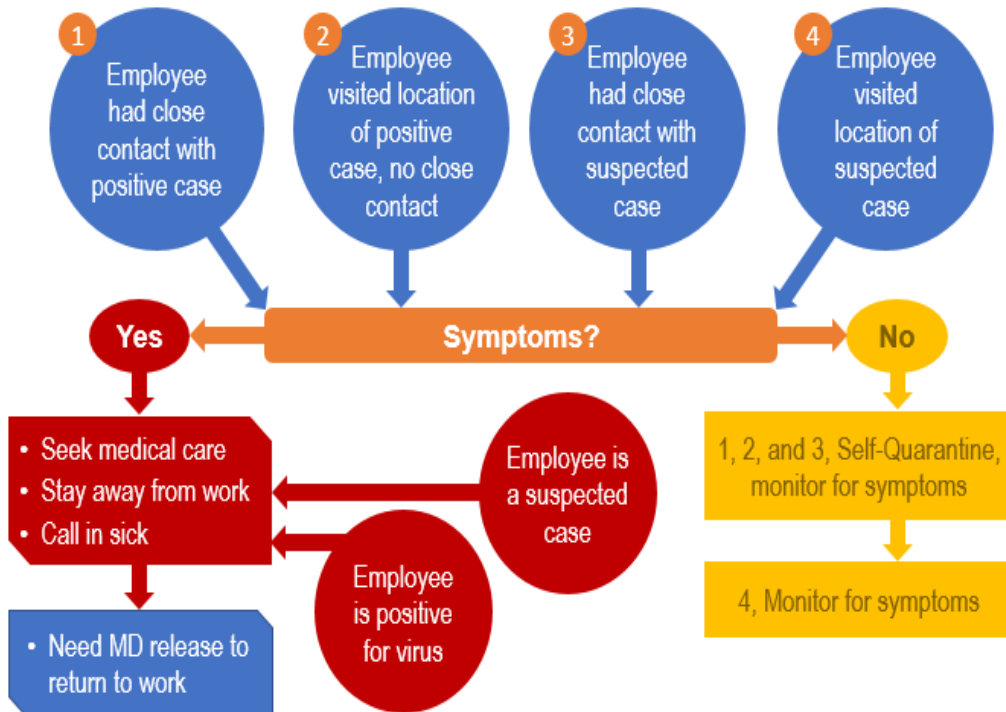
For Case 7, the Employee should report to the People Manager. The People Manager should report to the Business Unit Leader.

1. Definition of Suspected Case: an individual fulfilling the following should report to a local medical facility for further investigation:
 - a. Presented with fever OR acute respiratory illness OR pneumonia; AND
 - b. any one of the following conditions within 14 days BEFORE ONSET OF SYMPTOMS:
 - i. With travel history to Hubei Province* (irrespective of any exposure to a wet market or seafood market); OR other location where COVID-19 is active.
 - ii. Visited a medical hospital in an area that has elevated numbers of the virus as identified by the World Health Organization.
 - iii. Had close contact with a confirmed case of novel coronavirus infection while that patient was symptomatic.
2. Close contact refers to contact within 1 meters (3 ft) for a period \geq 30 min; or having meeting \geq 30 min within a confined meeting room regardless of distance.
3. Location refers to, places other than the AECOM Office, the same meeting room or the same confined common area where our Employee and the concerned person (of confirmed or suspected case) have visited during the concerned time and stayed for > 30 min.
4. For all notices and announcements, Business Unit Leader shall give the facts (details of the Case and Sub-case, date, place) to Comms Partner. Resilience Administrator, to inform Comms Partner what action is being taken, or has been planned, on the same date the case is known. Comms Partner will prepare the draft for the Regional Resilience Coordinator. Formal notice and updates to Organizational Resilience Executive via [Disruptive Event Briefing Agenda Template - AECOM Global](#) will be issued by the Regional Resilience Coordinator. Business Leaders may forward the announcement to stakeholders (e.g. Client and authorities) as a response to their queries on an as needed basis.
5. Staff feeling unwell or experiencing symptoms who stay home shall apply for leave/PTO. Staff being required to observe quarantine in the above cases will be considered as working from home. Business Leaders to report the status of quarantine and work from home cases to HR and to assess the impact on work progress and efficiency.
6. This guideline provides the minimum requirements to be observed. Business Leaders may exercise discretion to adopt more cautious measures if they consider the case is of a higher risk (e.g. for other staff affected by the concerned employees where close contact is regular/frequent).
7. To ensure privacy, any notifications/announcements regarding specific cases must be approved by AECOM Legal.

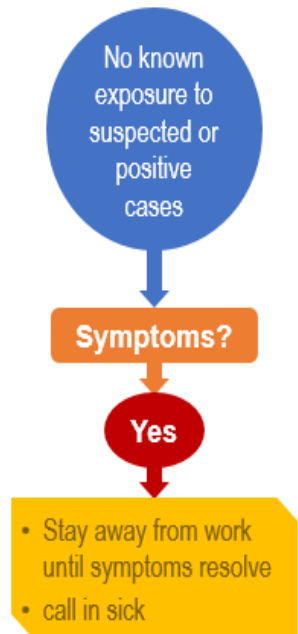
This document constitutes internal guidelines compiled based upon general external advice and publications to assist management and staff in dealing with and making management decisions in relation to the Coronavirus (COVID-19). The document should not be construed as providing medical or legal advice and should not be shared outside of AECOM. To the extent that you require any further clarification or have any queries in relation to the content set out therein, please seek further guidance from Legal or the Resilience Team.

AECOM Pandemic Flow Chart

Contact Scenarios – Potential Exposure



No Known Exposure



AECOM

Appendix 2 - Virus Prevention Posters & Flyers



World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES

Clean Your Hands

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this document. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use. WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

Duration of the entire procedure: 40-60 seconds

0



Wet hands with water;

1



Apply enough soap to cover all hand surfaces;

2



Rub hands palm to palm;

3



Right palm over left dorsum with interlaced fingers and vice versa;

4



Palm to palm with fingers interlaced;

5



Backs of fingers to opposing palms with fingers interlocked;

6



Rotational rubbing of left thumb clasped in right palm and vice versa;

7



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8



Rinse hands with water;

9



Dry hands thoroughly with a single use towel;

10



Use towel to turn off faucet;

11



Your hands are now safe.

Wash your hands

Wash your hands with
soap and running water
when **hands are visibly
dirty**



If your **hands are not
visibly dirty,**
frequently clean them
by using alcohol-based
hand rub or soap and
water



World Health
Organization

Protect yourself and others from getting sick

Wash your hands



- after coughing or sneezing
- when caring for the sick
- before, during and after you prepare food
- before eating
- after toilet use
- when hands are visibly dirty
- after handling animals or animal waste



World Health
Organization

STAY HEALTHY WHILE TRAVELLING

If you become sick
while travelling,
inform crew and
seek medical care
early



If you seek medical
attention, share travel
history with your health
care provider



World Health
Organization

STAY HEALTHY WHILE TRAVELLING

**Avoid travel if you have
a fever and cough**



**If you have a fever, cough and
difficulty breathing seek medical
care early and share previous
travel history with your health
care provider**



World Health
Organization

Risk Assessment & Management

S3AM-209-PR1

1.0 Purpose and Scope

- 1.1 This procedure requires hazard identification, risk evaluation, control measures, and documentation to manage safety, health and environment (SH&E) risks associated with work activities.
- 1.2 The objective is to establish and enhance SH&E performance, to mitigate and reduce losses due to injury, illness, property damage, or environmental impairment incident, and maintain regulatory compliance.
- 1.3 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 **Control Measure** - Actions that can be taken to reduce the potential of exposure to the hazard. The control measure could be to remove the hazard or to reduce the likelihood of the risk of the exposure to that hazard being realized.
- 2.2 **Hazard** - An object, condition or behavior that has the potential to cause human injury or illness, property damage, damage to the environment, business interruption, or a combination of these.
- 2.3 **Risk** – The possibility of loss or injury.
- 2.4 **Task Hazard Assessment (THA)** – A THA is a tool for evaluating work activities for the purpose of:
 - Identifying the SH&E hazards and risks associated with the activity being performed;
 - Identifying and implementing control measures to eliminate or reduce hazards and risks; and,
 - Evaluating the effectiveness of control measures and making modifications as needed.

3.0 References

- 3.1 S2-001-ATT4 Catastrophic and Critical Consequences Guidance – AECOM Global
- 3.2 S3AM-002-PR1 Stop Work Authority
- 3.3 S3AM-004-PR1 Incident Reporting, Notifications & Investigation
- 3.4 S3AM-010-PR1 Emergency Response Planning
- 3.5 S3AM-204-PR1 Environmental Compliance
- 3.6 S3AM-216-PR1 Compliance Assurance

4.0 Procedure

- 4.1 Roles & Responsibilities
 - 4.1.1 **SH&E Manager**
 - Assisting management personnel to identify any required SH&E planning documentation.
 - Assisting in the preparation of necessary SH&E risk assessment documentation.
 - Reviewing and approving SH&E risk assessment documentation prior to its implementation for work activities.
 - Providing SH&E technical and regulatory input as necessary.
 - 4.1.2 **Manager**

- Confirming appropriate SH&E planning and risk assessment activities are undertaken in the proposal support and pre-award stages of a project.
- Confirming the completion of SH&E risk assessment documentation as required, that addresses the full range of work activities, SH&E risks and that all requirements and procedures are implemented and enforced post-award, during the work activities.
- Confirming SH&E requirements are implemented successfully, including but not limited to:
 - Subcontractor evaluations and performance monitoring
 - SH&E training
 - Personal protective equipment
 - First aid and emergency response
 - Client requirements
- Contacting the SH&E Manager to discuss SH&E risk assessment documentation needs/ requirements at the start of each new project involving AECOM and at designated intervals or:
 - When changes occur to the work operations or work location/ conditions
 - When work activities are modified/ changed, or
 - When additional tasks are added to the work scope.
- Confirming that the SH&E Plan has been reviewed and approved by the SH&E Manager prior to its use by AECOM personnel or prior to release to clients, outside agencies or organizations.
- Making appropriate resources available to protect the health and safety of AECOM employees, the environment and to comply with occupational health and safety, and environmental legislation and for the effective implementation of this procedure.
- Identifying and reporting to a Manager/Supervisor when changes occur to the work operations or work location/conditions.
- Identifying appropriate and applicable SH&E regulatory requirements and implement into respective SH&E Plan.
- Confirming appropriate SH&E review and assessment activities are undertaken in the close-out stage of a project.

4.1.3 Employee

- Obtaining necessary training identified in the SH&E Plan and associated documents.
- Understanding the potential hazards and controls of the task before work commences.
- Complying with all required controls as identified in the SH&E Plan and associated documents. Reporting any program, SH&E plan or regulatory variances to their Supervisor.

4.2 Risk Assessment Strategy

4.2.1 Hazard Identification

Hazard identification is the precursor to being able to assess risk. Before undertaking any activity, the hazards shall be identified by persons competent to recognize them using professional experience and training including the following:

- a. Utilization of a formal hazard identification process;
- b. Information from review and improvement processes;
- c. Consideration of hazardous materials required for task(s);
- d. Location of work and proximity to outside hazards or equipment;
- e. Anticipation or possible change of conditions;

- f. Consideration of risk of human error;
- g. Identifying level of training required for task; and
- h. Any other factors that can introduce hazard or risk into the activity.

4.2.2 Hazard identification should consider:

- a. Routine and non-routine activities;
- b. Activities of all persons having access to the workplace (including contractors and visitors);
- c. Human behavior, capabilities and other human factors;
- d. Identified hazards originating outside the workplace capable of adversely affecting the health and safety of persons under the control of AECOM within the workplace;
- e. Hazards created in the vicinity of the workplace by work-related activities under the control of AECOM and neighboring activities not under AECOM control;
- f. Infrastructure, equipment, materials at the workplace, whether provided by AECOM or others;
- g. Changes or proposed changes in the organization of AECOM, its activities, or materials;
- h. Modification to the SH&E management system, including temporary changes, and their impacts on operations, processes, and activities;
- i. Applicable legal obligations relating to risk assessment; implementation of necessary controls;
- j. The design of work areas, processes, installations, machinery/equipment, operating procedures, and work organization, including their adaptation to human capabilities; and
- k. Driving and travel activities.

4.2.3 Risk Assessment

- a. Evaluate work area for hazards as defined above (applies to field, office, and travel settings).
- b. Determine whether identified hazards could affect employees, subcontractors, members of the public, visitors, or others.
- c. Assess the severity and probability of any identified hazard occurring. This is generally based on experience, although incident statistics are available for most industries. The assessment of probability must also take into consideration the frequency with which exposure to a particular hazard will take place (e.g., the probability of occurrence is much greater if the activity is a daily event involving a number of individuals, compared with the same activity carried out twice a year by few individuals as part of a maintenance procedure).
- d. Severity: Be realistic when considering how severe the result of exposure to a hazard could be. For example, it is remotely possible that someone tripping over a cable in an office may be killed, but the most probable result is bruising or a fractured bone. If, however, the cable is trailing across the top of a very busy stairway, a more severe injury is possible.

The following table shall be used to evaluate severity:

Severity – Potential Consequences				
	People	Property Damage	Environmental Impact	Public Image/Reputation
Catastrophic	Fatality, Multiple Major Incidents	>\$1M USD, Structural collapse	Offsite impact requiring remediation	Government intervention
Critical	Permanent impairment, Long term injury/illness	>\$250K to \$1M USD	Onsite impact requiring remediation	Media intervention
Major	Lost Time /Restricted Work	> \$10K to \$250K USD	Release at/above reportable limit	Owner intervention
Moderate	Medical Treatment	> \$1K to \$10K USD	Release below reportable limit	Community or local attention
Minor	First Aid	<=\$1K USD	Small chemical release contained onsite	Individual complaint

e. Probability: Determining the probability of a hazard actually causing harm can be much more difficult than determining the severity. The factors affecting the analysis of probability are:

- The number of times the situation occurs
- The position of the hazards
- Distractions
- The duration of exposure
- Quantities of materials involved
- Environmental conditions
- Competence of the people involved
- Condition of equipment.

In analyzing the probability of harm, it will be necessary to take into account the possibility of the control measures not being used because of human error, lack of maintenance, difficulty in compliance, complexity, etc.

The following table shall be used to determine probability:

Probability		
Frequent	Expected to occur during task/activity	9/10
Probable	Likely to occur during task/activity	1/10
Occasional	May occur during the task/activity	1/100
Remote	Unlikely to occur during task/activity	1/1,000
Improbable	Highly unlikely to occur, but possible during task/activity	1/10,000

4.2.4 Risk Matrix

A quantitative risk rating can be derived for each hazard using the following table.

Probability	Severity				
	5 - Catastrophic	4 – Critical	3 – Major	2 – Moderate	1 - Minor
5 – Frequent	25	20	15	10	5
4 – Probable	20	16	12	8	4
3 – Occasional	15	12	9	6	3
2 – Remote	10	8	6	4	2
1 - Improbable	5	4	3	2	1

Use of the quantitative risk table shown above can help to determine whether or not the level of risk is tolerable. This can assist in deciding priorities for action. In general, higher risks (yellow and red) may require the provision of considerable additional resources involving special equipment, training, high levels of supervision, and consideration of the most effective methods of eliminating or controlling hazards. Lower-level risks may be considered as acceptable, but actions should still be taken to try to reduce them further, if possible. The risk rating for a project should be revised if the scope of work changes and at a minimum, the risk rating should be re-assessed on an annually basis.

Risk Rating (Probability x Severity)	Risk Acceptance Authority
1 to 4 (Low)	Risk is tolerable, manage at local level
5 to 9 (Medium)	Risk requires approval by Operations Lead/Supervisor & SH&E Manager
10 to 25 (High)	Risk requires the approval of the Operations Manager & SH&E Director

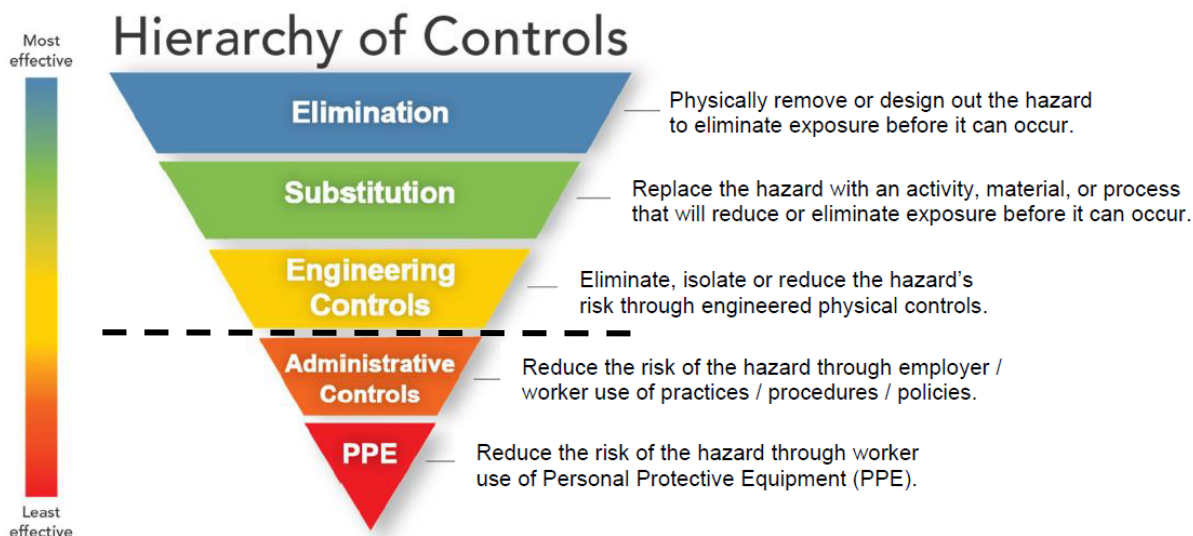
4.2.5 High Potential Risk

The hazards associated with all tasks will be assessed using the risk matrix. Tasks assessed with a risk rating of 10 to 25 are considered to be High Potential (HiPo) Risk tasks. In general, the following tasks are considered HiPo tasks (also identified in *S3AM-314-PR1 Working Alone*). Depending upon the factors contributing to the severity and probability assessment of a hazard associated with a particular task, other HiPo tasks or activities could be added to this list.

- Working at heights > 4 ft. (1.22 m) (Including aerial lifts, snoopers trucks, scaffolds, etc.).
- Working in a confined space.
- Working in a trench or excavation.
- Performing tasks requiring lock out/tag out.
- Work on energized equipment.
- Working with electricity.
- Working with hazardous substances or materials (including all HAZWOPER projects).
- Working with material under pressure.
- Working where there is a possible threat of violence, including civil unrest.
- Working in avalanche areas.
- Working on water or ice.
- Working in remote or wilderness isolation.
- Working in a controlled area.
- Extreme heat or cold stress environments.
- Working with power tools/equipment (drill, chainsaw, grinder, etc.).
- Working with/operating heavy equipment or machinery, including drill rigs.
- Working in isolation from first aid services or immediate/emergency assistance.
- Working around mobile equipment.
- Exposure to vehicular traffic (highways, roads, parking lots, etc.).
- All-terrain vehicle work.
- Working on railroads or within 25 ft. (7.62 m) of tracks.
- Any activity/task involving non-voluntary use of respiratory protection, including for site access.
- Working with people diagnosed with Coronavirus or other pandemic diseases.

4.2.6 Hierarchy of Controls

Controlling exposures to hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective control solutions.



Source: <http://www.cdc.gov/niosh/topics/hierarchy/>

When determining appropriate controls to mitigate the risk presented by each hazard, the most effective controls (ordered from the most effective at the top of the image above to the least effective at the bottom) shall be assessed and applied as is practicable, with PPE considered the last line of defense.

A minimum of one control above Administrative Controls (Elimination, Substitution, Engineering)

OR

Two controls below Engineering Controls (Administrative, PPE) is required to control any hazards that may contribute to a Catastrophic or Critical Consequence (see Risk Assessment Severity Table in this document).

Please consult [S2-001-ATT4 Catastrophic and Critical Consequences Guidance](#) for additional information.

****Note:** When engineering, administrative and PPE controls are used, and in many cases substitution, the **hazard is still present** and can still cause harm.

- Layers of control or redundancy shall be established whenever possible (e.g., engineered control further supplemented by safe work practices and PPE).
- The use of interim controls may be necessary while longer-term solutions are developed and implemented.
- Elimination examples: entry into hazardous area unnecessary due to controls / sensors designed and constructed to be operated / monitored external to the area, fall hazard eliminated by lowering a workpiece to the ground, confined space hazards eliminated through use of remote cameras to inspect vaults, trip hazard removed, hazardous chemicals removed from the worksite, etc.
- Substitution examples: use of water-based paint in place of a solvent-based paint, use of an electric motor rather than a gas motor, use of a hand cart rather than manually moving materials, etc.
- Engineering Control examples: ventilation to reduce atmospheric hazards, enclosures to reduce machine noise, machine or equipment guards around pinch or crush points, interlocks to prevent inadvertent equipment operation, keyboard trays to enable proper posture, etc.

- Administrative Control examples: procedures (e.g., use of personal electronic devices prohibited while operating a vehicle, requirement to vacuum harmful dust rather than sweep, Task Hazard Assessments, etc.), training, job rotation, signage, or temporary barriers to warn of a hazard or describe safe procedures, etc.
- Personal Protective Equipment (PPE) examples: safety glasses, hardhats, gloves, hearing protection, etc. PPE is considered the least effective method of controlling a hazard, as the equipment only places a barrier between the worker and the hazard, but does not prevent the occurrence of the incident. PPE failure would expose workers to the hazard, and is dependent upon proper selection and fit, and employee compliance.

***Always assess the control measures taken for any hazards the control may create or introduce (e.g., heaters introducing exhaust hazards, electrical equipment presenting ignition hazards, bulky PPE reducing mobility, scheduling producing congested sites, etc.). These created or introduced hazards shall be properly assessed for risk, and may require an alternative control to be developed or additional controls developed for the created or introduced hazards.

4.3 Preplanning for Development of Risk Assessment Documentation

4.3.1 In order to adequately assess a proposed pursuit, SH&E impacts require assessment. If the project's scope review finds the project includes hazards or SH&E requirements that may have critical impact on AECOM personnel, the client, the environment, or financial outcomes, the hazards and impacts should be assessed further during the pre-bid and start-up stages of the project.

- Proposal teams and/or Managers should consult [S2-001-ATT4 Catastrophic and Critical Consequences Guidance](#) for additional information and may engage subject matter experts, such as SH&E personnel, to obtain an accurate pre-bid SH&E risk assessment and summary of potential impacts.
- This information may be used by the proposal team and/or manager to populate the SH&E sections of a prospective project's overall risk assessment, thereby informing go or no-go decisions and, when preparing a bid, budgetary and staffing for safety considerations.

4.3.2 Coordination must be made by management with representatives of the client, regulatory authorities (if needed), contractors as applicable, and other appropriate personnel to determine and coordinate such items as:

- Measures to protect the public and/or other persons exposed to the work operations.
- Client requirements and local, state, and/or federal laws and regulations that are applicable to the project.
- Procedures for handling and reporting incidents, property damage, and other emergencies.
- Disciplinary policies and management of restricted access for company employees and subcontractors/vendors.

4.3.3 As soon as possible, conduct an initial review of the work location and review the proposed work activity to determine, to the extent possible, existing or probable hazardous conditions and restricted areas.

4.4 Risk Assessment Documentation

Business Groups may approach risk assessment processes and documentation in different manners. As a minimum, risk assessment activities shall begin during the project planning stages, with hazards further assessed for risk and control development through start-up and execution.

- Project SH&E Plans shall be developed and include hazard identification and risk assessment documentation (risk registers / hazard assessments) applicable to the scope of work prior to project kickoff.

- Project execution activities shall ensure the Project SH&E Plan is reviewed and hazards are further assessed in light of current conditions.
- Field level hazard assessments (Task Hazard Assessment [THAs]) shall be developed or reviewed and updated immediately prior to initiating a task at the work location by those conducting the task.
- Risk assessment of potential severity and probability shall be completed for all incidents and near misses. Refer to *S3AM-004-PR1 Incident Reporting, Notifications & Investigation*.
- Hazard Assessment results shall be communicated to employees and subcontractors on-site. Copies of the Hazard Assessment documentation will be kept on-site for review.

4.4.1 **SH&E Plan** (equivalent terms may be used such as, Health and Safety Plan [HASP], Safe Work Method Statement [SWMS], SH&E Management Plan (SHEMP), etc.). The Safety, Health & Environment (SH&E) Plan addresses health and safety concerns associated with AECOM-managed activities. It defines the roles, responsibilities, requirements and authority of the SH&E program.

- Development of the Project SH&E Plan in the start-up stage allows for adequate preparation for the prevention of incidents.
- All AECOM office locations are required to prepare an SH&E Plan using *S3AM-209-FM1 Office SH&E Plan Template*.
- AECOM requires an SH&E Plan to be developed for work activities outside of an AECOM office. The SH&E Plan is also often required by regulation, insurance policy requirements, or client requirement. A template is provided in *S3AM-209-FM2 Industrial Site / Project SH&E Plan Template* and in *S3AM-209-FM2-A Short Term SH&E Plan Template*.
- *S3AM-209-FM2-A Short Visit SH&E Plan Template* is intended for low risk site visits only. It is only appropriate if the scope of work is limited to driving, walking, taking notes, and taking photographs, for a duration of time no longer than 3 days. It should not be used if the conditions at the site being visited are hazardous or high risk. Use at an active construction site is acceptable if escorted by the Client, or General Contractor (or similar).
- A typical SH&E Plan includes, but is not limited to, the following components:
 - Descriptions of roles and responsibilities for the activity.
 - Risk registers / hazard assessments for each task and operation found in the work plan (documented using *S3AM-209-FM4 Pre-Job Hazard Assessment* or equivalent).
 - Attached AECOM procedures applicable to the scope of work. Utilize *S3AM-209-FM3 Procedure Checklist* to assist in determining which AECOM procedures apply.
 - Supplementary information to the attached procedures (e.g., jurisdiction-specific requirements, client requirements, etc.)
 - Supervision.
 - Training requirements.
 - Personal protective equipment requirements for the separate tasks or operating areas.
 - Medical surveillance requirements (for chemical exposure, noise, radiation, etc.).
 - Frequency and types of monitoring for physical and chemical hazards.
 - Pre-entry briefings requirements for visitors and workers.
 - Location-specific Emergency Response Plan. Refer to *S3AM-010-PR1 Emergency Response Planning*.
 - Client requirements that are more stringent than AECOM's SH&E requirements.
 - In California, the SH&E Plan must also address the Injury Illness Prevention Program. Refer to *S3AM-209-ATT1* for additional information.
- A SH&E Plan for hazardous waste operations may also include, but not be limited to:

- Site access and control measures.
- Site specific information on chemical, biological or radiation hazards.
- Decontamination procedures.
- Confined Space Entry plan.
- Spill containment plan.
- Waste management.
- An SH&E Plan for construction activities may also include, but not be limited to:
 - Traffic plan and site access controls.
 - Electrical and machinery protective measures.
 - Trench and excavation safety.
 - Fall protection and rescue plans.
 - Storage for combustible and flammable materials.
 - Sediment and community noise control plans.
- An SH&E Plan for a demolition project may also include, but not be limited to:
 - Materials movement plan.
 - Critical task sequencing.
 - Explosives safety.
 - Dust control measures.
 - Removal of asbestos and lead-containing materials.
- The Project SH&E Plan is reviewed and hazards are further assessed in light of current conditions and based on lessons learned during the course of project execution.

4.4.2 **Pre-Job Hazard Assessment.** The principle activities associated with the scope of work to be performed, the inherent risks, and the control measures for those risks shall be assessed and documented in order to properly plan the project work. This is accomplished through risk registers / hazard assessments contained in the project SH&E Plan. The business group process may also establish a process using Pre-Job Hazard Assessments.

- Pre-Job Hazard Assessments, or equivalent documentation, shall be completed before the work activities commence and are updated based on lessons learned. Refer to *S3AM-209-FM4 Pre-Job Hazard Assessment*.
- Workers involved in the anticipated activities should participate in the hazard assessment process so that best practices are shared and all possible hazards of the activities are identified.
- Pre-job Hazard Assessments are performed by:
 - Identifying the principle activities of the scope of work to be performed.
 - Potential hazards are identified for each activity and the initial risk rating is determined using the Risk Matrix.
 - Control measures are then identified for each activity using the hierarchy of controls, and may include reference to applicable procedures or plans.
 - Each hazard is then re-evaluated and assigned a final risk rating using the Risk Matrix.
 - If the final risk rating is a 5-9 (medium risk) or 10-25 (high risk), additional hazard controls shall be identified and applied until the final risk rating is reduced to 4 or below. If the final risk rating cannot be reduced to 4 or lower, additional approvals are needed before the activity can begin.
- A Pre-Job Hazard Assessment, or equivalent document, may be completed as a stand-alone

document, or may be incorporated into an SH&E Plan. Developed Pre-Job Hazard Assessments should be consulted when completing applicable field level hazard assessment (THA) activities.

- 4.4.3 **Daily Tailgate Meeting.** A tailgate meeting for all project personnel shall be held daily (excluding fixed-facility locations where AECOM employees permanently work full time). A record of the meetings shall include the name of all attendees, items discussed, and date/time of meeting. *S3AM-209-FM5 Daily Tailgate Meeting Form* may be used to document the meeting (DCSA may replace this form with the electronic Daily Tailgate Meeting Tool available on the [Ecosystem Daily Tailgate Meeting App Site](#)).

At a minimum, the meeting will involve representatives from all organizations with a direct contractual relationship with AECOM on the project site (e.g., AECOM employees, subcontractors, client representatives, etc.). Other contractors working in the area of AECOM's activities should also be invited to the meeting when possible. All members of the meeting should be engaged and encouraged to participate and provide input and feedback. Objectives for the meeting should include:

- Eliminating injuries, illnesses, and damage to the environment or property.
- Review planned work activities.
- Clarify roles and responsibilities.
- Confirm work crew is fit-for-duty.
- Assess, identify and mitigate hazards.
- Share lessons learned and observations.
- Review simultaneous operations with other non-AECOM controlled activities (e.g., other contractors performing work in the vicinity of AECOM's operations, fuel delivery at the location, utility company working near AECOM operations).

- 4.4.4 **Task Hazard Assessment (THA).** A THA is the most important element in an effective hazard identification and risk reduction program. *S3AM-209-FM6 Task Hazard Assessment* (or *S3AM-209-FM6-ES or equivalent approved Business Group specific form*) shall be completed before every assigned task at the work location. The THA is to be completed at the worksite by the individual(s) who is intended to conduct the task immediately prior to initiating the associated task. The intent of the THA is to engage the end-user in actively assessing the hazards associated with their task, as well as identify changes and capture nuances or specifics immediately present that may otherwise remain unacknowledged in the project's pre-planning hazard assessment documentation (risk registers, hazard assessments, etc.).

The focus of the analysis shall be on the specific assigned task and the evaluation of risks and assignment of control measures based on actual work conditions. THA is a portion of the overall job scope, focused at the specific foreman and/or crew level. Task Hazard Assessments must be completed prior to the start of work. Re-assessment must also be completed when a significant change of scope occurs or if conflicting work is being done. Completion of the THA involves both the site supervision and employees involved in the work.

Task Hazard Assessment steps:

- Assemble employees involved in the work.
- Review the scope of work being performed.
- Review the risk registers / hazard assessments obtained from the Project SH&E Plan for content applicable to the immediate task.
- As necessary, review the associated procedure.
- The THA shall:
 - Break the task into individual steps.

- Identify actual and potential hazards.
- Rank the risk using the Risk Matrix.
- Develop appropriate controls measures for each hazard.
- Rank the post control measure risk using the Risk Matrix.
- Review the THA for any additions or edits.
- Confirm communication of the THA to all affected employees.
- Confirm the THA is reviewed by any visitors or additional or new personnel brought on to perform the task.

If the final risk rating is a 5-9 (medium risk) or 10-25 (high risk), additional hazard controls shall be identified and applied until the final risk rating is reduced to 4 or below. If the final risk rating cannot be reduced to 4 or lower, additional approvals are required before the activity can begin.

Employees shall monitor the activities for compliance with the THA. Workers should stop any work on a task if conditions change from the planned and agreed approach to the work. The THA should be updated to reflect new conditions or changes in task methods.

Business Group Task Hazard Assessment processes may vary from the above description; however comprehensive hazard identification associated with the task, identification of appropriate controls, and effective communication between all involved and affected shall be incorporated into the Business Group process.

4.5 Key Elements in Risk Management at a Site

- 4.5.1 Regularly, or at least once per month, conduct safety meetings for supervisory personnel, including those of other contractors and subcontractors. Suggested action items for these meetings include:
- Reviewing of THAs, safety procedures and policies applicable to the project.
 - Identifying responsibilities of the various parties, including contractor(s) and subcontractor(s) obligations.
 - Reviewing noted and anticipated hazards, and plan methods to eliminate or control them.
 - Discussing incidents and near misses to determine causes and steps necessary to prevent reoccurrence.
 - Discussing suggestions and ideas for improving the project's safety program.
 - Maintaining a record of these meetings; this will be done by the safety representative or supervisor.
- 4.5.2 Regular inspections of active work areas will be made by the project supervisors and the site SH&E representative. Refer also to *S3AM-216-PR1 Compliance Assurance* for additional guidance.
- To be effective, such inspections should occur on all shifts, should be unannounced, and should occur at varied intervals.
 - Imminent danger situations must be stopped and corrected immediately. Refer to *S3AM-002-PR1 Stop Work Authority*.
 - Inadequate or deficient protective measures and unsafe or unhealthy work practices must be brought to the immediate attention of the appropriate supervisor and/or manager for correction and disciplinary action, as required.
 - Inform the manager of all deficiencies not immediately correctable, and/or that may result in damage to facilities, equipment, or work in progress, or that create hazardous exposures to employees or the public.
 - Projects that exhibit unsatisfactory SH&E performance present risk to AECOM personnel, the client, the public, property or the environment.

- Further evaluation may be required and a risk reduction plan, including monitoring activities may be determined as necessary.
 - Considerable additional resources may be required involving personnel, special equipment, training, high levels of oversight, and consideration of the most effective resources and methods of improving safety program performance.
- 4.5.3 Signs and posters of appropriate size and design, and bearing standard pertinent regulations, will be used to convey warnings, directions, and instructions to personnel and the public, as required by the client and other applicable regulations. The observance of such safety and incident prevention signs will be strictly required of company employees and visitors while on the project site.
- 4.5.4 Consideration must be given to make the project environmental protection plan effective.
 - The type and extent of the measures needed for pollution control, hazardous materials handling, hazardous waste control and disposal, and for relating occupational health issues will depend upon the contract stipulations, hazard involved, type of operation, and the mandatory requirements of regulatory authorities.
 - Such measures will include appropriate control methods necessary to prevent or reduce to safe levels exposure to hazardous substances.
 - Refer also to *S3AM-204-PR1 Environmental Compliance* for additional guidance.
- 4.5.5 It is the practice of AECOM to commend and reward employees and their supervisors for achieving excellence in their field of work, particularly when that work is performed safely. Project management is encouraged to promote and participate in safety recognition programs by developing project-specific safety goals and including safety incentive programs in project budgets. Project goals should include proactive goals such as training participation and training support, safety observations conducted, and management participation in safety reviews (e.g., safety walk-downs).
- 4.5.6 Concerning worksites in which other employers control concurrent operations and SH&E issues related to the worksite, the manager shall coordinate with those conducting concurrent operations to confirm appropriate control measures are in place to protect employees from the hazards associated with activities to be performed.
 - Coordination shall occur prior to work commencing, periodically thereafter, and as necessary given changes in scope and/or working conditions.
 - Affected employees (including managers and supervisors) shall seek to participate in all site SH&E meetings related to concurrent operations.
- 4.5.7 All employees are empowered and expected to stop work or not start work when it is unsafe. Employees will be trained on stop work authority upon initial assignment. Refer to *S3AM-002-PR1 Stop Work Authority*.
- 4.6 Other Requirements
 - 4.6.1 The following requirements apply to SH&E risk assessment documentation:
 - Preparation of the SH&E documentation may be performed by a member of the project team or SH&E.
 - SH&E documentation (including draft versions of documents) will be reviewed by a SH&E Manager prior to release for outside agency review (e.g., clients, regulatory agencies, etc.) and prior to its field implementation.
 - Changes to approved SH&E documentation require concurrence from a SH&E Manager (or designee). This includes those made in response to changing field conditions or operational requirements and those made in response to regulator/client comments. Any written responses made to regulator/client comments also must be reviewed by the SH&E Manager.
 - The SH&E documentation for any project lasting twelve (12) months or longer will be reviewed

at periodic intervals, but at least annually. The SH&E Manager will review the changes and determine whether modifications are required to the existing SH&E planning documentation. This confirms that the documentation continues to reflect the current scope of work and knowledge of site conditions, and that any revised regulatory requirements are properly addressed. The Manager will provide a master copy of the SH&E documentation to be maintained on site for reference by personnel, together with copies of any required SH&E-related records or operational documentation. The master copy must be current in all respects, and will include any changes or modifications made as work progresses.

- Managers will confirm that SH&E documents have been reviewed with affected personnel prior to implementation of field work. Sign-off and concurrence is mandatory and to be kept in the project records.

5.0 Records

- 5.1 Completed SH&E Plans, risk registers / hazard assessments, Tailgate Meeting Forms, and Task Hazard Assessments will be filed in the appropriate project file.

6.0 Attachments

All Business Groups

6.1	S3AM-209-ATT1	California Injury & Illness Prevention Program
6.2	S3AM-209-FM1	Office SH&E Plan Template
6.3	S3AM-209-FM2	Industrial Site / Project SH&E Plan Template
6.4	S3AM-209-FM2-A	Short Term SH&E Plan Template
6.5	S3AM-209-FM3	Procedure Checklist
6.6	S3AM-209-FM4	Pre-Job Hazard Assessment
6.7	S3AM-209-FM5	Daily Tailgate Meeting Form
6.8	S3AM-209-FM6	Task Hazard Assessment
6.9	S3AM-209-FM6(ES)	Evaluación de Riesgos de las Tareas (THA – Spanish)
6.10	S3AM-209-FM7	Office Relocation Plan

Supplementary Business Group Specific

6.11	S4[CS]AM-209-FM6-A	Task Hazard Assessment – Focus 4 Plus 2 – CS-BC Group
6.12	S4[DCS]AM-209-FM2-A	Safe Work Plan Template - DCS Group
6.13	S4[DCS]AM-209-FM2-A[ES]	Plan de Trabajo Seguro – (SWP Spanish) DCS Group
6.14	S4[DCS]AM-209-FM2-B	Short Visit Safe Work Plan Template - DCSA Group
6.15	S4[DCS]AM-209-FM2-C	Universal Health & Safety Plan Template - DCSA Group
6.16	S4[DCS]AM-209-FM2-D	Disaster Recovery Health & Safety Plan Template - DCSA Group
6.17	S4[DCS]AM-209-FM2-F	Safety Work Plan Template – Short Duration Work Zone – DCSA Group
6.18	S4[DCS]AM-209-FM2-G	Safety Work Plan Template – Highway Work Zone – DCSA Group
6.19	S4[DCS]AM-209-FM4-A	Risk Register – DCSA Group
6.20	S4[DCS]AM-209-FM6-A	Task Hazard Assessment – DCSA Group
6.21	S4[DCS]AM-209-FM6-A(ES)	Evaluación de Riesgos de Tareas (THA Spanish) – DCSA Group
6.22	S4[DCS]AM-209-FM6-A(FR)	Évaluation des Dangers de la Tâche (THA French) – DCSA Group

Bloodborne Pathogens

S3AM-111-PR1

1.0 Purpose and Scope

- 1.1 Define the AECOM procedures for eliminating and/or controlling occupational exposure to Bloodborne Pathogens on AECOM projects and activities.
- 1.2 A written Exposure Control Plan shall be developed and implemented during all AECOM operations where there is a reasonable potential for occupational exposure of AECOM employees and/or subcontractors to bloodborne pathogens as a regulated waste.
- 1.3 This procedure's requirements apply to all AECOM Americas employees and operations and any other entity and its personnel contractually required to comply with this document's content. Any jurisdictional requirements exceeding those identified in this procedure shall be met when conducting work in the given jurisdiction.

2.0 Terms and Definitions

- 2.1 **Blood** – Human whole blood; human blood components such as plasma or platelets; and human blood products such as clotting factors.
- 2.2 **Bloodborne Pathogens (BBP)** – Pathogenic microorganisms that are present in human blood and that can infect and cause disease in persons who are exposed to blood containing these pathogens including but not limited to hepatitis B virus (HBV), human immunodeficiency virus (HIV), hepatitis C, malaria, syphilis, babesiosis, brucellosis, leptospirosis, arboviral infections, relapsing fever, human T-lymphotropic virus Type I, and viral haemorrhagic fever (Ebola).
- 2.3 **Exposure Control Plan (S3AM-111-ATT1)** – A plan that addresses the requirements applicable to specific AECOM projects and activities designed to eliminate or minimize employee exposure. The Exposure Control Plan shall be incorporated into the location specific SH&E Plan and shall be accessible to all employees. The Exposure Control Plan shall include:
 - Exposure determination.
 - The schedule and method of implementation for:
 - Methods of compliance;
 - Hepatitis B Vaccination;
 - Post exposure Evaluation;
 - Communications of Hazards to employees; and
 - Record Keeping.
 - Documentation methods for exposure incidents, to include:
 - Routes of exposure; and
 - The circumstances for which and exposure incident occurred.

Note: In the State of California this plan shall also address exposures to airborne pathogens.
- 2.4 **SH&E Plan** – A document prepared for a specific project or program that details the hazards, precautions, emergency planning, medical, and training requirements for that project or program.
- 2.5 **Occupational Exposure (Exposed)** – Reasonably anticipated skin, eye mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. Employees will be considered to be potentially exposed, even though they are using the universal precautions specified for the project or program.

- 2.6 **Other Potentially Infectious Materials (OPIM)** – Body fluids and tissues including: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, saliva, and any other body fluid that is visibly contaminated with blood. When it is difficult or impossible to differentiate between body fluids, all body fluids should be treated as if they are potentially infectious.
- Note: In the State of California airborne pathogens are also considered infectious materials.*
- 2.7 **Regulated Waste** – (1) liquid or semi-liquid blood or other potentially infectious materials; (2) contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; (3) items that are caked with dried blood or other potentially infectious materials and are capable of being released during handling; (4) objects contaminated with blood that can pierce the skin; and (5) pathological and microbiological wastes containing blood or other potentially infectious materials.
- 2.8 **Source Individual** – An individual, typically one who has been injured, whose blood or saliva has come in contact with another individual, typically one who has rendered first aid or Cardio Pulmonary Resuscitation (CPR) to the injured party.
- 2.9 **Universal Precautions** – All body fluids and materials potentially contaminated by body fluids will be considered to be infectious unless the fluids were from the person performing the clean up or decontamination activities. All employees coming in contact with another person's body fluids shall assume that the fluids are infectious and shall wear prescribed Personal Protective Equipment.

3.0 References

- 3.1 S3AM-003-PR1 SH&E Training
- 3.2 S3AM-004-PR1 Incident Reporting, Notifications & Investigation
- 3.3 S3AM-017-PR1 Injury & Illness Recordkeeping
- 3.4 S3AM-128-PR1 Medical Screening & Surveillance
- 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 Occupational Health Manager

- Will review and maintain all medical records generated as a result of post-exposure follow-up and maintain all medical records related to the follow-up.
- Will, where appropriate, consult with AECOM's local medical providers about follow-up recommendations.

4.1.2 SH&E Manager

- Will review project / program-specific Exposure Control Plans (normally part of the SH&E Plan) prior to the initial mobilization, at least annually for continuing projects or programs, and whenever necessary to reflect modified tasks or procedures that affect occupational exposure to bloodborne pathogens.
- Will consult with the Occupational Health Manager regarding all bloodborne pathogens exposure incidents.
- Will maintain training records and post-exposure follow-up information.
- Will confirm that site-specific training is conducted for all employees working at sites where regulated wastes were disposed or for employees who may be occupationally exposed while working at a facility that handles regulated wastes.

- Will confirm the Hepatitis B vaccine is made available to all employees with a potential occupational exposure (e.g. paramedic, medical laboratory employee, etc.).
- Will review all incident reports and arrange for post-exposure follow-up with AECOM's local medical provider.
- Will offer recommendations on how to prevent an incident from recurring.

4.1.3 **Manager**

- See that all recommendations made by the SH&E Manager are implemented.
- Support the SH&E Manager in their efforts to prevent occupational and non-occupational exposures to bloodborne pathogens.

4.1.4 **Employee**

- Use all PPE and universal precautions required to prevent exposure to infectious materials.
- Follow the exposure control methods outlined in their Exposure Control Plan.
- Report potential exposure incidents to their Supervisor or Manager immediately.

4.2 Potential Exposure Situations

4.2.1 There are a few activities within AECOM where potential occupational exposures to blood or other potentially infectious materials are of concern. These activities may include:

- Investigations of properties that received regulated wastes.
- Site visits or audits at Treatment Storage and Disposal facilities where medical waste is handled.
- Site visits or audits at medical or health care facilities.
- The provision of first-aid or cardiopulmonary resuscitation (CPR) to AECOM, subcontractor, or client personnel (if the action is part of the employee's occupations duties [e.g. paramedic] and not provided as a voluntary action).

4.2.2 Although AECOM does offer first-aid and CPR training to its employees on a regular basis, providing such aid is often on a voluntary basis and not directed by AECOM. As such, potential exposures may not be considered occupational exposures within the context of the OSHA Bloodborne Pathogens Standard. Site-specific Exposure Control Plans shall differentiate voluntary first-aid duties from occupational exposures as a component of the exposure determination. Refer to *S3AM-209-PR1 Risk Assessment & Management*.

4.3 Unforeseen Exposure Situations

4.3.1 Occasionally, potentially infectious material is encountered during a activity where none was expected; when this happens, the work shall be stopped, employee training conducted, and an exposure control plan prepared prior to resuming activities with potential exposures.

4.4 Employee Training

4.4.1 All personnel who will work on projects or programs which involve potential contact with regulated wastes will be required to attend a training class prior to the start of the project or program and annually for continuing projects or programs. Refer to *S3AM-003-PR1 SH&E Training*. The specific requirements and provisions of the written Exposure Control Plan shall be provided to each AECOM Employee and subcontractor assigned to work at the program / project.

4.4.2 Either of the following two sources of employee training will be used by AECOM to educate Employees on the hazards of exposure to bloodborne pathogens:

- The local chapter of the American Red Cross or other recognized training provider.
- AECOM's in-house training program.

4.4.3 Training sessions will review the following:

- Requirements of OSHA's Bloodborne Pathogens Standard or equivalent, applicable jurisdictional requirements.
- Review of AECOM's Bloodborne Pathogen Procedure (this document).
- Situations within AECOM that may involve exposure to bloodborne pathogens.
- Bloodborne diseases and symptoms of disease.
- Means of transmission.
- Work practice controls to reduce risk.
- Use of personal protective equipment to reduce risk.
- Incident reporting.
- AECOM's Post-Exposure Medical Follow-Up Procedures:

4.4.4 When contracting for CPR and first-aid training sessions, AECOM will request that each session include a section on the hazards associated with exposure to bloodborne pathogens and protective measures that shall be followed when administering first aid, CPR, or other emergency medical care. At the end of the session, Employees will be provided with a copy of this procedure. This procedure will be reviewed and a question-and-answer session will be conducted at the end of the presentation.

4.4.5 If the training provider cannot provide such training, AECOM will conduct a Blood Borne Pathogen training session prior to the start of the first aid or CPR class.

4.4.6 AECOM has and will have little control over employees who have not received AECOM provided first aid or CPR training, but who choose to perform Good Samaritan acts. Any Employee who does perform a Good Samaritan act that results in exposure to blood or other potentially infectious materials will, however, be provided with post-exposure medical follow-up as described in this procedure.

4.5 Personal Protective Equipment

4.5.1 All body fluids and materials potentially contaminated by body fluids will be considered to be infectious. All Employees coming in contact with another person's body fluids shall assume that the fluids are infectious and shall wear prescribed personal protective equipment (PPE), refer to *S3AM-208-PR1 Personal Protective Equipment*.

4.5.2 The use of PPE to prevent exposure is more appropriate for the types of occupational and non-occupational exposures Employees might encounter than is the use of engineering or work practice controls that are more effectively instituted in medical care or laboratory facilities where employees are actually handling blood and other potentially infectious materials.

4.5.3 PPE such as Tyvek coveralls, shoe covers, and gloves will be provided to all field team members involved in site activities where regulated wastes may be present. Site-specific PPE requirements will be identified in the written Exposure Control Plan. The same type of PPE will also be available, if it is deemed necessary, for Employees involved with activities at TSD facilities that handle regulated wastes.

4.5.4 PPE will be provided to affected Employees at no cost.

4.6 Universal Precautions Kits

4.6.1 In those work areas where there is the potential for exposure to infectious materials, a universal precaution kit shall be readily available. The kit shall permit the clean-up, neutralization, transportation, and disposal of up to 1 litre of blood or body fluids. The kit shall contain the following items at a minimum:

- Safety shield/mask combination
- Liquid proof apron
- Medical-grade vinyl/nitrile gloves
- Liquid solidifier/deodorizer
- Pickup scoop with scraper
- Red biohazard waste bag with tie
- Germicidal solution with dry wipe
- Antimicrobial hand wipe
- ID tag
- Instructions for use

4.7 Personal Hygiene

- 4.7.1 Special provisions will be made so that hand washing facilities are available on-site for sites that are known to be contaminated with regulated wastes. Alcohol wipes will be available in the event that hand washing facilities are not immediately available.
- 4.7.2 To reduce the potential for infection, if skin contact with blood or other potentially infectious materials occurs, the exposed area should be washed with non-abrasive soap and water as soon as possible. Hand washing will also help to prevent the transfer of contamination from the hands to other areas of the body or other surfaces that may be contacted later. Even when protective gloves are worn, hands should be washed with non-abrasive soap and running water as soon as possible after the gloves are removed.
- 4.7.3 The use of an alcohol wipes should not be relied upon as the primary means of personal hygiene. Hands should be thoroughly washed with soap and running water as soon as possible.
- 4.7.4 If mucous membranes, such as the eyes, come in direct contact with blood or other potentially infectious materials, the area should be washed or flushed with water as soon as possible and reported immediately.

4.8 Reporting Exposure Incidents

- 4.8.1 All incidents in which an employee has been exposed to blood or other potentially infectious materials shall be reported to the employee's Supervisor and to the SH&E Manager immediately. An IndustrySafe on-line report shall be completed in accordance with *S3AM-004-PR1 Incident Reporting, Notifications & Investigation*. After reviewing the report, the SH&E Manager will provide recommendations, when appropriate, for preventing recurrence of the incident.

4.9 Medical Follow-Up to Exposure Incidents

- 4.9.1 Once notified, the SH&E Manager will in turn discuss the incident with AECOM's Occupational Health Manager and/or medical provider and make arrangements for an evaluation, refer to *S3AM-128-PR1 Medical Screening & Surveillance*. Prompt medical attention is important in the event of an exposure incident. If the incident occurs in the field, the Employee will either be asked to visit the local hospital or, if he/she chooses, return immediately to the office to visit AECOM's local medical provider.
- 4.9.2 An attempt will be made to test the affected employee, and if applicable, the source individual's blood, for bloodborne pathogens. No testing will be performed without the written consent of the exposed Employee or the source individual. If initially, the exposed Employee or the source individual does not consent to HIV serological testing, but does consent to HBV serological testing, AECOM will make provisions with the local medical provider to preserve the blood sample for at least 90 days in the event that after counselling efforts, the Employee voluntarily consents to HIV testing.

- 4.9.3 AECOM will rely on the professional judgment of its Occupational Health Manager and/or local medical providers in the event of an exposure incident. Evaluations and follow-up procedures will be provided according to the recommendations of the United States Public Health Service (USPHS), World Health Organization, or other Public Health organization in Canada and other countries in the Americas current at the time these evaluations and procedures take place. Minimally, a post-exposure evaluation and follow-up will include the following elements:
- Documentation of the route(s) of exposure
 - Circumstances under which the exposure incident occurred
 - Identification and documentation of the source individual in the case of first aid or emergency medical treatments
 - Collection and testing of source individuals and exposed employee's blood for HBV and HIV serological status as soon as feasible and upon consent
 - Post-exposure vaccination when medically indicated, as recommended by the USPHS
 - Counselling, if necessary
 - Evaluation of reported illnesses
- 4.9.4 Any and all follow-up recommendations offered by the physician will be immediately instituted by the SH&E Manager with the guidance of the Occupational Health Manager and/or the local medical provider and at no cost to the affected Employee. Repeat testing, counselling, and follow-up, if recommended, will also be provided at no cost to the Employee. AECOM will rely on the Occupational Health Manager and/or the local medical provider to provide counselling to Employees concerning infection status, including results of and interpretation of medical tests and advising the Employee about the protection of personal contacts.
- 4.9.5 All medical providers shall submit to AECOM's Occupational Health Manager and the affected Employee a written opinion of the post-exposure evaluation within 15 days of the completion of the evaluation.
- 4.9.6 All medical records generated as a result of the post-exposure evaluation will be retained in the office of the Occupational Health Manager, and as applicable AECOM's medical services provider, under lock and key and will be maintained with the strictest confidentiality. Refer to *S3AM-017-PR1 Injury & Illness Recordkeeping*.
- 4.10 Hepatitis Vaccination
- 4.10.1 Prior to performing site visits or field investigations where regulated wastes are stored, processed, or known to have been disposed of, AECOM will consult with the Occupational Health Manager and/or the local medical providers to determine if a hepatitis A or B vaccination is appropriate given the site conditions and the proposed scope of work. Where possible the first Hepatitis B vaccinations will be given prior to working at sites with known, potential occupational exposures.
- 4.10.2 Although AECOM does offer first-aid and CPR training to its Employees on a regular basis, providing such aid is often voluntary and not as a specified job duty of an Employee. As such, potential exposures may not be considered occupational within the context of the government Bloodborne Pathogens Standard. Pre-exposure hepatitis vaccinations will not typically be offered for voluntary roles.
- 4.10.3 Post-exposure hepatitis vaccination will be offered to Employees involved in an exposure incident within 24 hours of possible exposure.
- 4.10.4 The vaccinations discussed above shall be provided to Employees at no cost if required by the exposure determination.

4.11 Housekeeping

- 4.11.1 Other than through the provision of first aid or CPR, there is no potential for occupational exposure to blood or other potentially infectious materials within any of the AECOM offices. Therefore, the housekeeping requirements and requirements for warning signs and labels contained in the OSHA Bloodborne Pathogens standard are not applicable to our office operations.
- 4.11.2 When working at a site where regulated wastes have been disposed of, the specific housekeeping and warning sign requirements will be prescribed by the client and/or in the site-specific HASP.
- 4.11.3 When working at a client's facility, AECOM will review the facilities plan for compliance with all the requirements of the Bloodborne Pathogens Standard and will observe all housekeeping requirements, wear required PPE, and acknowledge all warning signs and labels as specified in the client's plan. If the client does not have an effective plan, AECOM will prepare a plan as part of the written Exposure Control Plan.

4.12 Regulated Waste Generated by AECOM

- 4.12.1 Any regulated waste generated by AECOM as a result of first aid activities or clean-up of potentially infectious material will be collected in sealed, watertight containers and disposed of according to the Host Employer's BBP program or disposed of through a permitted regulated waste facility.
- 4.12.2 Disposal manifests shall be maintained in accordance with local or governmental regulations.

4.13 Material Decontamination

- 4.13.1 Any areas or equipment that are contaminated by potentially infectious material will be decontaminated using a 10% solution of household bleach. Utilize appropriate personal protective equipment to control exposure to the bleach (e.g. safety goggles, gloves, etc.). Refer to *S3AM-208-PR1 Personal Protective Equipment*.

4.14 Procedure and Plan Review

- 4.14.1 All Exposure Control Plans for projects or programs extending over one year shall be reviewed annually by the SH&E Manager and affected Employees.

5.0 Records

- 5.1 Each SH&E Manager will maintain records and provide copies of the records to the Occupational Health Manager, related to bloodborne pathogens in accordance with the provisions of the standard and *S3AM-017-PR1 Injury & Illness Recordkeeping*.
- 5.2 Records maintained in accordance will include bloodborne pathogens exposure incidents, post-exposure follow-up, vaccination status, and training for all Employees with potential occupational exposure.
- 5.3 Employee medical and training records required by this procedure shall be provided upon request for examination and copying to the Employee, to anyone having written consent of the subject employee, or to State, Province, or Federal Occupational Safety and Health regulatory agencies.

6.0 Attachments

- 6.1 [S3AM-111-ATT1 Bloodborne Pathogens Exposure Control Plan](#)
- 6.2 [S3AM-111-FM1 Hepatitis B Vaccination Declination](#)

Bloodborne Pathogens Exposure Control Plan

S3AM-111-ATT1

1.0 Introduction

Employees are at risk for exposure to and possible transmission of infectious diseases each time they are in contact with blood or body fluids. Bloodborne pathogens are microorganisms present in human blood and other body fluids that can cause serious disease in humans and include, but are not limited to Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV). Therefore, this exposure control plan (ECP) has been established to ensure that employees are effectively informed concerning potential workplace health hazards, and that protective measures necessary to eliminate or minimize bloodborne exposure incidents are used whenever possible.

2.0 Exposure Determination

2.1 The Medical Screening Evaluation form will be used to evaluate which employees may incur occupational exposure to blood or other potentially infectious materials when performing routine tasks and procedures. Refer to *S3AM- 128-PR1 Medical Screening & Surveillance*. These exposure determinations will be made without regard to the use of personal protective equipment, and regardless of exposure frequency.

2.1.1 The employees in the following job classifications may have occupational exposure to bloodborne pathogens, and are covered by this program:

- Occupational health nurse
- Paramedics
- Registered nurses
- Designated first aid providers (providing first aid identified as part of the employee's occupational duties and not a voluntary action)
- Medical laboratory employees
- Janitorial workers in medical facilities and clinics.

2.1.2 Tasks and procedures that may expose the above employees to bloodborne pathogens include:

- Treating cuts, abrasions, and burns
- Cleaning contaminated environmental surfaces
- Administering cardiopulmonary resuscitation (CPR).

3.0 Exposure Control

3.1 "Universal precautions" are a required method of control to prevent exposure to blood and body fluids. This term refers to the concept that all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, HCV, and other bloodborne pathogens, regardless of the perceived risk status of another individual. Universal precautions apply to blood, other body fluids containing visible blood, semen, and vaginal fluids. Universal precautions do not apply to feces, nasal secretions, saliva, sweat, tears, sputum, urine, and vomitus unless they contain visible blood. Although these fluids have an extremely low or nonexistent risk for bloodborne pathogens, they are a potential source for other infectious diseases, and precautions shall also be followed when these body fluids are present.

3.2 Engineering and Work Practice Controls

3.2.1 The following engineering controls will be in place in all areas of occupational exposure:

- Containers for disposable contaminated sharps shall be puncture-resistant, labeled a biohazard, leak-proof, and have a closable top.

- Containers for storage, transport, or shipment of blood or other potentially infectious materials, regulated waste, and contaminated laundry will be labeled with the biohazard symbol and site address, and have a securely closing lid.
- Engineering controls will be reviewed and maintained on a regular basis to ensure effectiveness.

3.2.2 The following work practice controls (administrative and personal protective equipment) shall be strictly followed to minimize exposure, and isolate or remove bloodborne pathogens from the workplace:

- Accessible handwashing facilities. If soap and running water are not available, an antiseptic hand cleaner in conjunction with clean paper towels or antiseptic towelettes are acceptable temporary alternatives to running water. When this alternative method is used, employees shall wash their hands with soap and running water as soon as feasible.
- Personal protective equipment (PPE) will be provided at no cost to the employee, and will be chosen based on the anticipated exposure to blood. PPE is considered appropriate if it does not permit blood or other potentially infectious materials to reach or pass through clothes, skin, or mucous membranes of the eyes or mouth under normal conditions of use, and for the duration of time the equipment will be used. PPE shall be readily accessible and will be removed prior to leaving the work area.
- Disposable single-use gloves shall be used as a protective barrier in all situations in which contact with body fluids is anticipated. Gloves of the correct size will be provided. Disposable gloves will not be washed or disinfected for reuse, and will be replaced between employees, and if they become torn or punctured. Gloves are especially important if the employee has cuts, abraded skin, chapped hands, or dermatitis.
- Liquid-impermeable gowns, boots, and masks, in combination with eye-protective devices such as goggles and shatterproof glasses with solid-side shields or chin-length face shields, shall be worn whenever splashing, spraying, or spattering of blood droplets or body fluids can be reasonably anticipated.
- Disposable pocket mask ventilation devices shall be provided in all first aid kits and used to avoid mouth-to-mouth contact during emergency cardiopulmonary resuscitation.
- Examples of Recommended PPE (depending on task, more PPE may be needed).

<u>Task</u>	<u>Gloves</u>	<u>Gown</u>	<u>Mask</u>	<u>Goggles</u>
Bleeding control w/ minimal bleeding	Yes	No	No	No
Bleeding control w /spurting blood	Yes	Yes	Yes	Yes
Cardiopulmonary resuscitation	No	No	Yes	No
Decontamination/clean-up	Yes	No	No	No
Medical laboratory activities	Yes	Yes	Yes	Yes

3.2.3 Eating, drinking, smoking, applying cosmetics, and handling of contact lenses is prohibited in work areas where there is a reasonable likelihood of occupational exposure. Food and drink cannot be kept in refrigerators, freezers, shelves, cabinets, or on counter tops where blood or body fluids are present.

3.2.4 Contaminated needles and other sharps shall not be bent or recapped unless a one-handed technique is used. They shall be disposed of in an appropriate sharps container.

3.2.5 All regulated biohazardous waste will be placed in a waste receptacle that has designated red biohazard bags and a closable top controlled by a foot peddle. When full, the bags shall be removed with gloved hands, tied off, and placed in a biohazard shipping carton, to be held for pick-

up. If any biohazard bag appears to be leaking, it shall be double-bagged. The waste will be incinerated per federal, provincial/territorial/state regulations.

3.3 Housekeeping

- 3.3.1 Universal precautions shall be used when cleaning or decontaminating any surface or equipment that may be contaminated. Appropriate PPE shall be used for protection during decontamination.
- 3.3.2 All contaminated environmental work surfaces such as countertops or floors will be cleaned according to regulatory requirements or with a household bleach solution diluted 1:10 with water directly following contamination with blood or body fluids.
- 3.3.3 Instruments such as tweezers, bandage scissors, and thermometers shall be disposable rather than reusable equipment, and shall be disposed of in an appropriate manner.
- 3.3.4 Broken, contaminated glassware shall not be picked up directly with the hands. It shall be cleaned up using a mechanical means such as a brush and dustpan or tongs.

4.0 Hepatitis B Vaccination

- 4.1 Within 10 working days of placement, all employees assigned to tasks with potential occupational exposure to bloodborne pathogens shall be offered the Hepatitis B vaccination at no cost to the employee, unless the employee has had a previous Hepatitis B vaccination series, antibody testing reveals the employee is immune, or the vaccine is contraindicated for medical reasons. Further, this vaccination series shall be made immediately available to employees who have an occupational exposure, whether as a result of their assigned tasks, or occurring from an incidental contact.
- 4.2 The local occupational medical facility used for routine medical surveillance will administer the vaccinations.
- 4.3 Employees who decline the Hepatitis B vaccine shall sign a copy of the waiver form located at the end of this Work Instruction. The signed waiver will be stored in the employee's medical record with the Occupational Health Manager. Employees may initially decline the vaccination, but may decide to take them at a later date, while still covered under this plan. The vaccinations will be made available to the employee at that time.
- 4.4 Employees choosing to take the vaccination series will sign a consent form at the occupational clinic prior to receiving the injections, and are advised to read the package insert regarding the efficacy, safety, method of administration, and benefits of the vaccine. Employees may also ask questions directly of the Medical Service Provider or local occupational physician. Employees are not required to participate in a prescreening program (to determine immunity) before receiving the vaccinations. If a routine booster of Hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) will be made available to affected employees.

5.0 Post-Exposure Incident Evaluation And Follow-Up

- 5.1 All occupational bloodborne pathogen exposures shall be reported to the HSE representative and Occupational Health Manager immediately after initial decontamination first aid is accomplished. Following the report of an exposure incident, a confidential medical evaluation with an occupational physician will be arranged as soon as possible, ideally no later than 1 to 2 hours after the incident has occurred. In some jurisdictions, depending on applicable workers' compensation law, employees may choose treatment from their personal physician. A copy of the OSHA Bloodborne Pathogen Standard, if applicable to the jurisdiction, will be provided if the physician does not have a copy. A written incident report shall be completed as soon as possible, fully describing the incident.
- 5.2 First aid protocol for treatment immediately after an exposure incident:
 - 5.2.1 Lacerations, punctures, and abrasions should be washed under cool running water for at least 5 minutes, allowing free bleeding. Cleanse area well with soap or iodine solution. Apply sterile dressing as needed. Give tetanus booster if indicated (7 to 10 years since last booster).

- 5.2.2 Ocular exposure requires irrigation of the eye with water or sterile normal saline solution for 15 minutes.
- 5.2.3 Mucous membrane exposure requires rinsing mouth with ½ strength 3 percent hydrogen peroxide for 30 seconds, four separate and consecutive times.
- 5.3 Confidential Medical Evaluation
 - 5.3.1 The treating occupational physician will receive documentation of the routes of exposure, the circumstances surrounding the incident, and identification of the source individual (the individual the employee was exposed to). The blood of the source individual will be tested if possible, and after consent is obtained. When legally permissible, results of the source individual's tests will be made available to the exposed employee, with the exposed employee informed about the applicable laws and regulations concerning the disclosure of the identity and infectivity of the source individual.
 - 5.3.2 Testing of the exposed employee's blood, if consented to (the employee may consent to baseline blood collection, but may request that the sample not be tested for HIV for up to 90 days, if at all), is recommended.
 - 5.3.3 Post-exposure medical treatment will be offered in accordance with the current recommendations of the U.S. Public Health Services. This may include, but is not limited to:
 - A series of HIV post-exposure blood tests
 - Hepatitis B vaccination and/or Hepatitis B immune globulin
 - HIV post-exposure prophylactic medications
 - Evaluation of acute febrile illnesses following exposure
 - Employee counseling concerning precautions to take during the period after the exposure incident, and information on signs and symptoms of potential illnesses.
- 5.4 Healthcare Professional's Written Opinion
 - 5.4.1 The Occupational Health Manager shall obtain and provide the employee with a copy of the evaluating physician's written opinion within 15 days of the completion of the medical evaluation. A copy will be maintained in the employee's confidential medical record. The written opinion shall be in accordance with the requirements of the OSHA Bloodborne Pathogens Standard indicating that the employee has been informed of any medical conditions resulting from exposure that require further evaluation or treatment. All other findings or diagnoses shall remain confidential and will not be included in the report.

6.0 Hazard Communication

- 6.1 Fluorescent red or orange-red warning labels bearing the universal biohazard symbol and the legend BIOHAZARD shall be firmly affixed to all containers (e.g., waste cans, sharps containers, and refrigerators) used for the storage or shipment of blood or other potentially infectious materials.
- 6.2 All employees designated to perform tasks involving occupational exposure shall receive bloodborne pathogens training at the time of initial assignment to the job. This training will be given during working hours and at no cost to employees. Refresher courses will be provided annually (within 1 year of previous training), and if new tasks or procedures are implemented. Material appropriate in content and vocabulary to education level, literacy, and language of the employees shall be used for all required training.
- 6.3 Training will include: making accessible a copy of the regulatory text of the standard and explanation of its contents, general discussion on bloodborne diseases and their transmission, exposure control plan, engineering and work practice controls, personal protective equipment, Hepatitis B vaccine, response to emergencies involving blood, how to handle exposure incidents, the post-exposure evaluation and follow-up program, signs/labels/color-coding, and question and answer time with the trainer.

7.0 Exposure Incident Investigation

- 7.1 The SH&E Manager will review the circumstances of any exposure incident to determine corrective actions. The incident report will include:
- 7.1.1 Engineering controls in use at the time
 - 7.1.2 Work practices followed
 - 7.1.3 A description of any equipment being used
 - 7.1.4 A description of the work being performed
 - 7.1.5 PPE that was used at the time of the incident
 - 7.1.6 Date, time, and location of the incident
 - 7.1.7 Employee's training.
- 7.2 An incident report shall be completed within four hours of the incident and entered into AECOM's on-line incident reporting system (e.g., IndustrySafe) in accordance with *S3AM-004-PR1 Incident Reporting, Notifications & Investigations*. A copy of this incident report will be forwarded to the Occupational Health Manager, who will evaluate what follow-up actions should be addressed, including if revisions need to be made to the Exposure Control Plan.

8.0 Recordkeeping

- 8.1 The Occupational Health Manager will be responsible for establishing and maintaining accurate, confidential workers' compensation medical records for each employee with occupational exposure for the duration of employment plus 30 years, in accordance with OSHA 29 CFR 1910.1020 – Access to Employee Exposure and Medical Records.
- 8.2 The SH&E Manager will be responsible for maintaining the bloodborne pathogens training class records for at least 3 years from the date of training. The records will include the date of the training class, a summary of the class contents, the names of the qualified instructors, and the names and job titles of personnel attending the training.
- 8.3 Employee medical records shall be made available to employees (or their designated representative) with written consent by the employee within 15 working days of request.
- 8.4 An exposure incident will be evaluated by the Occupational Health Manager and SH&E Manager to determine if the case meets OSHA's Recordkeeping Requirements (29 CFR 1904).

Americas

Hepatitis B Vaccination Declination

S3AM-111-FM1

I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis B virus (HBV) infection.

I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself; however, I decline Hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring Hepatitis B, a serious disease.

If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with the Hepatitis B vaccine, I can receive the vaccine series at no cost to me.

Name:

Date:

Witness:

Date:

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](#)

Americas

Temperature Thresholds

S3AM-112-ATT1

1.0 Purpose and Scope

- 1.1 The following Tables 1 and 2 give apparent temperatures (wind chill or equivalent chill temperature [ECT]) for various combinations of wind and air temperature, as well as guidelines to the danger of skin exposure.

Table 1. Wind Chill Chart (C)

Actual Temp (°C)	Wind Speed in km/hour									
	8	16	24	32	40	48	56	64	72	80
	Ambient Temperature (°C)									
0	-2	-8	-11	-14	-16	-17	-18	-19	-19	-20
-5	-7	-14	-18	-21	-23	-25	-26	-27	-28	-28
-10	-12	-20	-25	-28	-31	-33	-34	-35	-36	-36
-15	-18	-26	-32	-35	-38	-40	-42	-43	-43	-44
-20	-23	-32	-38	-43	-46	-48	-50	-51	-52	-52
-25	-28	-38	-45	-50	-53	-56	-57	-59	-59	-60
-30	-33	-45	-52	-57	-61	-63	-65	-67	-67	-68
-35	-39	-51	-59	-64	-68	-71	-73	-75	-75	-76
-40	-44	-57	-65	-71	-75	-79	-81	-83	-83	-84
-45	-49	-63	-72	-78	-83	-86	-89	-90	-91	-92
-50	-54	-69	-79	-85	-90	-94	-96	-98	-99	-100

Note: A. Little Danger: if less than one hour of exposure to dry skin.

B. Danger: Exposed flesh freezes within one minute.

C. Great Danger: Flesh may freeze within 30 seconds.

Source: *2014 Threshold Limit Values (TLV™) and Biological Exposure Indices (BEI™) booklet; published by ACGIH, Cincinnati, Ohio.

Table 2. Equivalent Chill Temperature Chart (F)

Estimated Wind Speed (mph)	Actual Temperature Reading (°F)									
	50	40	30	20	10	0	-10	-20	-30	-40
	Equivalent Chill Temperature (°F)									
Calm	50	40	30	20	10	0	-10	-20	-30	-20
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-24	-33	-46	-58	-70
15	36	22	9	-5	18	-32	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-75	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	35	-51	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
Wind speeds >40 mph have little additional effect	LITTLE DANGER				INCREASING DANGER			GREAT DANGER		
	Trenchfoot and immersion foot may occur at any point on this chart.									

- 1.2 How fast a person's body cools in cold weather depends on: air temperature, wind speed, heat of the sun, and work being done.
- 1.2.1 The following Table 3 provides guidelines for establishing periods of work to warming break periods based on ambient temperature and wind speed for workers wearing dry clothing.
- 1.2.2 Notes following the Table take into account additional factor such as physical exertion, whether workers are acclimatized, etc.

Table 3. Work-Warming Schedule Guidelines

Air Temp. (Sunny Sky) °F	No Noticeable Wind		5 mph Wind (8 km/h)		10 mph Wind (16 km/h)		15 mph Wind (24 km/h)		20 mph Wind (32 km/h)		25 mph Wind (40 km/h)		Air Temp. (Sunny Sky) °C		
	Max. Work Period	Breaks	Max. Work Period	Breaks	Max. Work Period	Breaks	Max. Work Period	Breaks	Max. Work Period	Breaks	Max. Work Period	Breaks			
above 5°	Normal Work Schedule		Normal Work Schedule		Normal Work Schedule		Normal Work Schedule		Normal Work Schedule		Normal Work Schedule		above -15°		
5° to -1°											100 min	2	-15° to -17°		
0° to -4°									100 min	2	75 min	2	-18° to -20°		
-5° to -9°									100 min	2	75 min	2	55 min	3	-21° to -22°
-10° to -14°							100 min	2	75 min	2	55 min	3	40 min	4	-23° to -25°
-15° to -19°							100 min	2	75 min	2	55 min	3	40 min	4	30 min
-20° to -24°	100 min	2	75 min	2	55 min	3	40 min	4	30 min	5	Cease Work		-29° to -31°		
-25° to -29°	75 min	2	55 min	3	40 min	4	30 min	5	Cease Work				-32° to -34°		
-30° to -34°	55 min	3	40 min	4	30 min	5	Cease Work						-35° to -37°		
-35° to -39°	40 min	4	30 min	5	Cease Work								-38° to -39°		
-40° to -44°	30 min	5	Cease Work										-40° to -42°		
-44° & below	Cease Work												Cease Work		-43° & below

Modified from ACGIH 2014 Threshold Limit Values for Chemical Substances and Physical Agents.

- Note 1: Schedule describes the maximum continuous duration of work and number of 10-15 minute breaks to be observed during any 4-hour work period and assumes that period will be followed by an extended warm-up period (e.g., lunch). Allowed breaks should be taken in a warm environment.
- Note 2: Schedule applies to moderate to heavy work performed by acclimated workers wearing appropriate layered clothing. For light to moderate work apply the schedule for conditions one step lower. For unacclimated workers apply the schedule for conditions two steps lower. These modifications are additive.
- Note 3: For work under 25%–50% overcast/clouds, apply the schedule for conditions one step lower. For work at night or under greater than 50% overcast/clouds, apply the schedule for conditions two steps lower. These modifications are additive with any applicable modifications from Note 2.

Note 4: For wind speeds in excess of 25 mph (40 km/h), cease all nonemergency work when temperatures fall below 5°F (-21°C).

Note 5: When the work involves riding on an unshielded vehicle or some other activity that generates wind, the number of breaks should be increases appropriately.

Note 6: If effective protection against the wind can be provided by shields or screens, work modifications or measures, then the work warm-up schedule for “No Noticeable Wind” would apply.

Note 7: If reliable weather reports are not available, use the following as a guide to estimate wind velocity:

- A 5 mph (8 km/h) wind will move a light flag
- A 10 mph (16 km/h) wind will fully extend the flag
- A 15 mph (24 km/h) wind will raise a newspaper sheet
- A 20 mph (32 km/h) wind will produce blowing and drifting snow.

Symptoms & Treatment

S3AM-112-ATT2

1.0 Cold Stress-related Illnesses

1.1 Frostbite

- 1.1.1 Frostbite is a localized cold injury characterized by freezing of the tissues with ice crystal formation. There are several degrees of damage. Frostbite can be categorized into:
- **Frost Nip or Initial Frostbite:** (1st degree frostbite) Characterized by blanching or whitening of skin.
 - **Superficial Frostbite:** (2nd degree frostbite) Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient. Blistering and peeling of the frozen skin will follow exposure.
 - **Deep Frostbite:** (3rd degree frostbite) Tissues are cold, pale, and solid; extremely serious injury with possible amputation of affected area.
- 1.1.2 Frostbite injury is almost always limited to the upper and lower extremities (finger and toes) or to such appendages as the ears, nose or cheeks.
- 1.1.3 Conditions conducive to frostbite include sub-zero temperatures, hypothermia, dehydration, obstruction of the blood supply to the extremities (by constricting clothing, especially on the feet or at the wrists or ankles), contact with cold metal, contact with organic liquids (such as gasoline or solvents that have been left outdoors in sub-zero temperatures), use of substances that cause vasoconstriction (such as smoking tobacco), or other injury or shock.
- 1.1.4 Frostbite can occur without hypothermia when the extremities do not receive sufficient heat. Frostbite occurs when there is freezing of the fluids around the cells of the affected tissues.
- 1.1.5 Contact by the skin with tools or other metal objects below 20°F (-7°C) may result in contact frostbite.
- 1.1.6 The first symptom of frostbite is an uncomfortable sensation of coldness and pain, followed by numbness. There may be tingling, stinging, or cramping. Ongoing symptoms of frostbite include:
- Sudden and complete cessation of cold or discomfort in affected fingers or toes, often followed by a pleasant feeling of warmth;
 - Subsequently the only symptom may be the absence of any sensation in the frozen part;
 - Paleness in the affected tissues;
 - Firm or hard tissues; and
 - Purple tissue, if a large area, such as an entire hand or foot, is frostbitten.
- 1.1.7 If exposure occurs in temperatures that are below freezing (32°F or below), frostbite or trench foot (immersion foot) may accompany or complicate the symptoms of hypothermia. Frostbite is the freezing of living tissues with a resultant breakdown of cell structure. Symptoms due to frostbite may include, but is not limited to:
- Superficial redness of the skin;
 - Slight numbness;
 - Blisters;
 - Obstruction of blood flow (ischemia);
 - Blood clots (thrombosis); and
 - Skin discoloration due to insufficient oxygen in the blood (cyanosis).

- 1.1.8 Frostbite may occur if the skin comes into contact with objects with a surface temperature below freezing, such as metal tool handles. Trench foot is caused by continuous exposure to cold combined with persistent dampness or immersion in water. Injuries in this case include permanent tissue damage due to oxygen deficiency, damage to capillary walls, severe pain, blistering, tissue death, and ulceration.
- 1.1.9 Additionally, cold exposures may either induce or intensify vascular abnormalities. These include chilblain (a swelling or sore), Raynaud's disease, acrocyanosis (blueness of hands and feet) and thromboangiitis (inflammation of the innermost walls of blood vessels with accompanying clot formation). Workers suffering from these ailments should take particular precautions to avoid chilling.

1.2 Hypothermia

- 1.2.1 Hypothermia is a lower than normal body temperature that occurs when outer cold cools the body faster than the body can produce heat to stay warm. When this situation first occurs, blood vessels in the skin constrict in an attempt to conserve vital internal heat. Hands and feet are the first affected.
- If the body continues to lose heat, involuntary shivers begin. This is the body's way of attempting to produce more heat, and it is usually the first real warning sign of hypothermia.
 - Further heat loss produces speech difficulty, confusion, loss of manual dexterity, collapse, and finally death.
- 1.2.2 Hypothermia can be caused by exposure to wind, cold, and/or moisture. The combination of wind, cold, and moisture can be deadly. Wet clothes or immersion in cold water greatly increases the hypothermia risk. The progressive clinical presentation of hypothermia is described in the table below.

Condition	Core Body Temp.	Signs/Symptoms	Treatment
Mild Hypothermia	99 – 97 F 37 – 36 C	Normal, shivering may begin	Seek dry shelter; replace wet clothing, insulate whole body and head, avoid sweating, use external warmth (bath, fire) only if core above 95 degrees F, give warm sweet drinks and food.
	97 – 95 F 36 – 35 C	Cold sensation, goose bumps, unable to perform complex tasks with hands, shiver can be mild to severe, hands numb.	
Moderate Hypothermia	95 – 93 F 35 – 34 C	Intense shivering, muscle in-coordination becomes apparent, movements slow and labored, stumbling pace, mild confusion may appear alert.	Avoid exercise and external warmth, gently rest; give warm sweet drinks and calories, internal warming via warm moist air, monitor pulse and breathing.
	93 – 90 F 34 – 32 C	Violent shivering persist, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, signs of depression, withdrawn.	
Severe Hypothermia	90 – 86 F 32 – 30 C	Shivering stops, exposed skin blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness.	Medical emergency, give nothing by mouth, wrap in an insulated blanket, avoid rapid rewarming, transfer to hospital immediately.
	86 – 82 F 30 – 28 C	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.	
	82 – 78 F 28 – 25.5 C	Unconscious, heart beat and respiration erratic, pulse may not be palpable.	
	78 – 75 F 25.5 – 24 C	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.	

- 1.2.3 Early warning signs of hypothermia:
 - Feeling of being cold and tired;
 - Heavier breathing and increased pulse rate;
 - Tendency to keep moving (e.g., stamping feet, rubbing hands, continued walking/pacing);
 - Goose bumps, holding arms tightly wrapped around the body, hunching of shoulders, and
 - Shivering.
- 1.2.4 Hypothermia damages both the body's internal temperature mechanisms (hypothalamus) and the peripheral mechanisms to prevent heat loss (vasoconstriction and perspiration.) These effects may last up to three years after the initial hypothermia episode. Symptoms of hypothermia may include, but are not limited to:
 - Pain in the extremities;
 - Severe shivering and numbness;
 - Low core body temperature;
 - Drowsiness and muscular weakness;
 - Apathy;
 - Mental confusion;
 - Loss of consciousness;
 - Shock, and
 - Decreasing pulse and breathing rate.

2.0 Recommended Treatment for Cold Stress-related Illnesses

2.1 Frostbite

- 2.1.1 Wrap the victim in woollen blanket and keep dry until he or she can be brought inside.
- 2.1.2 Remove the victim from the cold environment.
- 2.1.3 Do not rub, chafe, or manipulate frozen parts.
- 2.1.4 Place the victim in warm water (102°F to 105°F) and make sure the water remains warm. Test the water by pouring it on the inner surface of your forearm. Never thaw affected body parts if the victim has to go back out into the cold; refreezing can cause significant tissue damage.
- 2.1.5 Do not use hot water bottles or a heat lamp, and do not place the victim near a hot stove.
- 2.1.6 Do not allow the victim to walk if his or her feet are affected.
- 2.1.7 Have the victim gently exercise the affected parts once they are thawed.
- 2.1.8 Seek immediate medical attention for thawing of serious frostbite.

2.2 Hypothermia

- 2.2.1 Bring the victim into a warm room or shelter as quickly as possible.
- 2.2.2 Give artificial respiration and stop any bleeding, if necessary.
- 2.2.3 If the victim cannot be moved (spinal injury, etc.), carefully place newspapers, blankets, or some other insulation between the victim and the ground.
- 2.2.4 Remove all wet clothing.
- 2.2.5 Provide an external heat source, because the body cannot generate its own heat. Wrap the victim in prewarmed blankets, place him or her in the liner of a portable hypothermia treatment unit, put the torso (not the extremities) into a tub of warm water, or use body-to-body contact to rewarm the body core. These measures will slowly reopen the peripheral circulation, minimizing the possibility

of after-shock or after-drop (the flowing of cooled, stagnated blood from the limbs to the heart), which may cause ventricular fibrillation, cardiac arrest, or death.

- 2.2.6 Do not allow the victim to sleep.
- 2.2.7 Give warm, sweet drinks. Do not give alcohol or pain relievers.
- 2.2.8 Keep the victim still. Do not try to walk.
- 2.2.9 Do not rub numb skin.
- 2.2.10 Get medical attention as soon as possible.

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 Temperature Thresholds*.
- 4.2.3 Clothing corrections shall be applied in accordance with the tables provided in *S3AM-113-ATT1 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 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 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 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 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 risks need to be planned using the SH&E Plan 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 Temperature Threshold*.

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 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 Anyone exhibiting symptoms of heat stroke (red dry skin, or unconsciousness) 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.).

4.5.4 Severe heat stress (heat stroke) is a life-threatening condition that shall be treated by a competent medical authority.

4.6 Prevention

4.6.1 Requirements for working in extreme heat may be triggered by a 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 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 Safe Work 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 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 Replacement fluids 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 will 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 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 Temperature Thresholds](#)
- 6.2 [S3AM-113-ATT2 Symptoms & Treatment](#)
- 6.3 [S3AM-113-ATT3 Dehydration Chart](#)
- 6.4 [S3AM-113-FM1 Heat Stress Monitoring Log](#)

Heat Stress – Temperature Thresholds

S3AM-113-ATT1

1.0 Work-Rest Schedule

The prevention of heat stress is best performed through Supervisor observation of Employees and routine heat stress awareness training activities. However, it is also necessary to implement a work routine that incorporates adequate rest periods to allow Employees to remove protective clothing, drink fluids (vital when extreme sweating is occurring), rest and recover. The frequency and length of work breaks shall be determined by the Supervisor based upon the ambient temperature, amount of sunshine, humidity, the amount of physical labor being performed, the physical condition of the Employees (e.g., acclimated/not), and protective clothing being used.

1.1 Establishing a Work-Rest Schedule:

1.1.1 AECOM permits the use of either of two techniques to initially determine an appropriate daily work-rest schedule. These methods are:

- Wet Bulb Globe Thermometer (WBGT) Method: This method is preferred if a WBGT meter is available.
- Adjusted Temperature Method: This method should be used only if WBGT data is not available.

1.1.2 Either procedure will provide the Supervisor with a recommended routine; however, adjustments to this routine may be required to accommodate the specific daily conditions at the work site.

1.2 WBGT Work-Rest Schedule Guidelines:

1.2.1 If the measured WBGT is less than the action limit value, there is little risk of excessive exposure to heat stress, and work can continue.

- Continue to monitor ambient conditions with the WBGT. However, if there are reports of the symptoms of heat-related disorders, then the analysis of little risk should be reconsidered.
- If the measured WBGT is greater than the values in the following two tables, institute heat stress controls, including the associated work-rest cycle, and perform physiological monitoring as described in *S3AM-113-PR1 Heat Stress*.
- Because of the physiological strain associated with very heavy work among less fit workers regardless of WBGT, values are not provided in Table 1 or 2 for continuous work or 75% work – 25% rest regimen. Physiological monitoring should always be implemented under these conditions.

1.2.2 Table 1, the Non-CPC Activities WBGT Chart, is intended for use where personnel are not utilizing Chemical Protective Clothing (CPC). Where workers are required to utilize CPC, Table 2, the CPC Activities WBGT Chart, will be used.

1.2.3 WBGT readings are compared directly with the values of the applicable WBGT Chart for the applicable work rate (where light work corresponds to minimal physical activity besides standing/watching; very heavy work corresponds to significant, continuous physical labor) to determine the work-rest frequency.

Table 1. Non-CPC Activities WBGT Chart

Work-Rest Regimen	WBGT			
	Light Work	Moderate Work	Heavy Work	Very Heavy Work
Continuous Work	85°F (29.4°C)	81°F (27.2°C)	78°F (25.6°C)	
75% Work – 25% Rest	86°F (30°C)	83°F (28.3°C)	81°F (27.2°C)	
50% Work – 50% Rest	88°F (31.1°C)	85°F (29.4°C)	83°F (28.3°C)	81°F (27.2°C)
25% Work – 75% Rest	90°F (32.2°C)	87°F (30.6°C)	86°F (30°C)	85°F (29.4°C)

Modified from ACGIH's 2014 *Threshold Limit Values for Chemical Substances and Physical Agents*, for acclimatized workers.

Table 2. CPC Activities WBGT Chart

Work-Rest Regimen	WBGT			
	Light Work	Moderate Work	Heavy Work	Very Heavy Work
Continuous Work	74°F (23.3°C)	70°F (21.1°C)	67°F (19.4°C)	
75% Work – 25% Rest	75°F (23.9°C)	72°F (22.2°C)	70°F (21.1°C)	
50% Work – 50% Rest	77°F (25°C)	74°F (23.3°C)	72°F (22.2°C)	70°F (21.1°C)
25% Work – 75% Rest	79°F (26.1°C)	76°F (24.4°C)	75°F (23.9°C)	74°F (23.3°C)

Modified from ACGIH's 2014 *Threshold Limit Values for Chemical Substances and Physical Agents*, for acclimatized workers.

1.3 Humidex Based Work-Rest Schedule Guidelines

1.3.1 The Humidex method is a simplified way of protecting workers from heat stress. It is an equivalent scale intended to express the combined effects of warm temperatures and humidity. Humidex is used as a measure of perceived heat that results from the combined effect of excessive humidity and high temperature.

1.3.2 This method requires only a local air temperature and relative humidity value. Monitoring shall continue throughout the day for changing conditions. Identify a representative location where measurements can be taken. Measurements should be recorded at least hourly when ambient temperatures and 90°F (32°C) for personnel wearing normal permeable work clothes.

- Step 1: On the Humidex table below, look up the temperature on the left (Celsius is located below RH>) and the relative humidity (RH) on the top. Determine the Humidex value.

F	RH>	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%
108	42													55	52	50	48	46
106	41												55	53	51	48	46	44
104	40											55	53	51	49	47	45	43
102	39										55	53	51	49	47	45	43	41
100	38	Step 1 - Determine HUMIDEX VALUE								54	53	51	49	47	45	43	42	40
99	37								54	52	51	49	47	45	44	42	40	38
97	36					57	55	53	52	50	49	47	45	44	42	40	39	37
95	35				56	54	53	51	50	48	47	45	43	42	40	39	37	36
93	34		56	55	53	52	51	49	48	46	45	43	42	40	39	37	36	34
91	33	55	54	53	51	50	48	47	46	44	43	41	40	39	37	36	34	33
90	32	53	51	50	49	48	46	45	44	42	41	40	38	37	36	34	33	32
88	31	50	49	48	47	45	44	43	42	40	39	38	37	35	34	33	32	30
86	30	48	47	46	44	43	42	41	40	39	37	36	35	34	33	31	30	29
84	29	46	45	43	42	41	40	39	38	37	36	35	33	32	31	30	29	28
82	28	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27
81	27	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25
79	26	39	38	37	36	35	34	33	33	32	31	30	29	28	27	26	25	24
77	25	37	36	35	34	33	33	32	31	30	29	28	27	26	26	25	24	23

- **Step 2:** Place the Humidex value into the Heat Index Adjustment Table below. Determine the applicable adjustments based on the given work or task.

Heat Index Adjustment Table

Step 2 - Risk Factor Adjustment		
Write in value	What is the HUMIDEX value from the table in Step 1?	
Radiant Heat		Adjustment
	Working in full-sun	Add 2
	Working in ½ or partial sun or weak radiant heat source	Add 1
	Working near very hot equipment surfaces or processes	Add 2
Clothing: Pick One Only		
	Short/long sleeve shirt and pants – no overalls	None
	Overalls (e.g., Nomex suit)	Add 3
	Double layer overalls	Add 5
Stop	Impermeable clothing	Perform Physiological Monitoring
Acclimatization		
	Have been working at least 5 of last 7 days in heat stress conditions.	Subtract 4
Work Load & Miscellaneous Factors		
	Light Work (Standing, slow walking)	Subtract 2
	Medium Work (Walking about with moderate lifting or pushing)	None
	Heavy Work (Shoveling dry sand, carrying 50 lbs)	Add 2
	Very Heavy Work (Shoveling wet sand)	Add 3
TOTAL – Compare to Heat Index Response Plan		

- **Step 3:** Compare adjusted Heat Index Total to the Heat Index Response Plan table to obtain guidance for work/rest.

Heat Index Response Plan*

TOTAL NUMBER	Final Step 3 - HEAT INDEX Response
30-33	alert & information & water
34-37	warning & increase water
38-39	75% work - 25% rest & monitor for signs of heat stress
40-41	50% work - 50% rest & monitor for signs of heat stress
42-44	25% work - 75% rest & monitor for signs of heat stress
45+	Perform Physiological Monitoring

* Percent work and rest/recovery are on a per hour basis. Adjustments and subsequent work/rest cycle recommendations are rough guidelines only. No heat stress prediction scheme can replace monitoring of symptoms or a health care practitioners advice in the case of individuals with special medical conditions or predisposing circumstances for heat related illness. Always pay attention to the way workers are feeling. Recuperate if fatigued, nauseated, dizzy or thirsty,

1.4 Adjusted Temperature Work-Rest Schedule Guidelines:

This method can be utilized where WBGT data is not available, and requires only that the ambient temperature be known. Adjustment factors are applied to the ambient temperature to account for departures from ideal conditions (sunny conditions, light winds, moderate humidity and a fully acclimated work force). The adjustments will be made by addition or subtraction to the ambient temperature reading, or changes in table position, as indicated in Table 3. Adjustments are independent and cumulative, all applicable adjustments should be applied. The result is the Adjusted Temperature, which can be compared with the values in Table 4 for the applicable work rate (where light work corresponds to minimal physical activity besides standing/watching; very heavy work corresponds to significant, continuous physical labor) to determine the work-rest schedule.

Table 3. Temperature Adjustment Factors

Time of Day	
Before daily temperature peak ¹	+2°F (+1.11°C)
10 am – 2 pm (peak sunshine)	+2°F (+1.11°C)
Sunshine	
No clouds	+1°F (+0.56°C)
Partly Cloudy (3/8 – 5/8 cloud cover)	-3°F (-1.67°C)
Mostly Cloudy (5/8 – 7/8 cloud cover)	-5°F (-2.78°C)
Cloudy (>7/8 cloud cover)	-7°F (-3.89°C)
Indoor or nighttime work	-7°F (-3.89°C)
Wind (<i>ignore if indoors or wearing CPC</i>)	
Gusts greater than 5 miles per hour at least once per minute	-1°F (-0.56°C)
Gusts greater than 10 miles per hour at least once per minute	+2°F (+1.11°C)
Sustained greater than 5 miles per hour	-3°F (-1.67°C)
Sustained greater than 10 miles per hour	-5°F (-2.78°C)
Humidity (<i>ignore if wearing CPC</i>)	
Relative Humidity greater than 90%	+5°F (+2.78°C)
Relative Humidity greater than 80%	+2°F (+1.11°C)
Relative Humidity less than 50%	-4°F (-2.23°C)
Chemical Protective Clothing (CPC)	
Modified Level D (coveralls, no respirator)	+5°F (+2.78°C)
Level C (coveralls w/o hood, full-face respirator)	+8°F (+4.45°C)
Level C (coveralls with hood, full-face respirator)	+10°F (+5°C)
Level B with airline system (hooded chemical resistant clothing)	+9°F (+5.56°C)
Level B with SCBA (hooded chemical resistant clothing)	+9°F (+5.56°C) and right one column ²
Level A (totally encapsulating chemical protective suit)	+14°F (+7.78°C) and right one column
Other	Specified in the HASP
Miscellaneous	
Unacclimated work force	+5°F (+2.78°C)
Partially acclimated work force	+2°F (+1.11°C)
Working in shade	-3°F (-1.67°C)
Breaks taken in air conditioned space	-3°F (-1.67°C)

**For complete descriptions of Level A through D Protective Clothing refer to
United States 29 CFR 1910.120 Appendix B**

¹ This adjustment accounts for temperature rise during the day. If the temperature has already reached its daytime peak it can be ignored.

² Locate the proper column based on work rate, then move one column to the right (next higher work rate) before locating the corresponding adjusted temperature.

Table 4. Work-Rest Schedule Based on Adjusted Temperature

Work-Rest Regimen	Adjusted Temperature			
	Light Work	Moderate Work	Heavy Work	Very Heavy Work
No specified requirements	< 80°F (26.67°C)	< 75 (23.88°C)	< 70 (21.11°C)	< 65 (18.33°C)
15 minute break every 90 minutes of work	80°F – 90°F (26.67°C) - (32.22°C)	75 – 85 (23.88°C) - (29.44°C)	70 – 80 (21.11°C) - (26.67°C)	65 – 75 (18.33°C) - (23.88°C)
15 minute break every 60 minutes of work	>90 – 100 (32.22°C) - (37.77°C)	> 85 – 95 (29.44°C) - (35°C)	>80 – 85 (26.67°C) - (29.44°C)	>75 – 80 (23.88°C) - (26.67°C)
15 minute break every 45 minutes of work	>100 – 110 (37.77°C) - (43.33°C)	>95 – 100 (35°C) - (37.77°C)	>85 – 90 (29.44°C) - (32.22°C)	>80 – 85 (26.67°C) - (29.44°C)
15 minute break every 30 minutes of work	>110 – 115 (43.33°C) - (46.11°C)	>100 – 105 (37.77°C) - (40.55°C)	>90 – 95 (32.22°C) - (35°C)	>85 – 90 (29.44°C) - (32.22°C)
15 minute break every 15 minutes of work	>115 – 120 (46.11°C) - (48.88°C)	>105 – 110 (40.55°C) - (43.33°C)	>95 -100 (35°C) - (37.77°C)	>90 – 95 (32.22°C) - (35°C)
Stop Work	>120 (48.88°C)	>110 (43.33°C)	>100 (37.77°C)	>95 (35°C)

Note: Time spent performing decontamination or donning/doffing CPC should not be included in calculating work or break time lengths.

Work-rest schedules and water provisioning may be documented using logs such as *S3AM-113-FM2 Daily Heat Illness Prevention Log*.

Heat Stress – Symptoms & Treatment

S3AM-113-ATT2

1.0 Heat Illness Symptoms

1.1 The following are four stages of heat-related illness:

1.1.1 Heat Rash

Heat rash (prickly heat) may result from continuous exposure to heat or humid air. It appears as red papules (elevated skin lesion), usually in areas where the clothing is restrictive, and gives rise to a prickly sensation, particularly as sweating increases. It occurs in skin that is persistently wetted by un-evaporated sweat. The papules may become infected unless treated.

1.1.2 Heat Cramps

Heat cramps are painful muscle cramps caused by heavy sweating and inadequate electrolyte replacement due to over-exertion in extreme heat. Symptoms include:

- Muscle spasms; and
- Pain in the hands, feet, and abdomen.

1.1.3 Heat Exhaustion

Heat exhaustion is the next stage. Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Symptoms include:

- Cool, moist, pale, flushed or red skin;
- Heavy sweating;
- Headache;
- Nausea or vomiting;
- Dizziness;
- Exhaustion;
- Mood changes (irritable, or confused/can't think straight), and
- Fainting

The key here is that the victim is still sweating, so the cooling system is still working; it's just under severe stress. The body core temperature may be elevated, but not higher than 104°F (40°C). It is important to recognize and treat these symptoms as soon as possible, as the transition from heat exhaustion to the very hazardous heat stroke can be quite rapid.

1.1.4 Heat Stroke

Heat exhaustion can sometimes lead to heat stroke, the most serious form of heat stress, which can be fatal and requires emergency treatment. Heat stroke happens when body temperature regulation fails and body temperature continues to rise to critical levels, often to 105 degrees Fahrenheit (°F) (40.5 degrees Celsius [° C]) or higher. Immediate action must be taken to cool the body before serious injury and death occurs. Competent medical help must be obtained. Symptoms of heat stroke:

- Vomiting;
- Decreased alertness level or complete loss of consciousness;
- Slurred speech;
- High body temperature (sometimes as high as 105°F [40.5°C]);
- Red, hot, usually dry skin;
- Lack of or reduced perspiration;
- Skin may still be moist or the victim may stop sweating and the skin may be red, hot, and dry;

- Rapid, weak pulse or rapid, strong pulse;
- Rapid, shallow breathing;
- Nausea;
- Dizziness and confusion; and
- Coma.

2.0 Recommended Treatment for Heat Stress-related Illnesses

2.1 Heat Rash

2.1.1 Treatment for heat rash includes:

- Shower after work, dry off thoroughly, and put on clean, dry underwear and clothes;
- Try to stay in a cool place after work;
- If, in spite of this, you develop heat rash, contact WorkCare.

2.2 Heat Cramps

2.2.1 Treatment for heat cramps includes:

- Gently stretch the cramped muscle and hold the stretch for about 20 seconds, then gently massage the muscle. Repeat these steps if necessary;
- Take more frequent breaks and drink more water;
- Move victim to a cool place;
- Administer drinks of cool water;
- Apply manual pressure to cramped muscles;
- Once spasms disappear, you may return to work;
- Seek medical attention if symptoms are not alleviated or if more serious problems are indicated.

2.3 Heat Exhaustion

2.3.1 Treatment of heat exhaustion includes:

- Get out of the sun to a cool location and drink cool water, a little at a time;
- Remove or loosen tight clothing and elevate the feet;
- If you are nauseated or dizzy, lie down;
- Move the victim to a cool place, administer drinks of cool water and fan to cool;
- Seek medical attention immediately.

2.4 Heat Stroke

2.4.1 Treatment of heat stroke, or if a person's temperature exceeds 102°F (38.9 °C) includes:

- Call for immediate medical help and then try to lower the temperature as quickly as possible:
 - Apply cool (not cold) water the person's whole body, then fan the person;
 - Wrap in wet sheet;
 - If available, use cold packs under arms, neck, and ankles;
 - Body temperature is measured frequently, often constantly. To avoid overcooling, cooling is stopped when the body temperature is reduced to about 102°F (38°C);
- Do not give aspirin or acetaminophen to reduce the temperature;
- Treat as a true medical emergency. Seek medical help immediately;
- Protect from injury during convulsion;
- Ensure that the person's airway is open;
- Transfer to a medical facility immediately.

GUIDANCE TOOL FOR MONITORING DEHYDRATION

URINE COLORATION CHART

1	2	3	4	5	6
Target		Dehydration		Severe Dehydration	
CONTINUE DRINKING WATER TO MAINTAIN CURRENT HYDRATION LEVELS.		INCREASE WATER CONSUMPTION TO IMPROVE HYDRATION LEVELS, INCREASE BREAKS FREQUENCY, TAKE BREAKS IN A COOL SHADED AREA.		STOP WORK! FIND A SHADED AREA AND BEGIN TO DRINK COOL TO ROOM TEMPERATURE WATER SLOWLY AND STEADILY.	

PREVENTING DEHYDRATION

- Start hydrating at least 3 days prior to working in high heat conditions
- Always bring enough water to maintain hydration. CalOSHA requires consuming 1 quart per hour of your work shift - more may be needed

Note: This information is guidance only and should not supersede the recommendation or instruction of a personal physician or medical professional. Contact your physician or medical professional if you have a personal medical condition or take medication for a personal condition which may be adversely affected by dehydration. Urine color can be affected by medications, vitamins and or other personal health conditions.

Americas

Heat Stress Monitoring Log

S3AM-113-FM1

The purpose of this form is to monitor employees for heat illness when applicable. It is the responsibility of the Foreman or Supervisor-in-Charge to ensure that each person completes the required information.

Project Name:			Foreman/Supervisor:						Work/Rest Schedule¹: IN (min) OUT (min)							
Date:	Water Provided¹		Acclimated²		Initial Vitals³	Vital Signs and Time In/Out³			Celcius <input type="checkbox"/> / Farenheit <input type="checkbox"/> (select one)							
Employee Name	Yes	No	Yes	No	Vitals	In (P ₁)	Out (P ₁)	Vitals	In (P ₁)	Out (P ₁)	Vitals	In (P ₁)	Out (P ₁)	Vitals	In (P ₁)	Out (P ₁)
					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		
					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		
					P			P			P			P		
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					Temp			Temp			Temp			Temp		

- Each Employee should be provided a sufficient amount of water or sports drink before entering the hot zone. Drinks such as coffee and cola should be discouraged.
- An Employee is "acclimated" if he/she has worked in a hot environment for at least 5 - 7 consecutive days. If an Employee is acclimated, check "Yes." If an Employee is not acclimated, check "No" and reduce the "Min In" by 50 percent for that Employee until the 5 - 7 -day period is reached.
- "Vitals" refers to Employee vital signs (e.g., pulse [P], blood pressure [BP], body temperature [Temp], etc.). Initial vitals must be taken and recorded before the start of work and at each break period, or as specified in the Heat Stress Exposure Control Plan.

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

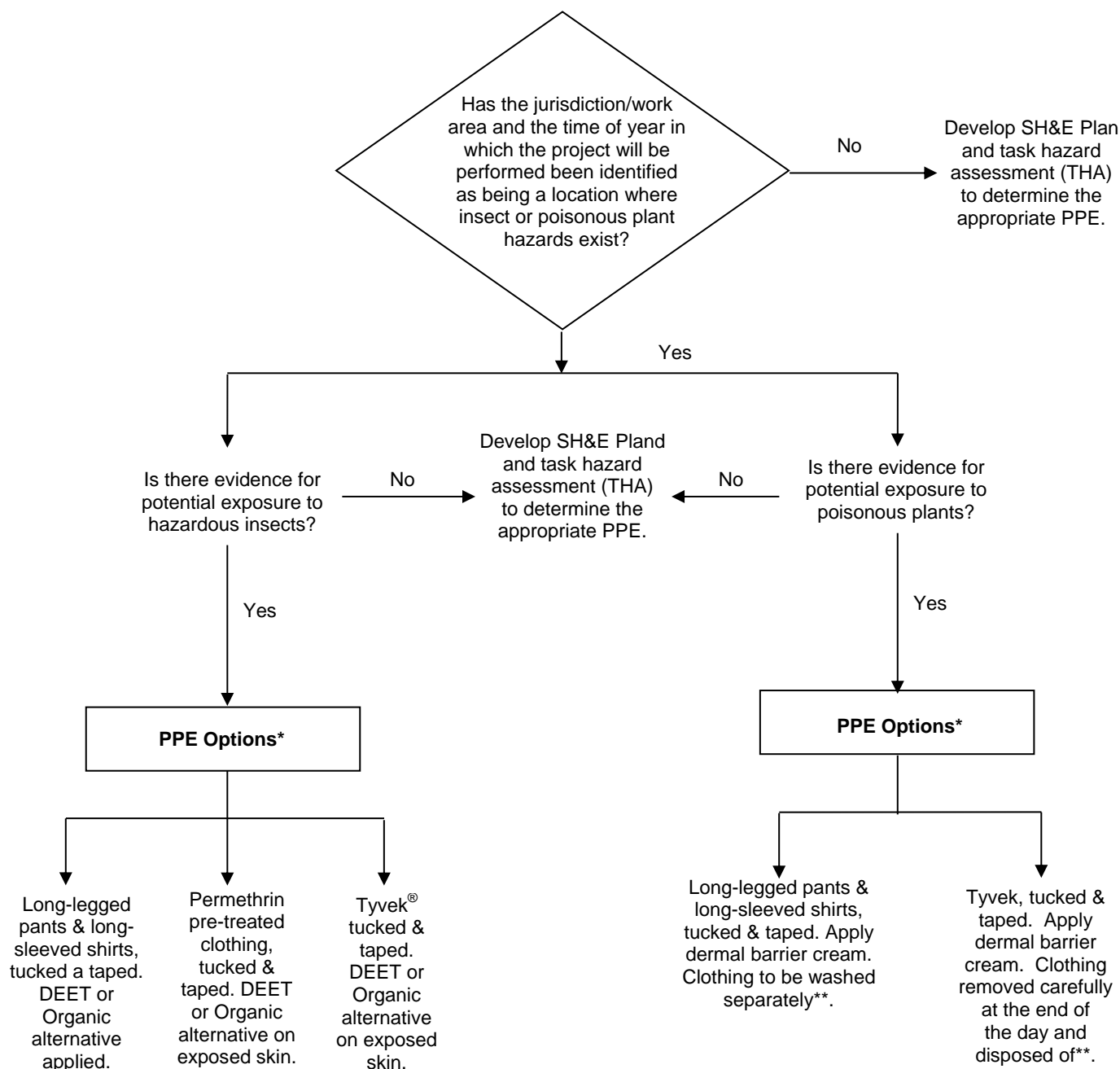
None

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](#)

Biological Hazard Assessment Decision Flowchart

S3AM-313-ATT1



* indicates that when both insect and poisonous plant hazards are recognized hazards at a project site, the most conservative combination of the available PPE choices will be selected. Include the selected PPE option in the respective SH&E Plan and THA.

** indicates that clothing that has been known or suspected to have come in contact with poisonous plants must be washed before it can be worn again. Similarly, Tyvek® that has been known or suspected to have come in contact with poisonous plants will be disposed of rather than reused during a subsequent day or project.

Americas

Ticks

S3AM-313-ATT2

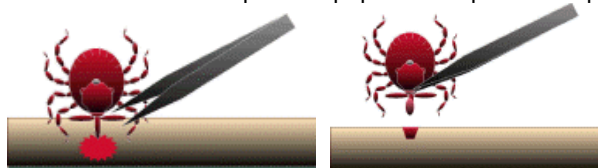
1.0 Background

- 1.1 The Public Health Agency of Canada and the Centers for Disease Control and Prevention work with States and Provinces, health authorities and other experts on research to define and monitor the occurrence of the ticks that carry bacterium that cause disease, including but not limited to:
 - 1.1.1 *Borrelia burgdorferi*, the bacterium that causes Lyme disease.
 - In the United States and Canada, the black-legged tick (*Ixodes scapularis*; often referred to as a deer tick) and the western black-legged tick (*Ixodes pacificus*) are the species known to transmit this disease-causing agent, as well as other less common agents.
 - 1.1.2 *Rickettsia rickettsia*, the bacterium that causes Rocky Mountain Spotted Fever.
 - In the United States and Canada, the American dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*Dermacentor andersoni*), and brown dog tick (*Rhipicephalus sanguineus*) are known to transmit this disease-causing agent.
 - 1.1.3 *Francisella tularensis*, the bacterium that causes Tularemia.
 - In the United States, these include the American dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*Dermacentor andersoni*), and Lone star tick (*Amblyomma americanum*).
 - 1.1.4 *Ehrlichiosis*, the general name to describe several bacterial diseases that affect animals and humans.
 - In the United States, these include the black-legged tick (*Ixodes scapularis*; often referred to as a deer tick) and the western black-legged tick (*Ixodes pacificus*), and Lone star tick (*Amblyomma americanum*).
- 1.2 Consult local health authorities to determine where tick populations are established or emerging. Locations where distribution may have previously been limited may show evidence of larger populations. Employees working in or adjacent to areas where there are established tick populations may have a greater chance of contact with ticks.
- 1.3 While there is a higher risk of coming in contact with infected ticks in areas where populations are established, there is also a low risk of tick-borne diseases being contracted almost anywhere in the Americas as migratory birds transport infected ticks over large geographic distances. Take precautions to reduce tick contact.
- 1.4 Lyme Disease
 - 1.4.1 The rate of infection of ticks with the bacterium that causes Lyme disease varies. Infection rates are typically higher in adult ticks compared to the other stages (nymphs and larvae).
 - 1.4.2 Despite the lower rates of infection, people are most likely to acquire Lyme disease from a nymph because this stage is so small and thus more likely to go unnoticed and feed for a sufficient amount of time for the Lyme disease bacterium to be transmitted (24-36 hours).
 - 1.4.3 Infection rates are often greater in tick populations that have been established for long periods of time compared to newly established ones.
 - 1.4.4 Lyme disease patients are most likely to have illness onset in April through November with onset peaking in June, July, or August and less likely to have illness onset from December through March

2.0 To Remove Attached Ticks



- 2.1 Use fine-tipped tweezers or notched tick extractor, and protect your fingers with a tissue, paper towel, or latex gloves (see figure). Persons should avoid removing ticks with bare hands.
- 2.2 Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. (If this happens, remove mouthparts with tweezers. Consult your health care provider if illness occurs.)
- 2.3 After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
- 2.4 Do not squeeze, crush, or puncture the body of the tick because its fluids may contain infectious organisms. Skin accidentally exposed to tick fluids can be disinfected with iodine scrub, rubbing alcohol, or water containing detergents.
- 2.5 Save the tick for identification in case you become ill. This may help your doctor make an accurate diagnosis of potential diseases by determining what type of tick it is. Place the tick in a sealable plastic bag and put it in your freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag.



3.0 Folklore Remedies Don't Work

- 3.1 Folklore remedies, such as the use of petroleum jelly or hot matches, do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva or regurgitate gut contents, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided.

4.0 Configuration of Clothing

- 4.1 Loose-cuff trousers must be tucked into socks, wrapped with duct tape (or equivalent) completely around the cuff of the sock up on to the surface of the pant leg to prevent entry of insects between the sock and pants, and preferably reverse-wrapped with "sticky" side out (see figure below).



Americas

Poisonous Spider Identification

S3AM-313-ATT3

Black Widow Spider

- Found in warm, dry parts of throughout the United States and extend into the southern edge of Canada.
- Prefer to spin their webs in dark, sheltered spots close to the ground
- Abdomen usually shows hourglass marking.
- The female is 1 to 1.5 inches (3-4 centimeters) in diameter.
- Have been found in well casings and flush-mount covers.
- Not aggressive, but more likely to bite if guarding eggs.
- Light, local swelling and reddening of the bite are early signs of a bite, followed by intense muscular pain, rigidity of the abdomen and legs, difficulty breathing, and nausea.
- If bitten, see physician as soon as possible.

**Brown Spiders (Recluse)**

- Central and South U.S., although in some other areas, as well.
- 0.25-to 0.5-inch (0.6 to 1.3 centimeters)-long body and the size of silver dollar.
- Hides in decaying wood, baseboards, ceilings, cracks, and undisturbed piles of material.
- Bite either may go unnoticed or may be followed by a severe localized reaction, including scabbing, necrosis of affected tissue, and very slow healing.
- If bitten, see physician as soon as possible.

**Hobo Spider**

- Primarily found in Washington, Oregon, Wyoming, Colorado, Utah, Montana and the Pacific Northwest United States.
- 0.4-to 0.5-inch (1.1 to 1.3 centimeters)-long body and the size of silver dollar.
- Because of its common features and color, it is easily confused with other spider such as Brown Recluse Spiders.
- They rarely climb vertical surfaces and are uncommon above basements or ground level.
- Bite is initially painless. After 24 hours, the bite develops into a blister and after 24-36 hours, the blister breaks open, leaving an open, oozing ulceration.
- If bitten, see physician as soon as possible.



Exercise care when collecting samples and avoid reaching into areas where visibility is limited. If bitten by a spider, attempt to identify the spider, notify a co-worker or someone who can help should the bite site become painful, discolored, or swollen. Stay calm and treat the area with ice or cold water. 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 any swelling or numbness beyond the site of the bite.

Mosquito-Borne Diseases

S3AM-313-ATT4

1.0 Background

- 1.1 Employees working outdoors in the Americas may be exposed to mosquitoes that may transmit illnesses, including Encephalitis and Dengue.
- 1.2 Dengue is transmitted by the bite of a mosquito infected with one of the four dengue virus serotypes. Dengue is endemic to South America.
 - 1.2.1 Dengue is a febrile illness that affects infants, young children and adults with symptoms appearing 3-14 days after the infective bite.
 - 1.2.2 Symptoms range from mild fever, to incapacitating high fever, with severe headache, pain behind the eyes, muscle and joint pain, and rash.
 - 1.2.3 Severe dengue (also known as dengue hemorrhagic fever) is characterized by fever, abdominal pain, persistent vomiting, bleeding and breathing difficulty and is potentially fatal.
- 1.3 West Nile encephalitis is an infection of the brain that is caused by a virus known as the West Nile virus.
 - 1.3.1 Most individuals infected with WNV remain asymptomatic. West Nile (WN) fever is typically a mild illness lasting 3 to 6 days.
 - 1.3.2 The main symptoms are sudden onset of fever with chills, rash, malaise, headache, backache, arthralgia, myalgia and eye pain. Other non-specific symptoms may include nausea, vomiting, anorexia, diarrhoea, rhinorrhoea, sore throat, and cough.
 - 1.3.3 The main route of infection is via the bite of a mosquito that has been infected by feeding on West Nile Virus infected birds.
- 1.4 Arboviral encephalitis is a virus that exists in various forms in global distribution. Numerous forms occur in the Americas, including the following four primary forms that can be transmitted by mosquitoes:
 - 1.4.1 Eastern equine encephalitis (EEE) – United States and Canada
 - 1.4.2 Western equine encephalitis (WEE) – United States
 - 1.4.3 St. Louis encephalitis (SLE) – United States and Canada
 - 1.4.4 La Crosse (LAC) encephalitis.all of which are transmitted by mosquitoes – United States
- 1.5 Mosquitoes are known to breed in standing water; therefore, when standing water is found at a job site, actions should be taken to drain the water. Typically, mosquitoes will fly only a quarter of a mile (400 meters) from their breeding location.
- 1.6 The local Public Health Department and Center for Disease Control and Prevention (CDC) should be consulted to determine what diseases transmitted by mosquitoes are present and exposure prevention recommendations.

Plants of Concern

S3AM-313-ATT5

1.0 Background

- 1.1 Poison ivy, oak and sumac (poisonous plants) pose a significant threat to AECOM employees due to the dermatitis that results from exposure to the oil on these plants, called urushiol.



Poison Oak

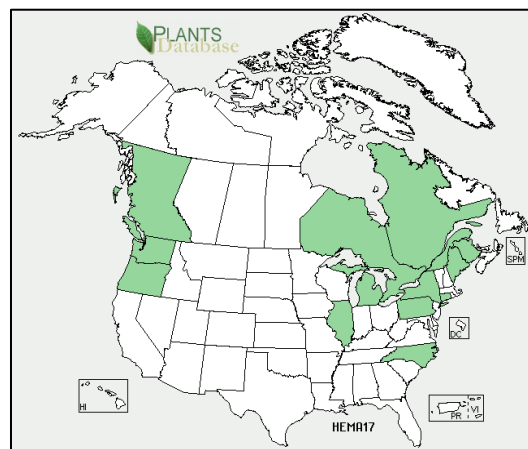
Poison Sumac

Poison Ivy

- 1.2 Exposure to urushiol produces a rash that can be irritating and cause the exposed employee to scratch the infected area, increasing susceptibility for an infection to result from the rash.
- 1.3 It should be noted that each time an employee is exposed to urushiol, it increases the severity of the reaction they will have in subsequent exposures.
- 1.4 Giant Hogweed is a phototoxic plant that causes skin irritation on contact with the sap and, when exposed to sun causes deep blisters.
- 1.5 Blisters from contact with Giant Hogweed can form black or purplish scars that can last for several years. Even a tiny amount of the sap in the eyes can cause temporary to permanent blindness.



Giant Hogweed



Giant Hogweed Distribution

Image obtained from
www.gclandscape.com

2.0 Treatment

- 2.1 In cases that involve severe rashes, medical treatment may be necessary to control the rash.
- 2.2 Employees that develop a rash as a result of exposure to poison ivy, oak or sumac should report the exposure immediately to their Supervisor, Project Manager and Region Safety, Health and Environment Manager.

Pacific Poison Oak Distribution



Image obtained from www.cdc.gov

Atlantic Poison Oak Distribution



Image obtained from www.cdc.gov

Poison Sumac Distribution



Image obtained from www.cdc.gov

Western Poison Ivy Distribution

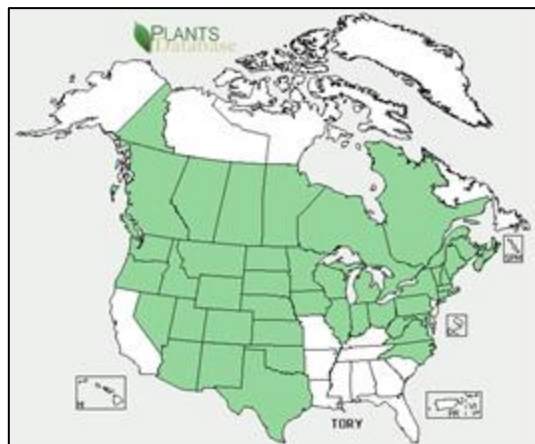


Image obtained from www.cdc.gov

Eastern Poison Ivy Distribution

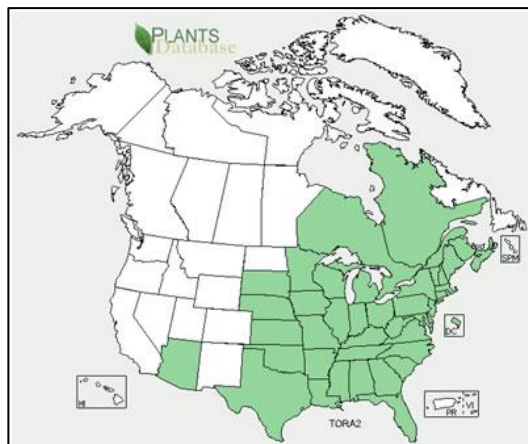


Image obtained from www.cdc.gov

Americas

Wild Parsnip Identification

S3AM-313-ATT6

1.0 Background

- 1.1 Wild parsnip (also known as poison parsnip) looks similar to a large carrot plant and is found in open places along roadsides and in waste places throughout the United States and Canada.
- 1.2 This plant produces a compound that causes severe blistering and discoloration after being exposed to sunlight—a condition known as photodermatitis. That is, when the skin comes in contact with this plant's juice and then is exposed to UV light, a severe burn develops.

2.0 Hazard

- 2.1 Everyone can get burned by wild parsnip. Unlike poison ivy, you don't need to be sensitized by a prior exposure. However, wild parsnip is only dangerous when the juice from broken leaves or stems gets on your skin—therefore, you can touch and brush against the undamaged plant without any danger.
- 2.2 If one gets some of the sap of hogweed (or meadow parsnip or cow parsnip) in contact with skin, it is critical that they stay out of the sun for 8 hours. If one needs to remove the plant they should be completely covered with overalls, gloves, hat and safety glasses.



Americas

Alligators

S3AM-313-ATT7

1.0 Hazard

- 1.1 Your chance of encountering an alligator is greatest during the animal's courtship and mating season, which takes place from March through September. This is when male alligators become most dominant and aggressive as they try to intimidate rival males and attract females by their show of power. Some males end up having to travel to find a mate. July through September is when mother alligators are guarding nests.
- 1.2 Mating season takes up much of the warmer months - a very popular time in the southeastern USA for outdoor activities - and alligators are solar-powered, so-to-speak. The warmth from the sun fires up their metabolism, giving them renewed energy; and renewed energy means great potential for conflict.

2.0 Encounter

- 2.1 The alligator is naturally wary of humans, and will flee quickly if you get too close to it, or it may utter a very audible and compelling warning hiss. In some cases, however, alligators may charge or attack. Here are some examples of such cases:
 - 2.1.1 An alligator that is accustomed to being fed by humans may not be so shy.
 - 2.1.2 An alligator that is surprised and alarmed by your approach may attack, thinking that it is being attacked itself.
 - 2.1.3 A mother alligator caring for her nest or for live babies. If you see alligator babies, or if you encounter a nest (usually a mound of vegetation mixed with mud), remove yourself to a safe distance, the mother alligator is sure to be close by. If you get close, the mother may sound a very audible and intimidating warning hiss. Such a nest may be difficult to identify for a non-expert, but it is likely the mother will issue you a warning.
 - 2.1.4 Alligator mothers are well-known to be practically fearless when defending their offspring, whether the little ones have hatched or not. A mother alligator was observed leaping, jaws agape, to attack a helicopter as it approached the nest area to land. The helicopter carried biologists studying alligator nests.
- 2.2 Also be careful near heavy vegetation in or near the water's edge. This is where an alligator likes to enjoy privacy and peace during the daylight hours. If you trudge through there and surprise it, the outcome may not be positive.
- 2.3 Generally, a good minimum distance to keep between you and an alligator or nest is 15 feet (4.6 meters).
- 2.4 When trying to get past an alligator, make sure not to walk between the alligator and the water, because if it's spooked, it's going to run to the water.
- 2.5 If an alligator does approach in a threatening manner, make as much noise and movement as possible. This should show the alligator that he has taken on more than he can handle and he'll back away.

**3.0 Alligator Charge**

- 3.1 The alligator is not a natural runner. Those short legs obviously don't serve it like a horse's legs do, and the alligator can actually tire out in a relatively short time. When it charges after a human or animal, it is either

trying to scare it away or seize it. It has a fast and furious burst of energy which serves it well for stealth hunting -- grabbing prey when it doesn't expect it. Furthermore, the reptile is opportunistic, which means, quite simply, it doesn't like to work very hard to get its food if it doesn't have to.

- 3.2 In the very rare event you are charged or chased by an alligator, move in as straight a line as possible away from it as fast as you reasonably can. In many cases, the vegetation features of the wild will serve to protect you by slowing the alligator down, like trees, bumps, bushes, etc. -- your comparatively long legs usually make it easier for you to maneuver through the trees and brush than an alligator's short legs do.
- 3.3 Most adult humans can outrun even a fast crocodilian, which has been clocked at a maximum of about 10 miles per hour (mph) (17 kilometers per hour [kph]), compared to a human speed of 15-17 mph (24-27 kph). But this doesn't matter much; an alligator will often give up the chase because it sees that the runner is moving away too quickly, and realizes that too much effort will be required to continue pursuit.
- 3.4 You may have heard somewhere that the zigzag run (running in a "z" pattern, side-to-side) is a good idea, but this is not only an unnecessary maneuver but probably a very unwise one. Here's why:
 - 3.4.1 Unless you're an Olympic athlete, running zigzag over natural topography increases your risk of tripping and falling over rocks, plants, roots, and the like. And it goes without saying that falling while being pursued by an alligator is not good.
 - 3.4.2 Furthermore, an alligator doesn't have the degree of stereoscopic vision we have. It actually has a small 'blind spot' directly in front of it. Hence, the alligator's vision is most effective in the 'sides' of its field of view. So, running zigzag not only slows your rate of distance from your pursuer, it may clearly indicate to the animal exactly where you are; even this point hardly matters since in many cases the alligator may keep its eyes shut while pursuing so as not to get them hit by twigs, grass stalks and branches in its path.
 - 3.4.3 Finally, an alligator bites very effectively in a side-swiping motion, so if you are trying to run zigzag and are slowed down by plants, rocks, or other obstacles, the backwards flying leg of a running human is an optimal target for side-swiping, chomping jaws (the operative word here is "side").
- 3.5 Simply put, when faced with an attack, move directly away from the alligator as quickly as possible, navigating the terrain as carefully as possible. The zigzag idea will likely not serve you well.

4.0 Alligator Attack

- 4.1 If it seizes prey, and the prey fights back hard, the alligator may release it, depending on factors such as its own size relative to that of the victim, its own level of aggression, and its measure of hunger. Merely struggling to break free may not be enough counter-aggression to stop an alligator, and may actually prompt a devastating "death roll" response, in which the reptile furiously spins on its central axis to tear muscle and bone free of the victim's body.
- 4.2 These armored saurian are among the toughest beasts in the animal kingdom, so an attack victim should channel his or her nervous energy and will to survive and take the offensive by fighting hard. Not struggling...fighting very, very, very hard. Others on hand during such an event may be able to help by fighting the reptile, too. This should include punching the snout, poking the eyes, and even jabbing the ears, which are seen as small slits behind the eyes.

Bird Droppings Safe Work Practices

S3AM-313-ATT8

1.0 Background

- 1.1 According to the National Institute for Occupational Safety and Health (NIOSH), histoplasmosis is an infectious disease caused by inhaling spores of a fungus called *Histoplasma capsulatum* (abbreviated *H. capsulatum*) that may inhabit accumulated masses of pigeon droppings and excrement of other birds and flying animals. Its symptoms vary greatly, but the disease primarily affects the lungs. Occasionally, other organs are affected. This form of the disease is called disseminated histoplasmosis, and it can be fatal if untreated. The acute respiratory disease form of histoplasmosis is characterized by respiratory symptoms, a general ill feeling, fever, chest pains, and a dry or non-productive cough. Distinct patterns may be seen on a chest x-ray. Chronic lung disease resembles tuberculosis and can worsen over months or years. If symptoms occur, they may start within 3 to 17 days of exposure, with an average of 10 days. On a positive note, histoplasmosis is not contagious.
- 1.2 Psittacosis, although primarily a respiratory disease, can cause a wide variety of clinical manifestations. Generally, about 10 days after infection occurs, the clinical illness begins abruptly with fever, chills, weakness, fatigue, muscle pain, anorexia, nausea, vomiting, excessive sweating and difficulty with breathing, headache, backache, and sensitivity to light.
- 1.3 Hypersensitivity pneumonitis is also known as pigeon breeder's disease.

2.0 Symptoms

- 2.1 The acute form of hypersensitivity pneumonitis is clinically characterized by chills, fever, cough, breathlessness without wheezing, and malaise 4-10 hours after exposure. In general, an acute attack subsides after 18 to 24 hours.

3.0 Treatment

- 3.1 If a person should develop any of the symptoms as noted above, or others, it is important to see a physician and inform him of an exposure to pigeon/bird or bat excrement. A failure to diagnose the preceding conditions could occur if a treating physician is unaware of a patient's exposure to pigeon/bird or bat excrement.

4.0 Prevention

- 4.1 Prior to work in any area where pigeons or other flying animals may nest, a written statement from the client shall be obtained in regards to the potential for, and extent of, accumulation of excrement on/in the structure from pigeons and other winged animals.
- 4.2 The client shall be asked to provide appropriate details as to the basis for their statement (e.g., date of last visual survey for pigeon/bird or bat excrement accumulation, date of last excrement removal effort, etc.).
- 4.3 In no case will an AECOM employee or contract employee be permitted to commence structure inspection procedures without the Project Manager having received and evaluated the aforementioned written statement from the client.
- 4.4 According to NIOSH, the best way to prevent exposure to *H. capsulatum* spores during survey and inspection work is to avoid situations where excrement and other potentially contaminated material can become airborne and inhaled. Therefore, it is preferable that the efforts to determine if, and to what extent, there is an accumulation of pigeon/bird or bat excrement on/in structures, or the efforts to clean-up/remove/dispose of such contaminated material, be left to the client or subcontracted out.

5.0 Safe Work Practices

- 5.1 In those cases where AECOM employees or contract employees are contracted by the client to determine the extent of accumulation of animal excrement in/on structures, the following minimum safety and health precautions shall be taken. (NOTE: precautionary measures are based on recommendations and best practices prescribed in the NIOSH 2004 public document titled *Histoplasmosis – Protecting Workers at Risk*).
- 5.2 All workers shall wear disposable protective clothing (Tyvek® coveralls). Disposable overalls with hoods shall be donned when working in areas where *H. capsulatum* spore-contaminated material is likely to fall from overhead.
- 5.3 All workers shall wear disposable shoe coverings fitted with ridged soles made of slip-resistant material to reduce the likelihood of slipping on wet or dusty surfaces. Gloves shall be worn.
- 5.4 All workers shall wear a full facepiece air purifying respirator fitted with P100 (HEPA) cartridges. If entering an enclosed area in which the extent of excrement contamination is unknown, additional protective measures shall be taken such that workers shall wear a powered air-purifying respirator (APR) with full facepiece fitted with P100 (HEPA) cartridges. Any variance from these requirements must be approved by the Region Safety, Health and Environment Manager. Workers donning APRs shall be medically screened, cleared, and trained in their proper use in accordance with AECOM safety program standards.
- 5.5 If contaminated material must be disturbed for purposes of removal/disposal or during the structure inspect process, it shall be wetted down prior to all work and will be rewetted as necessary to minimize airborne dusting.
- 5.6 After working in *H. capsulatum* spore-contaminated areas and before removing any respiratory protective equipment, workers shall remove all protective clothing and shoe coverings and seal them in a heavy-duty plastic bag for disposal.
- 5.7 Workers shall observe a high degree of personal hygiene, even if the exposure is casual. Special care shall be taken to wash hands, face, and other areas of exposed skin thoroughly before eating, drinking or smoking.

Americas

Large Carnivores & Ungulates

S3AM-313-ATT9

1.0 Hazard

- 1.1 Most wild carnivores in the feline family (cougars, lynx, and bobcat) or the canine family (wolves and coyotes) are more predictable than bears and are not predatory towards humans; however, all wild animals can be dangerous if they feel threatened or if they are sick or starving.
- 1.2 Most ungulates (deer, moose, elk, and caribou) will avoid humans and will flee as soon as a human is sighted; however, females with young (during May and June) and males during the mating season (September to November) can be very aggressive, especially if provoked.

2.0 Personal Protective Equipment

- 2.1 Noise makers such as bear bangers, whistles and bells can be used as deterrents for an approaching animal.
- 2.2 Pepper (bear) spray can be used to ward off an imminent attack.

3.0 Safe Work Practice

- 3.1 Most negative encounters with ungulates or carnivores can be avoided with a few key preventative measures:
 - 3.1.1 When working in wilderness isolation, always travel in pairs and make lots of noise.
 - 3.1.2 Always store food in air-tight containers away from sleeping areas (if camping) and never carry strong smelling foods which could attract animals.
 - 3.1.3 Keep your eyes open for fresh animal signs which may indicate a dangerous situation:
 - Extensive fresh rubbing on branches in the fall might indicate the presence of a rutting male ungulate that may become aggressive to defend a potential mate.
 - A fresh kill or carcass which might indicate the presence of a carnivore that may become aggressive to defend its food.
- 3.2 Maintaining a distance of at least 100 feet (30 meters) allows large animals an escape route. If you notice any signs of aggression or behavioral changes, you should move away to a safe location. Wildlife should not be enticed by reaching out or simulating calls.
- 3.3 Pets should be kept secure and away from wildlife as their actions can provoke an attack. Moose, deer and other wildlife may appear quite docile; however, if a dog makes them feel threatened, their behavior can become unpredictable.
- 3.4 **If you are approached by a carnivore (wolf, coyote, or cougar):**
 - 3.4.1 Pick up small children immediately.
 - 3.4.2 Try to appear bigger, hold your arms or an object over your head.
 - 3.4.3 Face the animal and retreat slowly. Do not run or play dead.
 - 3.4.4 Maintain steady eye contact with the animal.
 - 3.4.5 If the animal continues to approach, deter an attack by yelling, waving a stick or throwing rocks.
 - 3.4.6 If you are attacked, fight back. Hit the animal with a heavy stick or rock.
- 3.5 **If you are approached by an ungulate (moose, elk, deer, bison or caribou):**
 - 3.5.1 An angry moose, elk or deer will face you with its head and ears lowered.

- 3.5.2 Back away slowly.
- 3.5.3 Look for something to get behind like a tree or a car. You can go faster around an obstacle than the ungulate can.
- 3.5.4 An ungulate is more likely to bluff charge but if it continues the charge and you are attacked in the open, curl up in a ball on the ground. Always protect your head with your arms and lie still.
- 3.5.5 Stay still after the attack until the ungulate moves away.

Bear Safety

S3AM-313-ATT10

1.0 Hazard

- 1.1 An encounter with a bear of any species can have a wide variety of outcomes, ranging from a simple sighting, to a false charge, to a serious mauling or even death. Consequently, the risk of a bear encounter must be taken very seriously.
- 1.2 The hazard or risk associated with a bear encounter varies significantly depending on the location. It is important to research the project area before field work commences to determine the expected probability of encountering a bear. Remoteness from urbanized areas should not be a criterion, as bears have been encountered within city limits, especially near landfills.
- 1.3 The risk associated with a bear encounter also varies with the species of bear, the season, and the circumstances under which the bear is encountered.
- 1.4 Preparing staff for any type of encounter is key to managing the risk.

2.0 Personal Protective Equipment

- 2.1 The best deterrent of a “bad bear encounter” is knowledge: a good understanding of the ecology and the behavior of the bears that will likely be encountered.
- 2.2 Bear Spray and Bear Bangers
 - 2.2.1 Staff must have hands-on training for the safe use of bear spray (a pre-season practice run is a good use of expired bear spray).
 - 2.2.2 Prior to work commencing, staff must ensure that the bear spray they are carrying is still valid and not past its expiration date.
 - 2.2.3 During travel, bear spray must be sealed in an airtight container or bag and must not travel in the cab of a vehicle, aircraft, or helicopter.
- 2.3 Firearms
 - 2.3.1 Environments and conditions which pose a high risk of bear encounters, may warrant the use of an armed wildlife monitor. Project managers, in consultation with appropriate project staff and Safety, Health and Environment Management, are responsible for determining the level of risk for their projects and whether or not such measures are required.
 - 2.3.2 A person hired as an armed bear monitor must be properly trained in wildlife monitoring as well as certified in the expert usage of firearms.
 - 2.3.3 The usage of an armed bear monitor is intended only as an additional precautionary measure to be used in specific environments to ensure the protection of field staff; staff should still be equipped and trained appropriately for the risk.

3.0 Restrictions

- 3.1 Staff must not work alone in areas where there is a medium or high risk of a bear encounter.
- 3.2 AECOM personnel shall not carry firearms or attempt to function as a wildlife monitor and/or perform their professional duties. For possible exceptions contact the Regional SH&E Manager who will evaluate the potential hazards with Regional Manager and Legal and provide written response. This can only be overridden with expressed permission of Region Executive and AECOM Chief Resilience Officer, refer to *WP-001-PR Firearms Standard*.

4.0 Training

- 4.1 In-house Bear Awareness training must be taken by all field staff who work in bear country every three years at a minimum, or more often as required.
- 4.2 The Bear Awareness training involves testing and improving the employee's knowledge about bear encounters, watching videos regarding bear awareness and behavior, and participating in group discussions about how to avoid and how to respond to bear encounters.
- 4.3 Specific considerations are given to black bear, grizzly bear, and polar bear encounters.

5.0 Safe Work Practice

- 5.1 Staff must be aware of wildlife signs and avoid wildlife encounters.
- 5.2 Bear Signs
 - 5.2.1 Fresh tracks – It is often better to see the bear's tracks than to see the actual bear. If you can tell the direction that the bear is travelling in, it is prudent to change your course of direction. Bears will travel down the same pathways people or other large animals use. If you have a clear track you can determine which type of bear has passed through the area. If you see more than one track, you can tell that it is possibly a female with cubs. Avoid females with cubs!
 - 5.2.2 Scat – Bear scat will look different depending upon the bear's diet. Close examination of bear scat can sometimes give you an indication of what the bears have been eating at that time of year. If the scat contains remnants of human garbage, there is a human food conditioned bear in the area. These bears associate people with food and can be the most dangerous type of bear to encounter.
 - 5.2.3 Animal carcasses – IF YOU COME ACROSS A CARCASS, LEAVE THE AREA IMMEDIATELY. Grizzly bears will often cover their kills for a few days and let it rot, then come back and eat it. THE BEAR WILL STAY CLOSE BY. Grizzly bears will defend their kill and this is a situation that could prompt a defensive attack by a bear.
 - 5.2.4 Torn-up logs and stumps – Bears will forage for insects in dead logs and rotting trees. You will often see torn up logs and stumps, evidence of their foraging.
 - 5.2.5 Evidence of digging – Holes dug into the ground are often made by grizzly bears digging for roots or ground squirrels. In particular, grizzlies will dig for food in the early spring soon after they leave their dens.
 - 5.2.6 Claw marks on trees – Claw marks can be left on trees by black bears when they have climbed up a tree. Grizzly bears will also leave claw marks on trees and on the ground. Bears will often chew a small tree or a sign-post, so watch for signs of chew marks along the trail.
 - 5.2.7 Hair on trees – Bears will rub against trees, usually trees with rough bark, to scratch themselves. You can find evidence of bears by the hair left in the tree's bark. The higher the hair left on the tree, the bigger the bear. Remember that the bear will often stand on its back legs to scratch its back on the tree.
 - 5.2.8 Daybeds – Bears will be most active in the early morning and in the evening. It would be prudent for field staff to restrict their field activities during the bear's most active foraging times as much as possible. During the heat of the day, bears will rest in daybeds. These can be shallow depressions of piled up leaves in the forest, trampled vegetation, a shallow scrape or a hole. Daybeds are usually located in cool places. Bears will make daybeds along streams and rivers. Daybeds are often associated with feeding places and therefore should be avoided.

5.3 Prevention

5.3.1 Your best defense against bears is to actively practice bear avoidance techniques when working in the field. You can prevent chance encounters by taking the following precautions:

- Know the areas and habitats bears use at different times of the year, and attempt to avoid such areas or be extremely cautious if you have to travel through them.
- Contact the local Fish & Wildlife Office to get current information on the bears in the area. Ask what other camps are in the area and if they are following good bear avoidance practices. (i.e., do they keep a clean camp?) If there are nearby human food sources available, e.g., an open dumpsite, the local bears may not be afraid to approach your camp.
- Always be aware of your surroundings. Stay alert. Watch for signs of bears along your route.
- Use binoculars to look around for bears when you are in open terrain.
- Never approach a bear if you see one feeding in the distance.
- Note the behavior of other wildlife in the area. Flocks of ravens can alert you to a possible animal carcass, and perhaps a bear. The area should be avoided. Bird or squirrel alarm calls might be telling you that a bear is near.
- Whenever possible, travel in daylight and try to avoid areas with restricted visibility, e.g., dense brush.
- Make lots of noise, especially when travelling in dense vegetation. Sing, shout, or talk loudly. You can carry portable air horns or cans of rocks. (Please note that bear bells are not effective – they do not make enough noise to warn a bear that you are approaching. You need to be loud so the bear can hear you coming.) Remember that the noise you make can be masked by loud natural sounds such as the wind or water. Therefore it is possible that the noise you make can go unnoticed by a bear whose attention is focused on feeding. You must make every attempt not to surprise a bear. In areas of loud natural noise, be louder!
- Stay together and travel in groups. Bears are less likely to attack groups of people. When travelling in groups, stay close together. Being in a group doesn't help if the individuals have spread apart along the trail.
- Pets should not accompany you when you are travelling in bear country. If you must take your pet, keep the animal on a short leash at all times. Unleashed dogs will harass bears and once scared, run back to their owner with an angry bear in pursuit.
- Do not wear perfumes or cosmetic products when you are travelling in bear country. Do not mask your human scent.
- All sanitary products should be stored in a similar fashion as food (stored at least 10 feet [3 meters] above site).
- Children should be kept very close by in bear country.
- Carry bear deterrents and know their limitations. Be familiar with how to use the deterrents, how to transport the deterrent safely and under what conditions it is most effective. Carry the deterrent in a belt, out in front and ready to grab at a moment's notice, never in your backpack.

5.4 Field Worker Precautions in Bear Country

5.4.1 Field workers should take extra precautions when working in bear country:

- Make every effort to go out into the field with another person; you should not be working alone in the field. One person can act as a lookout for the other. Keep watch for bear signs.
- Never approach a bear.
- Report where you are going and when you will return every time you leave camp. Have a plan of action if someone does not report back to camp at a specified time.

- Bears do get used to a camp's schedule and you will have fewer surprise encounters if everyone in the camp comes and goes at the same time every day.
- Take a two-way radio with you when you go out into the field.
- Always carry bear deterrents with you in the field and understand each deterrent's limitations. Carry your deterrents on a belt, out in front and ready to use instantly. Do not carry your deterrents in your backpack.
- Keep any food that you take with you sealed in odor-proof/bear-proof containers. Make every attempt to take odorless food with you, not something with a heavy scent.
- Pack out any garbage in odor-proof containers and burn once you return to camp.
- The noise of an ATV or skidoo can scare off a bear. Starting the machine and revving it up can scare off a curious bear. **DO NOT CHASE A BEAR WITH AN ATV OR SKIDOO.** You may need to drive the ATV around in circles to scare off the bear, but do not chase the bear.
- Take extra precautions when travelling along lakes or stream beds; bears use streams and river beds as travel routes. Be sure to carry noise makers.
- Limit your workday so you are not out in the early morning or evening when bears are most likely to be foraging.
- All **employees** should be proficient in First Aid. Do not go out into the field without first aid training.
- All field camps should have a First Aid Kit.
- All field camps should have means of communication with local ambulance or air ambulance personnel.
- A person's best defense against bears is to avoid them. If this is not possible, then being heard, smelled, or seen may lessen your chances of surprising a bear and/or provoking an attack.
- All wildlife should be respected, avoided, and not harassed at any time.
- Cooking in remote areas should be avoided. Any food should be stored in airtight containers and all garbage should be managed appropriately: "pack it in, pack it out".
- A bear in camp or within human structures is not a chance encounter. If this bear challenges you, you must fight, scream, and do whatever is necessary to live, no matter what species the bear is!
- In general, there are two types of bear encounters: Defensive and Non-defensive for grizzly bears and black bears. Your response will vary based on your assessment of the situation (your training will help you in identifying these situations and the appropriate response).

6.0 Encounters

6.1 General Recommendations When Encountering a Bear

- Consider your surroundings and assess the situation before you act.
- Remain calm. Do not turn your back to a bear.
- **DO NOT RUN** – Running may trigger the bear's natural pursuit response. Bears are able to reach speeds of 25 miles per hour [40 kilometers per hour], must faster than Olympic sprinters. Bears are also excellent swimmers.

6.2 Bear Encounters in the Field

- 6.2.1 Your response will depend upon the type of encounter.

- 6.2.2 Bears are more predictable than once believed and you can determine your best course of action in a confrontation by understanding the bear's characteristics and motivation. There are two pieces of information you should be aware of in any bear encounter:
 - The type of bear you are dealing with, and
 - The reason for the encounter.
- 6.2.3 Some people believe that when you stand your ground against a predatory black bear attack, the bear will feel threatened and leave. This has been effective in some cases. HOWEVER, it is not effective against a grizzly bear predatory attack and it is very difficult to know when it will be effective against black bears. Polar bears do not follow the same behavioral patterns as grizzly and black bears; polar bears are almost always aggressive and will not back down. Special considerations must be given to projects where polar bear encounters are anticipated.
- 6.3 If you can leave undetected:
 - 6.3.1 Leave the area quietly in the same direction that you came from.
 - 6.3.2 Move while the bear's head is down. Stop moving when the bear lifts its head to check its surroundings.
 - 6.3.3 Stay downwind so the bear will not pick up your scent.
 - 6.3.4 When you have moved a safe distance away, you can either watch and wait until the bear leaves or make a wide detour around the bear.
 - 6.3.5 If the bear is unaware of you and approaching, allow the bear the right of way.
- 6.4 If you cannot leave undetected:
 - 6.4.1 Let the bear know that you are present by smell first; therefore move upwind so they can pick up your scent.
 - 6.4.2 If it is possible, try to keep the bear in your sight. Watch to see if the bear leaves when it smells that a person is nearby.
 - 6.4.3 Attempt to move out of the way without being noticed by the bear. If you cannot do this, talk loudly to let the bear know where you are.
- 6.5 If the bear is aware of you but in the distance:
 - Remain calm.
 - Continue walking slowly in the same general direction, but head away from the bear.
 - DO NOT RUN.
 - If the bear begins to follow you, drop your pack or some article, (not food) to distract the bear. This may distract the bear long enough for you to escape. If you drop food for the bear – you will help the bear associate food with humans and teach it that aggressive behaviour will be rewarded with food.
 - If it is a grizzly following you, climb a tree if there is a large tree around. Proper escape up a tree would require scrambling at least 33 feet (10 m), however this is applicable only to Grizzly encounters. Black bears are excellent climbers. Tree climbing should be last resort.
- 6.6 If the bear is aware of you and close:
 - A bear will feel threatened in a close confrontation. The bear's natural tendency will be to reduce or to remove the threat. Assist the bear by acting as non-threatening as possible.
 - Do not make direct eye contact with the bear.
 - Do not make any sudden moves.
 - Do not run!

- The bear needs to identify you as a person, so talk in low tones and slowly wave your arms over your head.
- Attempt to give the bear an opportunity to leave. Be sure the bear has an open escape route. Do not corner a wild animal.
- Try to back away slowly and/or climb a tree if appropriate.
- Attempt to deter the bear if you are in a safe position.

6.7 If the bear is close and threatening:

- If you have a deterrent such as a bear banger or bear spray, be prepared to use it depending on how close the bear is. Try to scare the bear off.
- If you do not have a deterrent, or if using the deterrent is not successful, act as non-threatening as possible.
- Talk to the bear in a calm authoritative tone of voice.
- Do not startle or provoke the bear by making sudden moves.
- Never imitate the bear's aggressive sounds, signals or posture. The bear is attempting to establish dominance and imitating its moves is a challenge to its dominance.
- Back slowly away from the bear and drop a pack or some other article in order to distract the bear momentarily.
- Remember that the bear may be defending cubs that you have not yet seen or they have a food cache nearby. Attempt to look as non-threatening as possible.

6.8 If the bear is very close and approaching:

- A distance of less than 164 feet (50 meters) in an open area and closer in a forested area.
- If the bear continues to approach, use your deterrent.
- If the bear does not respond to the deterrent you must now **STAND YOUR GROUND!**
- If the bear continues to approach and is acting aggressive, **YOU MAY HAVE TO SHOOT** if you are carrying a firearm.

6.9 If the Bear Charges:

- A bear will charge you at high speed down on all four legs and often crouched low to the ground.
- Bears do not charge when standing up on the hind legs.
- Many charges are bluffs and the bear will often stop or veer off just at the last minute. It is difficult to know if the bear is bluff charging or not until it gets very close.
- When faced with a charging bear you have two options:
 - Use your bear deterrent; or
 - Roll into a ball and cover your neck and head with your arms if you are unarmed and have no other choice.

Small Mammals**S3AM-313-ATT11****1.0 Hazard**

- 1.1 Working in the field either directly or indirectly with small mammals has inherent risks of injury or exposure to zoonotic diseases (infectious diseases that can be transmitted from animals to humans) that all field staff need to protect themselves against.
- 1.2 The risks are usually higher when there is direct contact with a wild animal, either through a break in the skin (blood), saliva, or excrement; however, there are also risks through air-borne diseases (e.g., Hantavirus).
- 1.3 Obviously, wildlife biologists directly handling wildlife, dead or alive, or working with wildlife feces or in enclosed habitats (such as caves), have an increased risk of exposure to a wider range of zoonotic diseases and should take extra precautions.

2.0 Personal Protective Equipment

- 2.1 Full-length clothing (long sleeves and pants)
- 2.2 Insect repellent
- 2.3 Respiratory equipment (when directly handling wildlife)
- 2.4 Gloves (when directly handling wildlife)

3.0 References

- 3.1 None.

4.0 Restrictions

- 4.1 Wildlife handling must only be completed under direct supervision of an experienced individual.

5.0 Training

- 5.1 Any staff that will be handling wildlife must be adequately trained and/or supervised by a wildlife biologist experienced in the job task.

6.0 Safe Work Practice

- 6.1 Wild animals can carry a variety of diseases that humans can contract: viral, parasitic, bacterial, and protozoal. Basic Personal Protective Equipment such as full-length clothing, gloves and a respiratory mask will greatly reduce the risk of exposure.
- 6.2 Treat unknown dogs encountered in field activities in the same manner as a wild animal. Be conscious of behaviors that seem to indicate anxiety (tail under the belly), defensiveness or aggressiveness, and attempt to leave the area if these are identified.
- 6.3 Whenever a wild animal must be handled, the procedure must be accomplished as safely and quickly as possible.
- 6.4 Proper techniques must be employed to avoid or minimize the risk of personal injury while, at the same time, avoiding or minimizing injury to the animal.
- 6.5 Gloves, catch sticks, caging, and other appropriate equipment may be necessary when handling a wild animal. Most of these animals will be extremely stressed, resisting every restraint attempt.

- 6.6 In the unfortunate circumstance that a person is bitten or scratched, he or she should cleanse the wound thoroughly with soap and flush with water immediately, providing for a mechanical removal of potentially infective organisms. This should be followed by cleansing under medical supervision and consultation with a physician to consider the potential exposure to the rabies virus.

7.0 Rabies

- 7.1 You will not be able to accurately determine if an animal has rabies simply by observation as traditional symptoms of rabies (foaming at the mouth, biting, etc.) do not occur in all animals nor at all stages. There are some mammals that are at a higher risk than others for the rabies virus, such as raccoons, skunks, stray cats and dogs, foxes, coyotes, rodents, and bats; however, any mammal can contract the virus.
- 7.2 Rabies is contracted by contact of an infected animal's saliva with an open wound – a bite or a scratch.
- 7.3 Symptoms of rabies in humans usually do not present themselves for a minimum of 10 days to a year or longer (the average is 30 to 50 days). Symptoms are typical of a flu, including malaise, loss of appetite, fatigue, headache, and fever. Over half of all patients have pain (sometimes itching) or numbness at the site of exposure. They may complain of insomnia or depression. Two to ten days later, signs of nervous system damage appear; these include hyperactivity and hypersensitivity, disorientation, hallucinations, seizures, and paralysis.
- 7.4 Because rabies is so difficult to detect and positively identify, it is very important to consult a physician immediately. If rabies is a possibility, begin treatment with the rabies vaccine as soon as possible (unlike other vaccines, rabies vaccination begins after exposure because the virus takes a comparatively long time to induce disease).

8.0 Hantavirus

- 8.1 Rodents can carry a variety of diseases; of notable concern is the North American hantavirus which can cause Hantavirus Pulmonary Syndrome (HPS).
- 8.2 A common host of the hantavirus is deer mouse and related species (*Peromyscus* spp.), which are common throughout much of North America.
- 8.3 Although infection is rare, it can be fatal and, therefore, it is necessary that risk of exposure be minimized. Infection can be spread to humans when they:
 - 8.3.1 Breathe air contaminated by deer mouse saliva, urine or feces containing infectious hantaviruses; or
 - 8.3.2 Accidentally rub eyes, mouth or broken skin with hantavirus-infected deer mouse saliva, urine or feces.
- 8.4 The following precautions will be taken for all field operations:
 - 8.4.1 Limit exposure to soils handling and use gloves where appropriate.
 - 8.4.2 Wash or sanitize hands often throughout the day and before meals.
 - 8.4.3 Equipment bags, storage areas, and vehicles will be inspected daily for signs of deer mouse infestation.
 - 8.4.4 Rodent-proof storage containers will be used when practical.
 - 8.4.5 Do not enter buildings infested with deer mice without adequate respiratory protection.
 - 8.4.6 Droppings should never be removed by vacuuming or sweeping. Wetting down an area with a mixture of 1:9 household bleach and water solution will reduce risk of airborne exposure.
- 8.5 If flu-like symptoms develop three days to six weeks after exposure to rodents, a doctor should be contacted immediately (mechanical ventilation is the primary method of treatment).

9.0 Bubonic Plague

- 9.1 The bacteria that cause plague, *Yersinia pestis*, maintain their existence in a cycle involving rodents and their fleas.
- 9.1.1 In urban areas or places with dense rat infestations, the plague bacteria can cycle between rats and their fleas.
- 9.1.2 Humans may contract the plague bacteria through:
- Infected flea bites.
 - Contact with contaminated fluid or tissue of a plague infected animal.
 - Infectious droplets from an infected person coughing into the air (very uncommon in the United States, but relatively frequent in developing countries).
- 9.1.3 Individuals infected develop sudden onset of fever, headache, chills, and weakness and one or more swollen, tender and painful lymph nodes (called buboes).
- 9.1.4 Immediate medical attention is necessary to prevent complications or death.
- 9.1.5 Rodent control measures should be employed at AECOM locations.
- 9.1.6 Wear gloves if handling potentially infected animals to prevent contact between skin and the plague bacteria. Contact the local health department with and questions about disposal of dead animals.
- 9.1.7 Repellent shall be used if there is potential exposure to rodent fleas. Products containing DEET can be applied to the skin as well as clothing and products containing permethrin can be applied to clothing (always follow instructions on the label).

Snakes & Scorpions

S3AM-313-ATT12

1.0 Hazard

- 1.1 Snakes have the ability to inject venom. A bite from a venomous snake, which may inject varying degrees of toxic venom, is rarely fatal but should always be considered a medical emergency.

2.0 Personal Protective Equipment

- 2.1 Long pants and shirts
- 2.2 Heavy gloves if staff will be handling debris or be close to the ground
- 2.3 Rubber boots, or boots that fully cover the foot (not sandals!) and preferably are at least 10 inches (25 centimeters) high
- 2.4 Snake Chaps that cover at least the shin
- 2.5 Personal first aid kit

3.0 Restrictions

- 3.1 Staff must not work alone in areas where the risk of a snake encounter is high.

4.0 Safe Work Practice




- 4.1 Prior to going into the field, staff should research the area and identify what species are present. Once confirmed, staff should contact local hospitals to identify which carry anti-venom and include that information into the SH&E Plan and THA.
- 4.2 Staff working in areas known to be inhabited by venomous snakes should take extra precautions, be able to identify the local snake species, and understand the best practices for administering first aid.
- 4.3 Most snakes in Canada are non-venomous; and most snake bites are not fatal, only painful. Learning to identify snake species will assist you in responding appropriately to an encounter, and will assist medical professionals in determining if antivenin needs to be administered if anyone is bit.
- 4.4 Most snakes are non-aggressive and will only attack if immediately threatened.
- 4.5 Prevention
 - 4.5.1 Before venturing out into the wilderness, familiarize yourself with the snakes in your area, both venomous and non-venomous species.
 - 4.5.2 Learn which habitats the venomous species in your region are likely to be encountered in, and use caution when in those habitats.
 - 4.5.3 Try as much as possible not to take a snake by surprise.
 - 4.5.4 Stay on trails where possible, and watch where you place your hands and feet, especially when climbing or stepping over fences, large rocks, and logs, or when collecting firewood. Take care when overturning any objects on the ground when in snake country.
 - 4.5.5 If you see a snake, give it as much room as possible. Most snakes have a strike distance that is only half the length of their body.
 - 4.5.6 If you get very close to a rattlesnake, hold very still until it calms down and starts to move away. Then slowly move backwards until you are at least one snake-body length away.

4.6 Treatment


- 4.6.1 A bite from a venomous snake should be considered a major medical emergency. Emergency services should be contacted immediately and staff should follow the direction of the medical responders.
- 4.6.2 Try to keep the snakebite victim still, as movement helps the venom spread through the body.
- 4.6.3 Keep the injured body part motionless and just below heart level.
- 4.6.4 Keep the victim warm, calm, and at rest, and transport him or her immediately to medical care.
- 4.6.5 Do not allow him to eat or drink anything.
- 4.6.6 If medical care is more than half an hour away, wrap a bandage a few inches above the bite, keeping it loose enough to enable blood flow (you should be able to fit a finger beneath it). Do not cut off blood flow with a tight tourniquet. Leave the bandage in place until reaching medical care.
- 4.6.7 Identify the snake that caused the bite to determine if it is venomous, and if antivenin needs to be administered. Do not waste time or endanger yourself trying to capture or kill it. Note the shape and color of the snake's head.
- 4.6.8 If you are alone and on foot, start walking slowly toward help, exerting the injured area as little as possible.
 - Note that there are several species of snakes that superficially resemble rattlesnakes. Several species, including Bull, Milk, Fox, and Rat Snakes will even rattle their tails when startled.
 - Massasauga Rattlesnake is recognized as a Threatened Species in Ontario and it is an offence to harass, or destroy the habitat of this species.
- 4.6.9 Workers in scorpion habitat have the potential to be stung.
 - Scorpions usually hide during the day and are active at night. They may be hiding under rocks, wood, or anything else lying on the ground. Some species may also burrow into the ground. Most scorpions live in dry, desert areas. However, some species can be found in grasslands, forests, and inside caves.
 - Scorpions are found in Southern and Southwestern United States.
 - One scorpion species, the Northern Scorpion (*Paruroctonus boreus*) occurs in semi-arid areas of southern British Columbia, Alberta, and Saskatchewan. It carries a stinger on the end of its tail. The sting is painful but not life threatening unless there is an allergic reaction.
 - Workers should wear long sleeves and pants. Clothing and shoes should be shaken out before put on.
 - Symptoms of a scorpion sting may include:
 - A stinging or burning sensation at the injection site (very little swelling or inflammation)
 - Convulsions
 - Staggering gait
 - Slurred speech
 - Drooling
 - Muscle twitches
 - Abdominal pain and cramps
 - Scorpion stings may be painful, but most are harmless. In the United States, only the Bark Scorpion has venom that can potentially cause severe symptoms.
 - Scorpions capable of lethal stings are found predominantly in Mexico and South America.
 - If there is any question as to what type of scorpion caused the sting, contact medical services immediately.





5.0 Species

5.1 Venomous Snakes in Canada

<p>Eastern Massasauga Rattlesnake (<i>Sistrurus catenatus</i>) found around Wainfleet, Windsor, Bruce Peninsula and eastern Georgian Bay in Ontario.</p>	 <p>Eastern Massasauga Rattlesnake picture by Michael Redmer/Courtesy Lincoln Park Zoo</p>
<p>Northern Pacific Rattlesnake (<i>Crotalus viridis</i>) found primarily in Okanagan and Thompson River valleys of southern British Columbia.</p>	 <p>LANCE TANNAHILL 2000</p>
<p>Prairie Rattlesnake (<i>Crotalus viridis</i>) found in south eastern Alberta, and south western Saskatchewan.</p>	

5.2 Venomous snakes in the United States

<p>Rattlesnake(<i>Crotalus cerastes</i>) found mostly concentrated in the southwestern United States, they extend north, east and south in diminishing numbers and varieties. Every contiguous state has one or more varieties of rattlesnake.</p> <p>The rattlesnake is found in many different biomes ranging from along the coast at sea level, the inland prairies and desert areas to the mountains at elevations of more than 10,000 feet.</p> <p>Species include: Sidewinder, Santa Catalina, Western,</p>	 <p>Western Rattlesnake</p>
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<p>Mojave, Red Diamond, Western Diamond, Ridge Nosed, Eastern Diamondback, and Pigmy.</p>	 <p>Eastern Diamondback</p>
<p>Copperhead (<i>Agkistrodon contortrix</i>) is the most common venomous snake found in the eastern United States. It can be found in the states of Texas, Oklahoma, Kansas, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee, Kentucky, Virginia, Illinois, Indiana, Ohio, Iowa, Pennsylvania, Maryland, New Jersey, Delaware, New York, Connecticut, and Massachusetts.</p>	
<p>Cottonmouths (water moccasins) (<i>Agkistrodon piscivorus</i>) found in the eastern United States from Virginia, south through the Florida peninsula and west to Arkansas, eastern and southern Oklahoma, and east and central Texas.</p>	
<p>Coral Snake (<i>Micrurus sp.</i>) found in the southern range of many temperate United States including North Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Kentucky, Arizona, and New Mexico.</p>	 <p>Eastern Coral Snake, <i>Micrurus fulvius</i></p>

Working Alone

S3AM-314-PR1

1.0 Purpose and Scope

- 1.1 This procedure establishes the requirements for communication and accountability between personnel at a work site to reduce the potential for incidents occurring to one employee without help readily available and to facilitate the rapid mustering of assistance to employees in the event of an emergency.
- 1.2 This procedure applies to all AECOM America-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 **Buddy System** – A system of organizing employees at a work site in such a manner that each employee is accompanied by or in communication with at least one other employee or is escorted by a client or contractor representative during work site activities.
- 2.2 **Controlled Work Areas** – One or more designated work areas on a field project site where hazardous activities and/or strictly defined operations take place. Such controlled work areas include, but are not limited to, remediation or construction sites; a restricted radius where a critical lift operation will take place could be declared a controlled work area. On a HAZWOPER site, the controlled work area is divided into the exclusion zone, the contaminated reduction zone, and the support zone.
- 2.3 **Working Alone** – Performing work with no line of sight or direct voice communication with another person who is aware of your assignment and capable of initiating emergency response.

3.0 References

- 3.1 S3AM-005-PR1 Driving
- 3.2 S3AM-209-PR1 Risk Assessment & Management

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Manager or Supervisor

- Establish if employee is permitted to work alone, through evaluation of employee's experience, training and any personal limitations (e.g. life-threatening allergic reactions).
- Provide the resources, communication devices, emergency response plans, and check-in procedures as listed in the Task Hazard Assessment (THA) or SH&E plan, etc. necessary so that employees are not working alone or have a buddy system in place.
- Act as point of contact if employees miss their check-in.

4.1.2 Employees

- Complete training as required to prepare for working alone.
- Confirm emergency contacts are provided to the Manager or supervisor in case of an emergency.
- Establish a buddy system and check in procedure in accordance with the THA or SH&E Plan provided by the Manager and Supervisor.

4.1.3 SH&E Managers

- Review and approve relevant planning documents entailing employees working alone and on remote travel.

4.2 General

4.2.1 All projects/programs shall conduct a review of all tasks performed by AECOM to establish specific work alone procedural requirements as defined here. They shall have at minimum a THA and SH&E Plan that has been reviewed by the SH&E Manager.

4.2.2 Employees are discouraged from working alone on any site due to the risk of delayed assistance in the event of an incident. If they will be out of contact with other employees, they shall establish a buddy system or check-in procedure with another employee or responsible person.

4.2.3 Employees working alone or in small crews in remote isolation shall have an effective means of communication including cell/radio/satellite phone as well as established check-in times.

4.2.4 When traveling alone, staff shall take appropriate precautions, including notifying someone of their travel plans as well as carrying a communication device and safety equipment, as appropriate. See *S3AM-005-FM1 Journey Management Plan*.

4.3 No employee shall work by themselves or without a buddy system established if they are conducting a hazardous job task.

4.3.1 The following tasks are considered hazardous:

- Working at heights.
- Working in a confined space.
- Working in a trench.
- Lock out/tag out tasks.
- Work on energized equipment.
- Working with electricity.
- Working with hazardous substances or materials.
- Working with material under pressure.
- Working where there is a possible threat of violence, including civil unrest.
- Working in avalanche areas.
- Working on water or ice.
- Working in remote or wilderness isolation.
- Working in a controlled area.
- Extreme heat or cold stress environments.
- Working with power tools/equipment.
- Working with/operating heavy equipment or machinery.
- Working in isolation from first aid services or immediate/emergency assistance.
- Working around mobile equipment.
- Highway and road work.

4.3.2 The following tasks (identified as hazardous) may permit working alone provided it can be demonstrated there is no substantial increased risk associated with working alone:

- Working with power tools/equipment (e.g. power drill versus chainsaw).

- Working with material under pressure (e.g. small air compressor versus compressed gasses).

4.4 Office Work

- 4.4.1 The supervisor shall have in place and shall communicate as part of location specific orientation, its procedures for the safety and security of an employee working alone in the office. Contact numbers to be used in case of emergency are posted at all common gathering areas or major exits.
- 4.4.2 Employees working in the office after regular working hours or in situations where they are working alone shall keep the entrance to the office locked.
- 4.4.3 If the building is monitored by a security service, employees working in the office after regular working hours or working alone shall notify the security guard of their presence and anticipated hours. If the building does not have a security service, the employee working alone shall notify their supervisor or a family member or friend if agreed to by their supervisor.
- 4.4.4 During all working hours, employees shall stay alert to unauthorized entries into the building and to other suspicious activities and shall report them to security or their supervisor immediately.

4.5 Field Work

- 4.5.1 Prior to work commencing, a THA shall be prepared for all assignments on which employees are to work alone (in accordance with *S3AM-209-PR1 Risk Assessment & Management*). The THA shall consider travel time, weather, available communications, and the impact of working alone when establishing risk ratings of the hazards associated with the task and work environment.
- 4.5.2 The THA should also consider whether the employee assigned to work alone has sufficient training and qualifications in the tasks to be performed to allow the employee to work safely alone. The employee's personal medical conditions may be considered if the employee has voluntarily made the medical condition known to the Manager or Supervisor.
- 4.5.3 The THA should identify the controls required for the safety of employees as applicable to the job task and location. Some controls associated with working alone or in remote isolation include a buddy system, standardized check-in times, what to do if a check-in is missed (e.g. worker in proximity attends site, utilizing secondary communication method, etc.), specialized communication devices, and enhanced emergency supply kits.
- 4.5.4 The THA is completed in addition to the SH&E plan which details the work activities and the procedures to manage the hazards and in accordance with *S3AM-209-PR1 Risk Assessment & Management*.

4.6 Buddy System

- 4.6.1 When conducting non-hazardous work, employees shall work with a buddy (another responsible individual) or follow check –in procedures listed in the THA or SH&E Plan.
- 4.6.2 When conducting hazardous work, employees shall work with a buddy (another responsible individual) at all times.
- 4.6.3 Once assigned as buddies, personnel shall remain in contact.
- 4.6.4 When electronic communication devices are used, prior to starting work, a protocol shall be established and agreed to by each buddy to confirm that periodic effective and faultless communications are maintained
- 4.6.5 When unanticipated conditions develop that do not permit line of sight and direct voice contact, and alternate communication was not established in the THA, Stop Work and notify the Supervisor. If permission from the Supervisor is obtained to continue the work, voice contact shall be achieved using reliable electronic communication devices such as, but not limited to, hand-held radio or cell phone. The THA shall be updated to reflect this change.
- 4.6.6 If crews will separate once they reach their work site, they shall then be considered to be "working alone". The buddy system or check-in procedures shall be established, as determined by the work being hazardous or non-hazardous and as identified in the THA.

- 4.6.7 Client or contractor personnel may be substituted for an AECOM employee's buddy only if they are designated by the client or contractor and the AECOM manager or supervisor, and are properly trained to the tasks and the site's emergency response procedures.
- 4.6.8 A missed communication event shall initiate the applicable missed check-in actions established in the THA (e.g. worker in proximity attends site, utilizing secondary communication method, etc.) and may trigger emergency response procedures. The results of each communication event shall be documented in the program or project files.
- 4.7 Check-In Procedures
 - 4.7.1 All field crews shall establish check-in procedures as part of the THA or SH&E Plan prior to leaving the office. These procedures shall be reviewed daily as part of the Task Hazard Assessment review or more frequently if there is a change in work arrangements that could adversely affect a worker's well-being or a report that the system is not working effectively. These procedures shall be confirmed with the assigned Check-In Person daily.
 - 4.7.2 The timing and frequency of those check-in procedures schedule shall be established prior to the initiation of field operations and shall vary depending on the task and location of the work.
 - 4.7.3 If communication is lost between buddies or a check-in time is missed, it shall be assumed that an emergency situation exists, and the site's emergency response procedures shall be implemented. Site work shall cease until the emergency is resolved and the Supervisor directs personnel to restart work.
 - 4.7.4 If crews will separate once they reach their field site, they will then be considered to be "working alone" and will establish a buddy system with the other members of the crew.
 - 4.7.5 Employees working alone or in small crews in remote isolation will have an effective means of communication system including cell/radio/satellite phone as well as established check-in times.
 - 4.7.6 The Check-In Procedure will be reviewed daily as part of the THA review or more frequently if there is a change in work arrangements that could adversely affect a worker's well-being or a report that the system is not working effectively.
- 4.8 Emergency Response Procedures
 - 4.8.1 All field employees and the Check-In Person shall be provided with the location specific Emergency Response Plan (may be included in the THA or SH&E plan, or exist as a separate document).
 - 4.8.2 The Check-In Person shall have access to a route map or understands their anticipated route of travel.
 - 4.8.3 The established contact person shall follow the procedures below, with specifics established in the SWP Plan or THA, if a field employee has missed a check-in:
 - First, they shall attempt to make contact with the field employee directly.
 - If that fails to provide a response, they shall contact other persons who may have been on site, including client supervisors, or other locations where the field employee might be (e.g., hotel, home, office).
 - If the field employee still cannot be located, the emergency contact person notifies the manager or supervisor responsible for the employee.
 - Depending on the location and situation, they shall then dispatch another employee, another supervisor, or an appropriate emergency response agency (e.g., police) to travel to the last known location of the field employee.
 - If the dispatched responder arrives at the site but cannot locate the field employee, the appropriate public emergency contacts (e.g., police, search and rescue) shall be made and the employee's personal contacts shall be notified by Human Resources.

- If the dispatched responder finds the crew in an emergency situation (medical, environmental, structural, etc.), the appropriate steps shall be taken to isolate the hazard, administer first aid, and contact emergency support services.

4.9 Training

- 4.9.1 All employees shall receive an initial orientation that includes the hazards and controls associated with working alone.
- 4.9.2 If working in wilderness, all field employees will be able to orienteer using a map and compass—if not, the basic skills of orienteering will be provided by an experienced employee before work commences. Refer to the *S3AM-314-ATT1 Wilderness Isolation* instruction for more specifics.
- 4.9.3 Employees working alone should be trained in First Aid. Consideration should be given to Wilderness First Aid training based on the anticipated work environment.
- 4.9.4 Employees regularly working in remote, isolated wilderness locations will either participate in a wilderness survival course from a qualified provider (one or two day) or will obtain management approval based on their level of experience/competence in wilderness situations.

5.0 Records

- 5.1 None

6.0 Attachments

- 6.1 [S3AM-314-ATT1 Wilderness Isolation](#)

Wilderness Isolation

S3AM-314-ATT1

1.0 Planning

- 1.1 Working in wilderness isolation presents many more potential hazards and should only be conducted by teams with documented experience, safety plans, and equipment appropriate for the tasks and conditions of the work.
- 1.2 A safety plan and Task Hazard Analysis will be reviewed by the SH&E Manager.

2.0 Safety Equipment

- 2.1 All field employees should regularly carry the following on their person:
- GPS Unit.
 - Compass.
 - Lighter, matches, or a "flint" of fire steel.
 - A knife or folding saw.
 - Map.
 - First aid kit.
 - Communication device appropriate to the type of coverage anticipated in the area.
- 2.2 When hiking long distances, it is recommended that a "mini survival kit" that includes the following items be carried in addition to the items listed above:
- Fire starter (tinder). Cotton balls with lip balm work well, or paper egg cartons with cotton balls and paraffin wax; if buying commercial fire starter, test it after several months.
 - A whistle.
 - Heavy tinfoil (to melt snow, to cook on, or to boil water in).
 - Water and/or portable water purification device (e.g. steri-pens®).
 - Some high-energy food.
 - Cordage or rope (about 50 feet).
 - Bear spray and/or bear bangers.
- 2.3 When using an ATV or helicopter for isolated work, it is recommended that a survival bag or backpack that can be left at a known muster point be put together. This bag should include the following items:
- Additional fire starter (tinder).
 - Matches, fire steel.
 - A multi-tool (like a Swiss Army knife).
 - A folding saw.
 - 3-8'x6" tarps plus one 12 X 16" tarp or larger (or a tent).
 - 100 " of utility cord or parachute cord.
 - A small pot.
 - A small stove (a small folding military stoves with trioxethelyne tablets will work well).
 - Closed cell foam pads or several square feet of double-wall bubble insulation (the silver sided bubble wrap used in construction) to use as a sleeping pad or for hypothermia treatment.
 - Emergency Food.
 - Water.
 - Sleeping bag with a mylar® bivouac (bivy) sack to be used as a vapor barrier inside.

3.0 Drinking Water

- 3.1 No surface water can be considered safe for human consumption without treatment. Even the cleanest looking spring water could be polluted. Untreated water may be contaminated with bacteria, viruses, or protozoa.
- 3.2 On short trips, carry treated water or obtain water from another safe source.
- 3.3 When field projects take you into remote isolation where there is the potential for not having access to clean drinking water, be sure to take the appropriate tools with you: a water filter, tin foil or a pot for boiling water, or tablets or chemicals for treating the water prior to consumption.
- 3.4 Generally, the chances of finding safe drinking water in the mountains increase as you gain altitude. Intense sunlight at high altitudes kills undesirable bacteria and viruses but harmful cysts are unaffected.
- 3.5 Runoff water from streams below glaciers is often cloudy with silt and should be filtered.
- 3.6 Well water and moving rivers are the best locations to obtain water. Avoid stagnant water, shoreline water, and water close to human habitations and campsites.
- 3.7 During the winter, it is best to use an open water source or to obtain water through a hole in the ice. Check the safety of the ice first. Melting ice and snow consumes fuel and takes extra time. Eating snow or ice directly can lead to chilling and hypothermia and could also cause stomach cramps and headaches. Beware of colored snow, which indicates the presence of algae that could cause diarrhea if ingested. Even in winter, all water should be purified.
- 3.8 Water Treatment
 - 3.8.1 Each method of water treatment has its advantages and disadvantages. Use only boiled or treated (filtered and disinfected) water for drinking, brushing teeth, or washing fruits and vegetables that will be eaten raw. Heat is the oldest, safest and most effective method of purifying water. However when boiling is not practical because of time and lack of a heat source, water should be treated by filtration and disinfection. This method may not be as effective as boiling the water.
 - 3.8.2 Use two water containers: one for treating water and the other for carrying purified water. After disinfection, shake the container vigorously. Wait five minutes. Shake it again with the lid loose so that some water leaks out to cleanse the mouth of the container. Then pour the water into a clean container for drinking water.
 - 3.8.3 Boiling. Bring the water to a boil for at least one minute (adding one more minute for each 300 m (1000 ft.) above sea level. If the water is cloudy, filter it before boiling.
 - 3.8.4 Filtration. Water filters for use in the wilderness are available. Avoid filters that allow particles larger than 0.5 microns to pass. Filters with a pore size of 0.1 to 0.3 micron can remove protozoa and some bacteria but may not remove viruses. Filtration alone is insufficient to purify water; hence, it should be combined with disinfection to kill viruses and bacteria.
 - 3.8.5 Disinfection. Disinfect with chlorine or iodine compounds, following the manufacturers instructions. Disinfection alone may not kill some protozoa..

Table 1: Summary of Water Purification Methods				
	Boiling	Chlorine	Iodine	Filters
Bacteria	E	E	E	M
Viruses	E	E	E	N
Protozoa	E	M	M	M
Chemicals	M	N	N	N

E = effective M = may be effective (see text) N = not effective

- 3.8.6 Additional portable water purification devices are available, using methods such as ozone disinfection, ultraviolet purification, or solar water disinfection.
- 3.8.7 Water treatment methods should be evaluated for suitability to the work environment, the potential water hazards, and limitation of the device.
- 3.8.8 Some water-borne diseases are difficult to diagnose. If you are not feeling well and have recently drunk water from a source in the wild, inform your doctor that you may have consumed untreated water.

1.0 Purpose and Scope

- 1.1 The purpose of this document is to establish policies and procedures for operation of AECOM-owned, rented, or leased vehicles, client or customer-owned vehicles, and personal vehicles used by AECOM employees.
- 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. Policies and procedures related to the operation of commercial motor vehicles are in addition to this procedure; refer to *S3AM-320-PR1 Commercial Motor Vehicles*.

2.0 Terms and Definitions

- 2.1 **AECOM Business** – Any activity that is performed in the name of AECOM. This includes, but is not limited to, vehicle travel between work locations, client sites, meeting locations as well as driving performed as a part of work-related travel (e.g., driving to and from airports, hotels, train stations). AECOM business does not include driving that is a part of a daily routine commute from home to an AECOM location.
- 2.2 **Authorized Driver** – AECOM employees who receive manager approval following evaluation of driver criteria to drive and maintain an AECOM-owned, leased or rented vehicle, a client or customer-owned vehicle, or a personal vehicle operated in the course of conducting AECOM business. Authorized Drivers shall maintain a current driver's license with full privileges applicable to the vehicle to be operated. There are three categories of Authorized Drivers;
 - Professional (AECOM employee who operates a commercial motor vehicle. Please refer to *S3AM-320-PR1 Commercial Motor Vehicles*).
 - Hired (Employee's specific AECOM role is to drive employees in a normal street vehicle, which may or may not require commercial licensing by the applicable authorities. This category does not include busses or vans with a capacity of more than 12 people.).
 - General (Driving is required as a part of the employee's job duties. This includes driving AECOM-owned, leased, or rented vehicles, client or customer-owned vehicles, or personal vehicles on AECOM business).
- 2.3 **Collision** – Any incident in which a motor vehicle that (whether in motion, temporarily stopped, or parked) makes contact with another vehicle or pedestrian, or results in property damage and/or bodily injury, regardless of who was injured, what property was damaged, or who was responsible.
- 2.4 **Commercial Motor Vehicle (CMV)** – Any self-propelled or towed motor vehicle used for AECOM business (e.g., to transport passengers or property) when the vehicle is one of the following:
 - Has a gross vehicle weight rating (GVWR) or gross combination weight rating equal to or greater than the weight specified by the applicable jurisdiction (e.g., U.S. ≥ 10,001 pounds [4,536 kilograms]); or
 - Is designed or used to transport more than the number of passengers specified by the applicable jurisdiction, including the driver, for compensation; or
 - Is designed or used to transport more than the number of passengers specified by the applicable jurisdiction, including the driver, and is not used to transport passengers for compensation; or
 - Is used in transporting hazardous material in quantities ≥ 1,001 pounds (454 kilograms) combined total weight at any time.
 - Refer to *S3AM-320-PR1 Commercial Motor Vehicles* for additional information.

- 2.5 **Distracted Driving** – An activity that takes the driver's attention away from the primary task of driving.
- 2.6 **Driving Under the Influence (DUI)/Driving While Intoxicated (DWI)** – The operation of a vehicle while under the influence of alcohol, drugs, medications, or other substances capable of inducing an altered mental state and/or impairing physical and mental judgments, such that the influence of the substances produces impairment in violation of the applicable governmental laws.
- 2.7 **Fatigue** – A general term used to describe the experience of being “sleepy”, “tired” or “exhausted”. The effect of fatigue is both physiological and psychological and can severely impair a driver's judgement. Fatigue can cause lapses in concentration which could prove fatal. Fatigue is not just a problem for drivers on long trips, as drivers can also suffer from fatigue on short trips.
- 2.8 **Incident** – For the purposes of this procedure, a vehicle collision or other event where personal injury or property damage occurs, or where a citation is issued while the employee is on AECOM business. This may also include acts of theft, vandalism, and criminal mischief.
- 2.9 **Journey Management** – A process for planning and executing necessary journeys safely.
- 2.10 **Local Laws** – Signs, postings, laws, regulations, ordinances and codes applicable for the jurisdiction in which the motor vehicle is being operated.
- 2.11 **Motor Vehicle Report (MVR) / Driver's Abstract** – A listing of the tickets (violations), incidents collision for an individual driver over a period of time (e.g., 3 years, 5 years) provided by a state or provincial authority such as the Department of Motor Vehicles.
- 2.12 **Personal Vehicle** – A motorized vehicle owned or leased by an employee.
- 2.13 **Portable Electronic Device** – A mobile electronic device that is used to receive or communicate voice, email, internet, and/or public media. The device requires user interaction (typing, dialing, reading, keying, etc.) that distracts the motor vehicle operator. Example devices include, but are not limited to:
 - Mobile Communication Devices (MCD)
 - Mobile/Cellular phones
 - Two-way Radios
 - Personal Data Assistant (PDA)
 - iPads, iPods, or other tablet models
 - Computers
 - Global Positioning System (GPS) receivers
- 2.14 **Spotters** – Extra personnel that may provide guidance when maneuvering in close and/or complex situations in order to avoid the occurrence of an incident.
- 2.15 **Task Hazard Analysis (THA)** – A tool for evaluating work activities for the purpose of:
 - Identifying the SH&E hazards and risks associated with the activity being performed;
 - Identifying and implementing control measures to eliminate or reduce hazards and risks; and,
 - Evaluating the effectiveness of control measures and making modifications as needed.

3.0 References

- 3.1 AECOM Global Travel Policy
- 3.2 RS2-001-PR Firearms Standard
- 3.3 S3AM-003-PR1 SH&E Training
- 3.4 S3AM-004-PR1 Incident Reporting, Notifications & Investigation
- 3.5 S3AM-009-PR1 Fatigue Management
- 3.6 S3AM-010-PR1 Emergency Response Planning

- 3.7 S3AM-209-PR1 Risk Assessment & Management
- 3.8 S3AM-314-PR1 Working Alone
- 3.9 S3AM-319-PR1 All-Terrain Vehicles
- 3.10 S3AM-320-PR1 Commercial Motor Vehicles

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Manager / Supervisor

- Confirming employees are informed of the provisions of this procedure and related vehicle procedures.
- Providing a copy of this procedure to an employee who will be driving an AECOM-owned, leased or personal vehicle for AECOM business.
- Allowing employees to designate time to complete required driving safety training, vehicle inspections and related activities.
- Assigning driving tasks to authorized employees only.
- Selecting and providing vehicles for use by authorized employees that are appropriate for the planned working conditions and environment.
- Supporting employees in the reporting of vehicle incidents per *S3AM-004-PR1 Incident Reporting, Notifications & Investigations*, including the entry of the incident into the on-line incident management system (e.g., IndustrySafe).
- Confirm notification of AECOM Human Resources and Counsel upon receipt by an employee of a legal summons associated with a moving violation related to the use of a company vehicle.

4.1.2 Employee

- Follow this procedure and applicable laws while operating a vehicle.
- Complete assigned driver safety training based on the training matrix and any additional training assessments developed at the business group. Refer to *S3AM-003-PR1 SH&E Training, including S3AM-003-FM1 SH&E Training Matrix*.
- Report to the Manager / Supervisor if the vehicle selected is not appropriate for the working conditions and environment.
- Report to the Manager / Supervisor if the employee is inexperienced in operating the type of vehicle assigned.
- Report to the Manager / Supervisor if the employee is inexperienced in driving in the type of working conditions and environment assigned.
- Review the completed Task Hazard Assessment and complete journey management. If required, document the Journey Management Plan using *S3AM-005-FM1 Journey Management Plan* or equivalent.
- Immediately report vehicle incidents per *S3AM-004-PR1 Incident Reporting, Notifications & Investigations*, including the entry of the incident into the on-line incident management system (e.g., IndustrySafe).
- Notify the appropriate Manager / Supervisor and SH&E Manager upon receipt of a legal summons associated with a moving violation related to the use of a company vehicle.
- Immediately report a change or limitation(s) to his/her Driver's License to the appropriate AECOM Human Resources representative or his/her Manager / Supervisor.

- Conducting a pre-operational inspection of the vehicle for damage or deficiencies and reporting discovered deficiencies affecting the safe operation of the motor vehicle to the appropriate authority (e.g., supervisor, rental car agency, etc.).

4.1.3 **SH&E Manager**

- Maintaining and updating training resources for vehicle and driver safety.
- Providing guidance.
- Assisting operational leaders with determining the risk incurred by the use of motor vehicles.
- Assist in the incident investigation and review process.

4.2 General Procedures and Practices

- 4.2.1 Only Authorized Drivers are to operate a motor vehicle (rental, personal, client or customer-owned, or AECOM-owned/leased) while on AECOM business.
- 4.2.2 Drivers must comply with *AECOM's Global Travel Policy* and applicable laws, and employ safe driving practices. (NOTE: *Individual state, provincial, and local laws vary.*) Refer to *S3AM-005-ATT1 Authorized Driver Safety Practices*.
- 4.2.3 Authorized Drivers shall confirm their operating license is on their person, and valid registration and insurance is maintained with the respective vehicle prior to operation.
- 4.2.4 All local laws including, signs, postings, regulations, ordinances, and codes applicable for the jurisdiction in which the motor vehicle is being operated shall be adhered to.
- 4.2.5 At-risk driving behavior by AECOM employees shall be identified and managed accordingly.
- 4.2.6 Authorized Drivers must be at least 18 years of age (noncommercial license) or 21 years of age (commercial license) and have a current driver's license for the appropriate class of vehicle (unless more stringent requirements are established by the leasing/renting agency). Employees with conditional licenses are prohibited from operating vehicles on AECOM business.
- 4.2.7 If an Authorized Driver receives a citation resulting in their license being suspended, has his/her driver's license revoked, or is otherwise unauthorized to drive, he/she shall notify the appropriate AECOM Human Resources representative or his/her Manager prior to start of the following work day. Failure to do this may result in disciplinary action up to and including termination.
- 4.2.8 The office to which the vehicles are registered is liable for any damages to the vehicle being operated by an Authorized Driver.
- 4.2.9 Seat belts are to be worn by the occupants. The number of passengers shall not exceed the manufacturer's specifications for the vehicle.
- 4.2.10 The vehicle may not move until all passengers have fastened their restraints in the proper manner (e.g., lap belt secured and shoulder harness placed over the shoulder). Vehicles are not to be operated or used by AECOM employees if seatbelts are not included as part of the vehicle's safety equipment.
- 4.2.11 The vehicle's engine is to be turned off during refueling. Smoking or cellular phone use is not allowed while refueling.
- 4.2.12 Motorcycles may not be operated on AECOM business unless the following requirements are met:
 - Specific approval is provided by the Supervisor with concurrence from the SH&E Manager.
 - A hazard analysis is completed.
 - Required training and license is in place.
 - Headlights or daytime running lights will be used when the vehicle is in operation.
 - A Class 2 or 3 safety vest and appropriate helmet shall be worn while operating a motorcycle.

- 4.2.13 When practical, drivers should travel during daylight hours and avoid driving during adverse weather conditions. Drivers should also inform colleagues of their travel itinerary including destination and anticipated departure and arrival times.
- 4.2.14 Fire arms and weapons are not permitted in AECOM-owned, leased or rented vehicles insured by AECOM. Firearms and weapons in personal vehicles are subject to the laws and regulations of the respective local, provincial, state, territory, federal and region and/or country. Refer to the *RS2-001-PR1 Firearms Standard*.
 - Exceptions to this standard may exist where there is a credible and demonstrated risk to AECOM employees or assets, or when knives or weapons are required as part of the work activity. Under such circumstances, the exception must be approved by the Chief Resilience Officer, and must strictly adhere to the procedures set forth by the Global Resilience Group.
- 4.2.15 Vehicles are to be selected based on the nature of planned use. In some working conditions, specialized vehicles, such as four-wheel drive and higher clearance vehicle, may be required to confirm safe travel. These specialized vehicle requirements/specifications shall be identified in the project specific SH&E Plan and/or THA.
- 4.2.16 Vehicles are to be maintained according to manufacturer's specifications and the applicable environmental and operating factors (e.g. winterized with appropriate fluids, winter tires installed, appropriate coolant for hot climates, etc.).
- 4.2.17 Vehicles are to be outfitted with the appropriate support equipment based on the THA or client vehicle specifications. Support equipment may include, but is not limited to, cones, rotating warning lights, warning flags, vehicle identification (magnetic door signs or similar), wheel chocks, cargo nets, and rollover protection.
- 4.2.18 Drivers are to operate vehicles in a manner that avoids situations where backing is necessary. Whenever possible and as permitted, reverse parking of all vehicles while on business is required. A spotter shall be used when backing of trucks and heavy equipment presents a risk of collision.
- 4.2.19 Non-AECOM drivers (those other than AECOM employees [e.g., subcontractors, joint venture partners, clients, etc.]) are prohibited from operating an AECOM company owned, leased or rented vehicle unless the activity is specifically agreed to in the applicable contract and only if the use of the vehicle is consistent with the terms of the contract.
- 4.2.20 Authorized drivers required to operate vehicles with special hazards (e.g., trucks carrying fuel cells, vehicles used to tow trailers, vehicles with limited visibility, etc.) will be thoroughly briefed on the hazards and control measures necessary for safe operation of the vehicle. The local AECOM operation will maintain documentation of the briefing.
- 4.2.21 Define specific vehicle travel routes and parking areas at field sites through the use of fencing, cones, or other markings.
- 4.2.22 When a vehicle will be left unattended without an authorized driver in the driver's seat, the vehicle must be turned off, placed into park (or gear for manual transmissions), and the emergency brake set. When parked on a grade, the wheels or tracks of mobile equipment shall be either chocked or turned into a bank.
- 4.3 Distracted Driving
 - 4.3.1 Distractions while driving are a major cause of incidents. Distractions include the use of cellular phones (including texting), eating, drinking, smoking, and engaging in intense conversations. AECOM Authorized Drivers must exercise proper control of the vehicle at all times, including the management of possibly distracting actions and behaviors.
 - 4.3.2 The use of portable electronic devices that may distract the driver while driving is prohibited. This includes cell phones, two-way radios and other items whether hand-held or hands-free. Electronic devices include, but are not limited to, all mobile phones pagers, iPods, MP3s, GPS units, DVD players, tablets laptops and other portable electronic devices that can cause driver distraction.

- Employees shall not use a personal or company mobile communication devices (MCD) while driving any vehicle on AECOM business.
 - Employees shall not use a company MCD while driving a personal vehicle.
 - Driving includes the time spent in traffic or while stopped at red lights or stop signs.
- 4.3.3 GPS units and devices (e.g., smart phones, tablets) used for navigation may only be used if factory installed or secured to the vehicle with a bracket that allows the driver to view the image without having to take their eyes off the road. Note: windshield mounting brackets are not permitted in many jurisdictions, with dashboard mounts being acceptable. Consult jurisdictional requirements.
- 4.3.4 Electronic devices shall be setup for operation prior to commencing driving activities and shall not be changed by the driver while driving.
- 4.4 Impairment
- 4.4.1 Impairment can take many forms ranging from fatigue, to the use of prescription medication or alcohol (even small amounts), to the abuse use of illegal and legal drugs and alcohol. AECOM employees shall not drive in an impaired condition.
- 4.4.2 AECOM employees are prohibited from being under the influence of alcohol or drugs or improperly using medication in a way that could diminish, or raise questions concerning, an employee's ability to perform at his or her best while performing services for or on behalf of AECOM. Operation of vehicles while under the influence may void insurance coverage.
- 4.4.3 Drivers/operators will not drive or operate vehicles while under the influence of medications when told by a physician, another healthcare provider, or the manufacturer (e.g., instructions on the label) the medication could render the activity unsafe.
- 4.4.4 AECOM employees are prohibited from operating a vehicle if they are experiencing signs and symptoms of fatigue. Employees should stop work and rest before driving. No employee should operate a vehicle if they have worked 14 consecutive hours within a 24 hour period. Refer to *S3AM-009-PR1 Fatigue Management*.
- 4.5 Journey Management
- 4.5.1 When practical, alternatives to road travel should be evaluated including teleconferencing/video conferencing, the use of public transportation or carpooling.
- 4.5.2 Journey management is a process for planning and executing necessary journeys safely and may or may not be documented. Review the completed THA and complete the journey management process. If required, document a Journey Management Plan (JMP) using *S3AM-005-FM1 Journey Management Plan* or equivalent. The journey management process includes the following steps:
- Determining if the trip is necessary.
 - Evaluating alternative safer modes of transport.
 - Evaluating the potential to combine journeys with others.
 - Planning the trip.
 - Select the safest and most efficient route. Confirm compliance with any site specific specified routes, route rules, or restrictions.
 - Confirm route planning factors in fatigue management. Refer to *S3AM-009-PR1 Fatigue Management*.
 - Review road conditions and potential hazards associated with the route.
 - Review weather conditions and forecast.
 - If applicable, review *S3AM-314-PR1 Working Alone*.
 - Confirm Emergency Response Plan includes procedures to be taken in the event of a collision or vehicle incident.
 - Allow for adequate travel time.
 - Inform others of destination, estimated time of arrival and routing.

- 4.5.3 Drivers who are to undertake trips in excess of 250 miles (400 km) each way, drive in remote or hazardous areas, or when otherwise deemed necessary, shall develop and document a JMP. This plan typically includes the route, location of route hazards, timing, rest periods and locations, communications, emergency response and security arrangements.
- 4.5.4 Drivers are responsible for developing the JMP and coordinating with the applicable parties identified in the plan.

4.6 Driver Safety Training

Authorized drivers shall have a current driver's license for the appropriate class of vehicle (unless more stringent requirements are established by the leasing/renting agency).

Driver safety training is to be assigned based on the risks posed with the work environment, driver type and vehicle type, using the training matrix and any additional training assessments developed at the business group level. Refer to *S3AM-003-PR1 SH&E Training, including S3AM-003-FM1 SH&E Training Matrix*. A determination of training type is at the discretion of the Manager / Supervisor, with the following guidance applied.

- 4.6.1 All Authorized Drivers (Professional, Hired, and General Drivers) shall be trained in this procedure; *S3AM-005-PR1 Driving*.
- 4.6.2 All Authorized Professional Drivers shall be trained in *S3AM-320-PR1 Commercial Motor Vehicles*.
- 4.6.3 Vehicle / Driver Safety Training
 - Recommended for all employees who drive on behalf of AECOM (Professional, Hired and General Drivers).
 - This may be completed online (e.g., AECOM University – Driver Safety).
 - Recommended to be completed within 1 month of the Authorized Driver's hire date.
- 4.6.4 Defensive Driver (online) Training
 - Recommended for all Authorized Drivers (Professional, Hired, and General Drivers) who are assigned an AECOM company owned, leased or rented vehicle for a significant period of time with the expectation that the employee utilizes the vehicle on a regular basis for AECOM business.
 - It is recommended that authorized drivers who have completed web-based defensive driver training or equivalent also complete a refresher every three years.
 - Defensive Driver training is available online through AECOM University (e.g., Alert Driving Basic, Alert Driving Skills) or one of the following AECOM-approved training resources:
 - The National Safety Council
 - Alert Driving
- 4.6.5 Defensive Driver (hands-on) Training
 - Recommended for all Authorized Professional Drivers and Authorized Hired Drivers.
 - Recommended for Authorized General Drivers who drive in remote locations, hazardous environments (such as refineries, ports, terminals etc.), at-risk drivers, and when required by clients.
 - Defensive Driver hands-on training is provided through an AECOM-approved training resource, such as Smith Systems.
 - Hands on defensive driver training may be required as a result of an incident or negative Motor Vehicle Report.
- 4.6.6 Driver Retraining
 - Drivers involved in repeated motor vehicle incidents, incidents of sufficient severity or concern, or drivers identified as at-risk through review of their Motor Vehicle Report/Driver Abstract may

be retrained or, as applicable, subject to disciplinary action and refused the right to drive on behalf of AECOM.

- Retraining programs will be implemented at the discretion of the Supervisor and SH&E Manager.
- Employees eligible to continue driving shall be subject to a driver retraining program that may include any of the above programs or other training programs appropriate for the type of driving the employees performs.

4.6.7 Special Vehicles and Driving Conditions

- Vehicles such as All-Terrain Vehicles (ATVs), four wheel drive vehicles, motorized carts, snowmobiles, box vans and trailers (towing) require specialized training and supervision. For ATVs, Refer to *S3AM-319-PR1 All-Terrain Vehicles* for additional information.
- Use of these types of vehicles is limited to AECOM projects, therefore training and qualification programs for drivers will be project specific. The Manager / Supervisor shall work with the SH&E Manager to tailor training to the specific needs of the project.

4.7 Personal Vehicles (additional requirements)

- 4.7.1 The requirements of this procedure apply to the use of a personal vehicle for AECOM business. Additional requirements are set forth in the *AECOM Global Travel Policy*.
- 4.7.2 Personal vehicles driven by Authorized Drivers for business use must satisfy the jurisdiction's registration and inspection requirements and may not be modified beyond manufacturer's specifications.

4.8 Rental Vehicles (additional requirements)

- 4.8.1 The requirements of this procedure apply to the use of a rental vehicle for AECOM business. Additional requirements are set forth in the *AECOM Global Travel Policy*.

4.9 Requirements for Authorized Drivers

- 4.9.1 Review the *S3AM-005-ATT1 Authorized Driver Safety Practices* for specifics.
- 4.9.2 Drivers are not to permit unauthorized persons to operate an AECOM-owned/leased/rented vehicle.
- 4.9.3 All Authorized Drivers shall perform a walk-around inspection of the vehicle prior to operation.
- 4.9.4 Pre-operation vehicle inspections shall be performed and documented by all Authorized Professional Drivers and all Authorized Hired Drivers. A sample vehicle inspection checklist is provided in *S3AM-005-FM2 Vehicle Inspection Checklist*.
- 4.9.5 Vehicles with deficiencies that affect or could potentially affect the safe operation of the vehicle shall be removed from service and promptly repaired as necessary to permit safe vehicle operation.
- 4.9.6 As applicable, arrange for and/or coordinate with appropriate AECOM personnel to facilitate preventive maintenance services for the vehicle. Maintain it in sound mechanical condition, as per the manufacturer's recommendations provided in the owner's manual.
- 4.9.7 Do not operate the vehicle if unsafe maintenance conditions exist that would likely result in vehicle damage or personal injury. This applies to vehicles owned or leased by AECOM and to personally-owned vehicles used for AECOM business. Escalate other maintenance issues for correction to appropriate authority (e.g., manager, rental car agency, supervisor, etc.).
- 4.9.8 Transport only persons on AECOM related business or those persons receiving transportation as a prescribed service. Only drive vehicles in conditions for which the driver has the appropriate training and experience.
- 4.9.9 AECOM-owned, rented, or leased vehicles are for official business use only and are not to be used for personal activities. Exceptions to this requirement can be made only with the specific written approval of the Manager of the office or location the vehicle is registered to.

- 4.9.10 Smoking (including the use of e-cigarettes) and chewing tobacco is not permitted in AECOM-owned, leased or rented vehicles.
- 4.9.11 Drivers are responsible for damage caused by abuse of the vehicle.
- 4.9.12 Secure the vehicle when left unattended.
- 4.9.13 Securing loads in the inside and outside compartments of the vehicle.
 - Do not rely on weight/shape of load alone. Always use a cargo net, straps, containers or other mechanical device when necessary to confirm load is secure.
 - Mark loads that extend the beyond the end of truck, trailer or similar edge with a red warning flag of at least 16 square inches.
 - Red lights will be utilized at night to mark loads that extend the beyond the end of truck, trailer or similar edge.
- 4.9.14 Do not modify existing equipment (warning sounds, backing alarms etc.) or install aftermarket equipment including toolboxes, truck caps, specialty lights, or towing equipment) without approval from the Manager of the office or location the vehicle is registered to and AECOM Procurement Department.
- 4.10 Emergency Preparedness
 - 4.10.1 AECOM-owned or leased vehicles are to have a “Safety Kit” that contains a first-aid kit, portable fire extinguisher, safety triangle, and two reflective safety vests. If not available, contact the Manager / Supervisor or SH&E Manager to determine how to obtain a kit.
 - 4.10.2 The following suggested items should be kept in vehicles used for AECOM business in remote project locations:
 - First aid kit, appropriate to the work and crew size, or per regulations.
 - Fire extinguisher, safety triangle, and safety vest.
 - Emergency equipment (e.g., flares, flashlight, blanket, drinking water, etc.) based on conditions.
 - Means of communication (cell phone, radio or satellite phone), extra batteries or a charger.
 - 4.10.3 To the extent possible, employees should refrain from changing tires or making repairs to vehicles in the field.
 - A road side assistance service should be identified for vehicles used for AECOM business in advance travel.
 - If changing tires or making repairs to vehicles is necessary in the field, assessment of hazards shall be completed and all applicable safe procedures and manufacturer’s specifications shall be followed.
 - 4.10.4 Specific emergency procedures are to be identified in the applicable Emergency Response Plan, JMP or the THA. Refer to *S3AM-010-PR1 Emergency Response Planning*.
- 4.11 Vehicle Incidents
 - 4.11.1 Vehicle incidents are to be reported and managed in accordance with *S3AM-004-PR1 Incident Reporting, Notifications and Investigation* regardless of how minor the incident might be.
 - 4.11.2 The Employee(s) involved in a collision shall follow the below guidelines:
 - Assess the situation to confirm everyone is safe, and remove any vehicle occupants from harm’s way. Call, or have someone else call 911 immediately, if necessary.
 - As appropriate, remain at the scene of a collision to contact the police. Ask another motorist to call the police if necessary; never leave the scene of a collision.

- As applicable, provide (if requested) to police and the other driver(s) the liability insurance information. Obtain the officer's jurisdiction, name, and badge number and a copy of the police report.
 - As applicable, consider moving the vehicle out of the traffic flow if it is safe to do so, the vehicle is operational, and/or no further damage to the vehicle can occur.
 - Do not operate a damaged vehicle if its safety is questionable, its operating condition is illegal by applicable laws or its condition is such that further damage would likely result from its operation.
 - Turn on the vehicle's flashers to warn other motorists.
 - Obtain:
 - Names, phone numbers, and addresses of owner(s), driver(s), and occupants of the other car(s) involved.
 - Other party's insurance company's name, address, phone number, policy number, and insurance agent.
 - Names, phone numbers, and addresses of all witnesses.
 - Photographs of the accident scene when safe to do so.
 - Cooperate with AECOM Counsel if the incident results in unresolved risks or third party claims, or if the employee receives a summons, complaint or other legal documents relating to a traffic incident.
 - **DO NOT ADMIT LIABILITY, AGREE TO PAY FOR DAMAGE OR SIGN A DOCUMENT RELATED TO AN INCIDENT EXCEPT AS REQUIRED BY LAW.**
 - Statements made in haste or anger may be legally damaging.
 - If contacted by a third party, do not answer any questions. Immediately report this contact to the Manager / Supervisor and/or Legal Counsel
 - Employees shall report the incident to AECOM's Global Travel Department. If the incident involved a third party, the driver is responsible for obtaining a copy of the police report and providing to global travel
- 4.11.3 Employees must cooperate with the incident investigation team during any investigation of an incident meeting the investigation protocol.
- 4.11.4 Vehicle repairs shall be conducted at the authorization of the Manager / Supervisor.
- 4.12 Drug and Alcohol Testing
- 4.12.1 Testing for Alcohol and/or Drugs procedures shall be administered in accordance with the applicable policy and procedures. Refer to *S3AM-019-PR1 Substance Abuse Prevention*.
- 4.12.2 In the event that a police/regulatory officer responding to a vehicle incident administers field and/or laboratory impairment testing AECOM reserves the right, as permitted, to obtain copies of such testing results for inclusion in the incident report and consideration in a subsequent incident investigation.
- 4.13 Driving Privileges, Citations and Violations
- 4.13.1 A violation of this vehicle safety standard is subject review by the appropriate AECOM Human Resources representative and may be subject to disciplinary action, up to and including termination. The applicable Manager / Supervisor will review all incidents involving AECOM-owned, rented, or leased vehicles.
- 4.13.2 Citations and violations which occur while driving for AECOM business are to be reported as a vehicle incident in accordance with *S3AM-004-PR1 Incident Reporting, Notification & Investigation* within 24-hours. Incidents will be investigated as appropriate.
- 4.13.3 The AECOM Manager responsible for the employee, in consultation with the appropriate AECOM Human Resources representative, may suspend the privilege to operate vehicles on AECOM business due to noncompliance with the AECOM Vehicle and Driver Safety Program, involvement

in a motor vehicle incident, or resulting citations or other legal actions associated with motor vehicle violations.

4.13.4 The employee's driving privileges will be suspended for any of the following:

- Accidents or legal action involving alcohol or drug use (e.g., driving under the influence).
- Driving without a license.
- Hit-and-run driving or leaving the scene of an accident.
- Unauthorized use of AECOM vehicles (e.g., using an AECOM vehicle for moving personal items, carrying passengers who are not associated with work activities, etc.).

4.13.5 The employee's driving privileges may be suspended for any of the following:

- Two or more at-fault accidents involving the same Authorized Driver within a 12-month period.
- Multiple complaints from other employees or members of the public about driving performance.
- Any accident caused by an AECOM Authorized Driver where damages exceed \$2,500.
- Failure to comply with the distracted driving requirements.
- Gross misconduct or violation of policy.

4.13.6 An Authorized Driver's driving privileges may be reinstated as follows:

- For any suspension resulting from law enforcement agency legal action involving drugs and alcohol on the part of the former Authorized Driver, driving privileges may be reinstated only by concurrent agreement of the Vice President of SH&E for the applicable Business Group and Human Resources Manager.
- For those Authorized Driver's privilege suspensions that are not related to driving under the influence of drugs or alcohol, privileges may be reinstated with concurrent agreement by the AECOM Manager, the SH&E Manager, and Human Resources Manager upon completion of required remedial training.

4.13.7 Disciplinary action may include the following:

- Loss of AECOM driving privileges.
- Disciplinary warning.
- Termination.

4.13.8 The employee is personally responsible for payment of fines for moving violations and parking citations incurred while driving a vehicle on AECOM business and for reporting such incidents to his/her Manager / Supervisor. The Manager is responsible for notifying Counsel.

4.13.9 If an Authorized Driver receives a citation resulting in the license being suspended from driving or has his/her driver's license revoked, he/she is required to notify his/her Manager / Supervisor prior to start of the following work day. Failure to do so may result in disciplinary action up to and including termination.

5.0 Records

5.1 Documentation of employee training completed shall be retained in accordance with *S3AM-003-PR1 SH&E Training*.

5.2 As applicable, completed *S3AM-005-FM2 Vehicle Inspection Checklists* and/or *S3AM-005-FM1 Journey Management Plans* shall be retained in project files.

6.0 Attachments

6.1 [S3AM-005-ATT1 Authorized Driver Safety](#)

6.2 [S3AM-005-FM1 Journey Management Plan](#)

6.3 [S3AM-005-FM2 Vehicle Inspection Checklist](#)

Authorized Driver Safety

S3AM-005-ATT1

1.0 Before Vehicle Operation

- 1.1 Learning and practicing good driving habits will help reduce the chance of a traffic collision. Learning to properly scan surroundings will improve hazard awareness and avoidance. With correct driving habits, errors can be significantly reduced and incident response time can be decreased.
- 1.2 All Authorized Drivers shall perform a walk-around inspection of the vehicle prior to operation.
 - 1.2.1 Authorized Drivers should use the “Get Out And Look” (GOAL) method before placing a vehicle in motion. Drivers are to make a 360-degree (360°) walk around of the vehicle immediately before placing vehicle into motion in order to determine whether there are hazards or possible obstructions in the proposed path of travel. Drivers are to clear the area of people and objects before placing the vehicle in motion. A check will also be performed to confirm overhead and side clearances are adequate. The following are recommended best practices:
 - Placement of cones on the right side of the front and rear of vehicle upon parking and retrieved during the 360° GOAL walk-around.
 - In lieu of cones, place GOAL magnets on the right side of the hood and truck/tailgate of the vehicle upon parking. The GOAL magnets should then be retrieved during the 360° GOAL walk around just prior to moving the vehicle again.
 - Place a GOAL sticker on the driver side door window as a reminder to get out and look.
 - 1.2.2 Pre-operation vehicle inspections shall be performed and documented by all Authorized Professional Drivers and all Authorized Hired Drivers. A sample vehicle inspection checklist is provided in *S3AM-005-FM2 Vehicle Inspection Checklist*.
- 1.3 Drivers shall be familiar with applicable client rules and regulations when on the client’s sites. The employee may, for example, be required to leave their keys in the ignition with the vehicle turned off or to display a vehicle pass. When parking, it is recommended that employees back the vehicle into the parking space.
- 1.4 Drivers must be trained, competent and in possession of a current driver’s license that is valid to the jurisdiction and the vehicle driven. Any additional certification required given the particular vehicle and equipment transported must also be current (e.g. air brake certificate).
- 1.5 Execute proper travel planning to avoid being in a rush, traveling during peak traffic hours, and traveling through high traffic volume areas. Utilize the *S3AM-005-FM1 Journey Management Plan* as appropriate.
- 1.6 All drivers must be involved in a task hazard assessment applicable to the task(s) undertaken (may exclusively be the driving task or may include the driving task).
- 1.7 Confirm current insurance and registration is maintained with the vehicle and any equipment being towed. License plates must be clean.
- 1.8 As applicable, check all safety equipment (e.g. First Aid Kit, Fire Extinguisher, Flares, Triangles, Reflective Vest, etc.).
- 1.9 As applicable, check for survival gear and equipment. Emergency kits should include blankets, food, water, flashlight, extra batteries, a method of communication and a heat source such as a candle.
- 1.10 When accessing any pickup truck box, staff will: step up into the box to avoid excess reaching and strain and; use three point contact getting in and out of the truck box (i.e., avoid jumping off the tailgate).
- 1.11 Confirm no items are hanging from the rear view mirror that could obstruct vision.
- 1.12 Adjust mirrors to confirm optimal visibility.

2.0 Vehicle Operation – General

- 2.1 Be vigilant of differences between trucks and small cars related to blind spots, turning radius, and required overhead and undercarriage clearances.
- 2.2 It is a personal responsibility of the driver to operate a vehicle safely and in compliance with regulations (e.g. Cargo Securement, Traffic, Dangerous Goods, etc.).
- 2.3 Confirm compliance with applicable traffic legislation, driver regulations, and rules (e.g. commercial driver hours of service, state / provincial highway acts, municipal bylaws, private road/property owner rules, site specific rules, etc.).
- 2.4 All vehicle occupants shall wear seatbelts at all times.
- 2.5 Keep reflectors, lights and windows (inside and out) clean.
- 2.6 Window cleaner should be on hand for cleaning the interior of the windows as well as headlights that have become obscured due to road spray or slush.
- 2.7 A shovel and a supply of sand or gravel can help to extract a stuck vehicle that does not have traction.
- 2.8 Maintain good housekeeping practices and confirm items and loaded materials are secured from movement on both the interior (e.g. cab, glove box, etc.) and exterior (e.g. box, flat deck, etc.) of the vehicle.
- 2.9 Conduct en-route inspections as required to check cargo securement.
- 2.10 Pulling Over
 - 2.10.1 Pull the vehicle off the road to a safe location as required by the applicable jurisdiction (e.g. rest stops, a side road, an unused approach):
 - If, in the ongoing assessment of road and weather conditions, it has been concluded that travel is no longer safe (i.e. heavy rain, sleet), and wait until conditions allow for safe travel.
 - To review or adjust navigation equipment and check cargo securement.
 - To check telephone messages, text messages or to take notes.
 - For interval breaks, to stretch and if fatigued (try to take a break every two hours).
 - To manage and eliminate driver distractions.
 - 2.10.2 If it is necessary to park a vehicle on the shoulder of an active roadway, park as far off the road as possible, and turn on the four-way indicators (hazard lights) prior to leaving the vehicle. Use cones or other warning devices, and wear a high visibility traffic vest.
 - 2.10.3 Observe extra caution in and around emergency and construction zones.
 - 2.10.4 Avoid unattended rest areas, when possible, and especially at night.
 - 2.10.5 If the vehicle breaks down, attempt to get to a secured location. Call police or roadside assistance as appropriate.
 - 2.10.6 Contact the police to help those with car trouble instead of stopping to assist.
 - 2.10.7 When possible, employees should have a car mechanic or roadside assistance change or repair a flat tire. If the Driver or passenger must change a tire, the Driver and passenger must adhere to the manufacturer's specifications and observe the proper lifting technique and safety procedures. Proper lifting is addressed in *S3AM-104-PR1 Manual Material Handling*.
 - 2.10.8 When parking or leaving a vehicle, the following procedures must be followed:
 - Engage the transmission in park (automatic transmission) or first gear (standard transmission).
 - Shut off the engine.

- Set the parking brake.
- Remove the ignition keys, and lock the vehicle.

2.10.9 If work (e.g., surveying) is required alongside an active road, park the vehicle behind the area of work to provide a barrier against out-of-control vehicles.

2.11 Backing Up

2.11.1 Keep reverse motion to a minimum as the most common incidents involve backing up.

2.11.2 Whenever possible, vehicles should be parked in a manner that prevents the driver from backing (reversing) upon departure. For example, the vehicle should be backed into a parking spot or drivers should select a parking spot that allows them to “pull” through” so that the vehicle is facing the direction of departure.

2.11.3 Confirm the area behind the vehicle is clear prior to and while reversing a vehicle.

2.11.4 All vehicles with limited visibility operated around workers or on a construction site:

- Should have an audible back-up alarm installed that functions automatically when the vehicle is put into rear motion; or
- Shall be backed up only when a signaler communicates that it is safe to do so.
- If a vehicle is not equipped with an audible back-up alarm, the operator shall sound the vehicle horn twice to indicate intention to back vehicle up.

2.11.5 Confirm compliance with applicable traffic legislation regarding backing up (i.e. Texas – An operator may not back the vehicle on a shoulder or roadway of a limited-access or controlled-access highway; Ontario – No driver of a vehicle shall back the vehicle upon the roadway or shoulder of any highway divided by a median strip on which the speed limit is in excess of 80 km/h; etc.).

2.11.6 Take the time to become acquainted with the area the vehicle is to be backed into.

2.11.7 Inspect the area to be backed into (i.e. walk around it by foot, identify obstructions and possible hazards).

2.11.8 Line up as straight as possible with intended final position prior to backing equipment or vehicle up.

2.11.9 If the area is congested with people or equipment a signaler SHALL be used.

2.11.10 Before putting the vehicle into motion, decide:

- The method of communication (hand signals, two-way radios or other means).
- If hand signals are going to be used, confirm both the driver and signaler agree on signals to be used.
- If two-way radios are being used confirm there is continuous voice contact between the signaler and driver. If there is nothing being transmitted on the two-way radio the driver shall STOP the vehicle.

2.11.11 While backing up:

- Confirm there is constant visual contact with the signaler when the vehicle is in motion if using hand signals.
- If driver loses eye contact with the signaler at ANY time, the driver shall STOP the vehicle until eye contact is regained. The exception is where the communication between the signaler and driver is conducted by two-way radio.
- When possible, the signaler shall stand on the driver’s side of the vehicle during motion.

- The signaler must always keep a safe distance from the vehicle or equipment and never stand directly in the path of motion. Refer to Safe Work Practice – Red Zone.
- While backing up using a signaler, the driver must confirm that the vehicle radio (not to be confused with two-way radio) is off and the windows are down (if possible) to avoid distraction and to be able to hear outside of the vehicle.
- If the driver notices anything out of the ordinary (despite what the signaler is directing) the driver will STOP the vehicle or equipment and assess the situation.
- If at any time the safety of any person or property is at risk, including that of the signaler, the signaler shall signal the driver to STOP the vehicle IMMEDIATELY.
- Any person (other than the signaler) can direct the driver to STOP the vehicle or equipment and the driver must take that as a valid direction to STOP.

3.0 If Vehicle is to be Left Unattended

- 3.1 Turn the ignition off, remove the key and set the emergency brake (if parked on an incline).
- 3.2 Lock and secure the vehicle.
- 3.3 Secure equipment and property in a locked trunk or tool chest.
- 3.4 Do not leave keys in an unattended vehicle.

4.0 Defensive Driving

- 4.1 Demonstrate an effective and positive driving attitude.
- 4.2 Use road courtesy, expect the unexpected and be patient. Do not rush or drive aggressively.
- 4.3 Follow and obey regulations.
- 4.4 Do not make sudden lane changes and always use signal lights.
- 4.5 Be Visible – Be seen by all other drivers, pedestrians, cyclists and others using or crossing the road:
 - 4.5.1 Avoid driving in blind spots of other vehicles.
 - 4.5.2 Confirm vehicle lights are on, working and clean before and during travel.
 - 4.5.3 Confirm the vehicle's horn works and use it as necessary to warn others.
 - 4.5.4 Tapping the vehicle brakes may provide a visible alert for following vehicles.
 - 4.5.5 Confirm adequate distance to enable passing of other motorists safely.
- 4.6 If it is necessary to turn a vehicle around, confirm that the operation is conducted safely and according the applicable traffic legislation and rules.
- 4.7 Always operate a vehicle within operator driving limitations. Do not be enticed by others to exceed driving capability for any reason. When behind the wheel, drivers must be in control of all driving related situations.
- 4.8 Maintain awareness of all objects in the immediate circle of influence. Whenever possible, stay well clear of other vehicles, machinery, equipment and pedestrians.
- 4.9 Scan Ahead – Check the path of travel for obstacles and other vehicles:
 - 4.9.1 Utilize three driving monitoring zones (should not be confused with safe following distances):
 - Action Zone (approximately 4 to 6 seconds in front of the vehicle) – activity in this zone generally requires immediate reaction by the driver.

- Planning Zone (at least 15 seconds in front of the vehicle) – look ahead to visually identify if there is slowing traffic or another type of road hazard ahead or to the side. Do not drive behind vehicles that block visibility.
 - These zones may require enlarging based on speed and driving environment (e.g. traffic congestion, weather, etc.).
- 4.9.2 Get the big picture and look for hazards (other motorists, pedestrians, cyclists, road debris, etc.).
- 4.9.3 Moving eyes every 2 seconds can help to avoid fixating on any one object. Check rear view mirror every 5 to 8 seconds and any time braking.
- 4.9.4 Read and obey traffic signage and controls.
- 4.9.5 Use high beam head lights when possible.
 - Use low beam headlights when following closely behind other vehicles or when approaching and meeting oncoming traffic.
 - Use low beam headlights in fog or heavy snow.
- 4.9.6 Wear appropriately tinted sunglasses to improve visibility in sunny conditions. Do not wear sunglasses at night and, if wearing at dusk or dawn, confirm the tint is of the type that improves and does not hinder visibility.
- 4.10 Keep a Space Cushion:
 - 4.10.1 Maintain a space cushion around the vehicle to improve the potential of avoiding a collision. Create an out by monitoring the space in front, behind and to each side of the vehicle, leaving enough area as a cushion to enable evasive action if needed.
 - 4.10.2 Maintain a minimum of 2 seconds plus 1 second for every 10 feet (3m) of vehicle length between the vehicle driven and the vehicle ahead:
 - Pick a marker on the road ahead, such as a road sign or pole.
 - Count "one thousand one, one thousand two".
 - When the front of the driven vehicle reaches the marker, stop counting.
 - If the marker is reached before "one thousand two," increase the space cushion.
 - Add more time (space) in poor driving conditions.
 - Add more time (space) if the vehicle operated is heavily loaded.
 - Add more time (space) if the vehicle ahead is smaller and lighter and may stop more quickly than the vehicle operated.
 - 4.10.3 When stopped behind another vehicle leave 1 vehicle length between the vehicle driven and the vehicle ahead.
 - 4.10.4 Do not travel in a traffic cluster. Manage the space to the front, left and right of the vehicle driven.
 - 4.10.5 Fog, heavy rain, snow, slush or wind require speed and distance between vehicles to be adjusted accordingly.
- 4.11 Recognize and Anticipate Hazards:
 - 4.11.1 Exercise increased caution at night, dawn and dusk.
 - 4.11.2 When driving at night look to the right of the on-coming headlights and not directly head-on.
 - 4.11.3 Identify changing road hazards or conditions.
 - 4.11.4 Identify changing weather or driving conditions:

- 4.11.5 Light rain and heat can draw oil to the surface of asphalt creating slippery driving conditions.
- 4.11.6 Heavily rain soaked roads can result in a vehicle hydroplaning / aquaplaning.
- 4.11.7 Fluctuating cold temperatures may produce ice.
 - Open hilltops may become icy due to blowing snow accumulating and freezing on the road.
 - Shaded areas, such as overpasses and bridges, will freeze first and dry out last. These locations are prone to black ice.
 - Be aware that black ice may be very difficult to spot. Darker, glossy spots may indicate black ice.
- 4.11.8 At dawn or dusk, the low sun can create a significant visibility hazard.
- 4.11.9 Be aware of changing conditions (i.e. traffic patterns, accidents, traffic lights, other vehicles).
- 4.11.10 Watch for large loads or slow moving agricultural equipment:
 - Exercise extreme caution, provide extra room and pass only if it is safe to do so.
 - Be aware that large loads or heavy equipment cannot stop as quickly as smaller vehicles and require a longer stopping distance.
 - Never pull directly in front of these vehicles after passing or merging, but leave adequate space to confirm safe operation.
 - Signal well in advance of any intended maneuver to give large vehicles additional time to react.
- 4.11.11 Avoid travelling in the blind spots of other vehicles or mobile equipment.
- 4.11.12 Scan road and shoulders for wildlife and pedestrians:
 - Animals may travel in groups. Maintain heightened awareness when spotting one.
 - Leave plenty of room when driving around an animal on or near the road – a frightened animal may run in any direction.
 - Honk in a series of short bursts to make animals move out of the way.
 - Avoid *swerving* for wildlife as this could result in veering into oncoming traffic.
- 4.12 Reduce Speed:
 - 4.12.1 Adjust speed to accommodate traffic flow and patterns.
 - 4.12.2 Adjust speed to all weather pattern changes (Rain/Hydroplaning, Ice & Frost/Traction Loss, and Restricted Visibility).
 - 4.12.3 Adjust speed in response to inconsistent road surfaces.
 - 4.12.4 Reduce speed when required by law, in construction zones and school and playgrounds.
 - 4.12.5 Safely and appropriately reduce speed upon observing any hazard to increase reaction time.
 - 4.12.6 Always be prepared to brake at an intersection.
 - 4.12.7 Always come to a full stop at uncontrolled railway intersections and verify it is safe to proceed.
 - 4.12.8 Make eye contact with other motorists at intersections (particularly uncontrolled intersections) before proceeding.
 - 4.12.9 Never assume other motorists are following and obeying road rules.
 - 4.12.10 Keep to the right of the road or in the right-hand lane on multi-lane roads unless turning left or passing another vehicle.
 - 4.12.11 Confirm driving practice and vehicle position allow for a defensive or avoidance maneuver.

4.13 Eliminate Distractions

- 4.13.1 Confirm appropriate time is taken to become acquainted with an unfamiliar vehicle prior to driving.
- 4.13.2 Do not operate a vehicle if preoccupied, agitated or have existing health issues that could potentially pose a safety issue.
- 4.13.3 Do not operate a vehicle if under any form of impairment (i.e. fatigue, alcohol, drugs, etc.).
- 4.13.4 Remain engaged. Do not succumb to boredom, complacency, or allow the focus to drift from the driving task.
- 4.13.5 Remain focused on driving defensively and follow any given direction when passing an accident scene.
- 4.13.6 Avoid any activity that requires moving a hand from the steering wheel (e.g. changing radio stations, handing articles to passengers, etc.).
- 4.13.7 Do not engage in activities that may distract from the driving task (e.g. operating navigation systems, ridding the cab of an insect, etc.).
- 4.13.8 Do not engage in eating or drinking that may distract from the driving task.
- 4.13.9 The use of electronic devices that may distract the driver while driving is prohibited. This includes cell phones, two-way radios and other items whether hand-held or hands-free (a simple text message sent while travelling at highway speed results in an operator's eyes being off the road for the length of a football field).

5.0 Road Rage

- 5.1 Road rage is a dangerous driving situation that can occur and should be avoided whenever possible, but NEVER instigated. Do not get drawn into a confrontation. Avoid any confrontational eye contact or gestures.
- 5.2 The driver should be aware of the vehicles around them, paying frequent attention to the vehicle's mirrors.
- 5.3 Get out of the way if safely possible, even if the other motorist is speeding. The other driver may be dealing with an emergency situation.
- 5.4 Unless it is necessary to use the horn as an alert, do so sparingly.
- 5.5 If followed after an on-the-road encounter, drive to a public place or to the nearest police station and seek assistance.
- 5.6 Attempt to note the offender's license plate number and write it down as soon as it is safe to do so and the vehicle is not in motion.
- 5.7 Report any aggressive driving to the police immediately. This action may aid in preventing further occurrences by the same driver.

6.0 Winter Driving

- 6.1 Clear snow from exterior vehicle surfaces.
- 6.2 Do not cruise control on icy roads.
- 6.3 Accelerate and brake gently to reduce skids or spinouts.
- 6.4 Wear winter clothing that does not restrict movement, vision or hearing.
- 6.5 Where required, have snow chains for the vehicle and be familiar with their installation.
- 6.6 Use extra caution while driving during hazardous winter conditions.
- 6.7 Avoid sudden changes of speed or direction to reduce possibility of skidding.

- 6.8 Drivers should leave extra distance between their vehicle and the vehicle ahead of them. Stopping on ice takes approximately eight times the distance that it takes on dry pavement.
- 6.9 Carry suitable warm clothing and emergency equipment during the winter months. Temperatures can plunge rapidly.
- 6.10 Be aware of icy patches on the road bridges and intersections that are especially prone to icing.
- 6.11 Be familiar with the skid control procedures for the type of vehicle being driven (e.g., front, rear or four-wheel drive).

7.0 Gravel Roads and Remote Locations

- 7.1 Prior to driving on a road with an assigned radio frequency, the passenger will test the two-way radio to confirm that the proper radio frequency is set, and that the transmission is being received clearly by other traffic. The passenger will operate the two-way radio.
- 7.2 Drivers will maintain appropriate speed for the road conditions.
- 7.3 Headlights will be used when operating the vehicle.
- 7.4 Drivers will respect the understood road protocol, drive defensively and respect intersections.
- 7.5 4WD options will be utilized at the discretion and comfort level of the driver. If road conditions are questionable even for 4WD use, the road will not be traveled and either another route found or the job postponed until road conditions improve.

8.0 Off-road

- 8.1 If inexperienced, seek supervisory advice and training.
- 8.2 Vehicles should only be driven off roads after other available options (e.g., use of ATV's, etc.) have been considered.
- 8.3 Prior to driving off-road, check to see that the vehicle is in good operating condition and tires are properly inflated.
- 8.4 Realize the limitations of the vehicle and do not become over confident.
- 8.5 Seat belts should be kept fastened and loose objects in the vehicle securely fastened to prevent them from becoming projectiles in the event of a sudden stop.
- 8.6 Drive according to the ground conditions.
- 8.7 Speed and power are normally not required in rough off-road driving.
- 8.8 Learn to read the surrounding terrain. Monitor the ground conditions ahead of the vehicle -- it is essential to know what to expect in light of the road conditions.
- 8.9 When slowly traversing difficult areas of soft ground, try to keep the vehicle in motion.
 - 8.9.1 Once stopped it is far more difficult to get the vehicle going again.
 - 8.9.2 If the vehicle becomes stuck, do not spin the wheels, as they will only dig in further or deeper until the vehicle chassis rests on the ground.
 - 8.9.3 Try to slowly back the vehicle in its own tracks, as these have been previously compressed by the vehicle. In most cases this will be successful. If not, place appropriate material (e.g., wooden planks, mats, branches, etc.) under the wheel to improve traction.
- 8.10 Before driving over rough terrain, the terrain should be inspected on foot first.
- 8.11 When climbing hills in the vehicle travel straight up or down.
 - 8.11.1 Be aware of what is on the other side of the hill prior to climbing.

- 8.11.2 At the base of the hill the driver should apply more power. Ease up on the power while approaching the top and before going over the crest.
- 8.11.3 If the vehicle stalls on the ascent, back straight down the hill in reverse.
- 8.11.4 For downhill travel in a vehicle with manual transmission, always use the lowest appropriate gear, and do not disengage the clutch to allow the vehicle to coast. If the vehicle is equipped with an automatic transmission, use low range and the lowest drive setting.
- 8.11.5 DO NOT drive a hill at an angle this increases the risk for a roll-over incident.
- 8.11.6 DO NOT attempt to climb a very steep hill if there is doubt the vehicle can successfully climb the hill.
- 8.12 When driving through water, consider the maximum wading depth of the vehicle.
 - 8.12.1 The air intake must always be kept clear of water.
 - 8.12.2 Driving through water should always be done slowly to keep the bow wave low.
 - 8.12.3 In addition, slow speed prevents a hot engine from suffering tension cracks by sudden contact with cold water.
 - 8.12.4 Check the brakes after leaving the water.
- 8.13 Prior to returning to the road, do a vehicle inspection to confirm the vehicle is road worthy.

9.0 Towing

- 9.1 Conduct a pre-start inspection of the equipment to be towed.
- 9.2 Only hook-up equipment, using a signaler to do so, that has been verified as safe for transport.
- 9.3 Confirm the hitching equipment of the vehicle and that of the equipment to be towed are compatible.
- 9.4 Always inspect the hitch for defects and to confirm it is securely closed (e.g. safety pin in place, safety chains hooked up using the "crossed" or "cradle" method, locking devices on hooks).
- 9.5 Confirm light cord is plugged in and any emergency braking devices are hooked up. Verify all lights are in working order.
- 9.6 Conduct a brake test prior to travelling.
- 9.7 Confirm speed of travel does not exceed the manufacturer's specification for the equipment towed.
- 9.8 Maintain awareness of total dimensions of the vehicle plus the equipment towed. Adjust driving accordingly (i.e. widen turning radius, increase distance between vehicles).

Americas

Journey Management Plan

S3AM-005-FM1

Project:		Journey Management Plan Identifier # (optional):	
Project Specific Requirements:			
Journey Management Plan – Minimum – required for trips > 250 miles / 400 kilometers (one way) and as identified in the project specific requirements.			
1. Driver and Passenger Information			
Driver Name:		Driver Training Completed:	
Passengers:			
2. Vehicle Information			
Company Owned <input type="checkbox"/>		Rental / Leased <input type="checkbox"/>	Personal <input type="checkbox"/>
Vehicle Type/Description/Registration No.:			
3. Trip Information			
What is the purpose of the trip?		Estimated distance:	
Single Trip: <input type="checkbox"/> Reoccurring Trip: <input type="checkbox"/> / / to / /			
<i>This Journey Management Plan is to be assessed and reviewed prior to each trip.</i>			
Have alternate modes of travel (telepresence, public transportation, air, train) been evaluated? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Has a Safe Work Plan or Task Hazard Assessment been completed and attached? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA			
Destination 1:			
Departure Date:	Time:	Arrival Date:	Time (ETA):
Destination 2:			
Departure Date:	Time:	Arrival Date:	Time (ETA):
Destination 3:			
Departure Date:	Time:	Arrival Date:	Time (ETA):
Destination 4:			
Departure Date:	Time:	Arrival Date:	Time (ETA):
4. Special Conditions / Hazards (Check all that may apply)			
<input type="checkbox"/> Night Driving <input type="checkbox"/> Weather <input type="checkbox"/> Road Conditions (e.g., construction, ice, snow) <input type="checkbox"/> Rush Hour/Heavy Traffic <input type="checkbox"/> Long Driving / Fatigue (Over 2 hours) <input type="checkbox"/> Potential for distraction		<input type="checkbox"/> Rugged Terrain (4 x 4) <input type="checkbox"/> Large Vehicles <input type="checkbox"/> Animals <input type="checkbox"/> Towing (e.g., trailer) Other	
Additional Conditions / Hazards Details:			
Weather forecast:			
5. Contact Information			
Traveler No. 1 (Driver) - Name:		Phone No:	
Traveler No. 1 (Driver) - Personal Contact Name:		Phone No:	
Traveler No. 2 - Name:		Phone No:	
Traveler No. 2 - Personal Contact Name:		Phone No:	

Traveler No. 3 - Name:		Phone No:
Traveler No. 3 - Personal Contact Name:		Phone No:
Manager - Name:		Phone No:
Check-In Contact - Name:		Phone No:
Alternate Check-In Contact - Name:		Phone No:
Destination Contact (if applicable) - Name:		Phone No:
Other (description)	Name:	Phone No:
Other (description)	Name:	Phone No:
6. Route of Travel		
Route of travel (insert map or give detailed route directions):		
Is the return route of travel the same? <input type="checkbox"/> Yes <input type="checkbox"/> No		
7. Check-In Procedure		
<ul style="list-style-type: none"> • Check-In Interval - • Advise Manager and any other applicable personnel of travel plans and supply with a copy of this form (including attachments) • Confirm availability of Manager or Check-In Contact. Confirm check-in interval with Manager or Check-In Contact. • Discuss with contacts the possibility of travel within a cell phone "dead zone". • Advise Manager or Check-In Contact of departure. • Call Manager or Check-In Contact upon arrival at destination (e.g. worksite, office, home). • If multiple destinations, the process is repeated. 		
7.A Missed Check-In Procedure for Manager		
<ul style="list-style-type: none"> • Attempt to call traveler(s) using contact number(s) listed above. • Contact traveler's personal contact listed above. • If unsuccessful, discuss options with Manager, Check-In Contact (is anyone nearby who can be sent out along the route to destination, how much daylight remains, etc.?). • Call 911 or local police. 		
8. Emergency Planning		
AECOM Supervisor	Name:	Phone Number:
AECOM Manager	Name:	Phone Number:
Roadside Service:		
Emergency: 911 or equivalent	Incident Reporting:	
9. Approvals: All Journey Management Plans shall be reviewed and acknowledged by the driver and the driver's manager / supervisor. Copies of the form shall remain with the driver and the manager / supervisor for the duration of the journey. (Electronic copies are acceptable).		
Driver's Signature:		
Manager or Supervisor	Name:	Signature:

Americas

Vehicle Inspection Checklist

S3AM-005-FM2

Vehicle Tag No:	Mileage:	Date:	Time:	Driver Name:	Location:		
Inspection Checklist: This Pre-Trip Vehicle Inspection Checklist is intended to be completed by the vehicle driver prior to departing on a trip. Checking boxes means that item is present and functioning. Deficiencies that affect or could potentially affect the safe operation of the vehicle shall be repaired or corrected prior to departure. This checklist should only be used in addition to an on-going vehicle maintenance program.							
Item					Yes	No	N/A
1. General							
1-1 Proof of insurance and registration available and current?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-2 Is the date of the last regular maintenance known, or is the mileage/date of next scheduled maintenance known?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1-3 Is the overall condition of the vehicle good (no body damage, unusual sounds, leaks, odors, etc.)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Tires							
2-1 Do all tires have sufficient tread for driving conditions? Legal limit: 2/32" (for rain/snow: > 4/32")					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-2 Are tires sufficiently inflated for driving conditions?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-3 Are the lug nuts and stem caps present and tight for each tire?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-4 Is the spare tire and jack present and in good condition?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Vehicle Interior							
3-1 Are the brake and accelerator pedal pads in good condition?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-2 Are the floor mats in good condition and not interfering with the brake or accelerator pedals?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-3 Is the seat properly adjusted (including the headrest)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-4 Is the seatbelt in good condition?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-5 Are the mirrors in good condition (not broken, dirty)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-6 Are the dashboard/instrument lights working?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-7 Is the dashboard free of warning lights and do the gauges appear to work when the car is started?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-8 Does the horn work?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-9 Are distractions such as cell phones and GPS units secured so they do not encourage use?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Lights and Signals							
4-1 Do the headlights and high beams work?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-2 Do the tail lights function properly?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-3 Do the turn signals work (front and rear)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-4 Do the brake lights work (including high light in the rear window if applicable)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-5 Do the hazard lights (emergency flashers) work?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-6 Do back up / reverse lights work?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-7 If equipped with a back-up alarm can it be heard clearly?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Mechanical							
5-1 Do the brakes work and feel solid (not soft)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-2 Does the parking/emergency brake work?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-3 Is the steering in good working condition (not loose)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-4 Is the engine oil level full or in the operating zone?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-5 Excessive vehicle bounce going over bumps reported (possible sign of worn shock absorbers)?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5-4 Is the fuel level full or at an adequate level for the proposed usage?					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item	Yes	No	N/A
6. Windows and Windshield			
6-1 Is the windshield clean and unbroken?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6-2 Are the wiper blades in good condition (front and rear)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6-3 Are all the windows clean and unbroken and windshield fluid available and operational?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Emergency Equipment (as needed per conditions/project requirements)			
7-1 Is there a "Safety Kit" (fire extinguisher, first aid, safety triangle and 2 reflective vests)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7-2 Is there a first aid kit, has it been inspected recently?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7-3 Is survival gear and equipment available (blanket, water, heat source, flashlight, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7-4 Is a means for emergency communication available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Other Equipment (as needed per conditions/project requirements)			
8-1 Is there a means to secured loads (cargo next, container)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8-2 Are cones or other warning devices available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8-3 Is weather specific equipment (snow chains, tired etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8-4 Does the vehicle have a snow brush/ice scraper?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8-5 Does the vehicle have a fire extinguisher?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Comments			
Inspector Name:	Signature:	Date:	

SH&E Training

S3AM-003-PR1

1.0 Purpose and Scope

- 1.1 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. These are the minimum safety, health and environment (SH&E)-related training requirements and tracking procedures. Additional training requirements may exist related to a specific task. Specific geographic entities, business units, and projects may have additional training requirements.
- 1.2 This procedure was developed to assist employees and managers in the identification of training requirements and to define the AECOM procedures for tracking and documenting SH&E training. The goals of this procedure are to ensure regulatory compliance and to provide employees with the information and training they need to accomplish their work assignments safely; prevent injuries to themselves, coworkers, surrounding communities, and customers; and protect company and/or customer property and the environment.
- 1.3 Major objectives of this procedure include:
- Identify accountability, responsibility, and authority pertaining to SH&E training program requirements.
 - Establish minimum training course and/or instructor criteria to support compliance with applicable regulatory requirements as well as AECOM policy.
 - Provide a framework to assess participant competency and understanding.
 - Define recordkeeping requirements for the training program.
 - Maintain consistency in SH&E training content throughout the Americas.

2.0 Terms and Definitions

- 2.1 **Compliance Training** – Training meant to provide a safe and healthy workplace for AECOM employees and others through adherence to legislative and regulatory mandates (e.g., Federal, State, Provincial, Territorial, local/municipal governments and agencies thereof).
- 2.2 **Conformance Training** – Training developed by AECOM intended to further develop the AECOM SH&E culture, as specified in AECOM SH&E policy and procedure, or client requirements.
- 2.3 **Learning Management System (LMS)** – An electronic training delivery and data management system utilized for implementation of the SH&E training program.

3.0 References

- 3.1 S3AM-015-PR1 Newly Hired or Transferred Employees
- 3.2 S3AM-202-PR1 Competent Person Designation

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Executives

- Establish adequate resources (budget, staffing, etc.) to implement this procedure.
- Assignment/support of Learning Management System administration duties.

4.1.2 Supervisors/Managers

- Confirm new employees complete the AECOM Safety Orientation.

- Assist employees in identifying training requirements.
- Confirm supplemental employee training courses are identified based on local/client requirements.
- Confirm additional employee SH&E training requirements are identified based upon prudent risk management considerations and local performance issues.
- Confirm employee's training requirements are re-evaluated whenever an employee's assigned duties change significantly.
- Provide time and resources to allow employee to complete required training.
- Verify corrective actions are implemented when employees fail to meet training requirements.
- Confirm that the appropriate level of training is being assigned to the employee with regard to their specific job and task assignments and client needs.
- Confirm employees have current and applicable training to the employee's assigned tasks associated with the program or project.
- Confirm their own supervisory or management training is complete and current as applicable to the scope of work and type or oversight (e.g., AECOM employees, subcontractors, etc.).

4.1.3 **Vice President SH&E**

- Establish and maintain this procedure.
- Provide the necessary tools, support, and staff for on-going development and support of the training program.
- Report/communicate training status to senior management.

4.1.4 **SH&E Managers**

- Confirm management understands the function of the LMS and provide training, access and resources.
- Work with management to develop schedules, develop skills of employees assigned with training and recordkeeping duties, and provide training classes as requested.
- Confirm qualifications of safety training providers are reviewed and approved.
- Confirm training lesson plans and course agendas for training courses are reviewed and approved to verify the course content meets compliance/conformance requirements.
- Offer training participants the opportunity to evaluate training events.
- Report compliance with training program requirements to line management.
- Develop a training calendar.

4.1.5 **Employees**

- Complete the AECOM Safety Orientation.
- Coordinate with their supervisor to complete required training within any specified timeframes.
- Monitor their training expiration dates and coordinate refresher training to prevent expiration of any required training certification.
- Maintain a personal record of all training certifications.
- Supply copies of training completion certificates for inclusion in the LMS, as requested.
- Provide feedback on training through the evaluation process.

4.2 **Identifying Required Training**

4.2.1 **All new employees shall complete the AECOM Safety Orientation.**

- The AECOM Safety Orientation communicates the responsibility of each employee for a safe working environment and establishes AECOM's commitment to safety.
- The orientation communicates AECOM's Safety, Health and Environment (SH&E) Policy and the fundamental principles of the SH&E Management System; Safety for Life and the Life

Preserving Principles. Employees are informed of various aspects of the program, including but not limited to:

- Monitoring and evaluation of the program by leadership on an ongoing basis.
- Availability of AECOM policies and procedures and reference to the AECOM intranet site.
- The importance and requirement of pre-planning, including hazard assessment basics.
- Responsibility to report unsafe actions and conditions and the authority to stop unsafe work.
- The availability and importance of task specific training, refresher training, and related initiatives.
- Basic requirements and importance of incident reporting, notifications and investigation.
- Substance abuse prevention program, fit for duty requirements and the availability of medical support.
- Employees shall also complete any applicable site specific field or office orientations.
 - Employees shall be oriented to the layout of the site and instructed on the recognition of unsafe conditions.
 - Employees shall be informed of the site specific field or office hazards, any applicable control measures and any site specific field or office requirements and restrictions (e.g. rules, required PPE, etc.) through the review of the applicable field or office SH&E Plan.
 - Site specific orientations shall include the location specific Emergency Response Plan, including any required actions and responsibilities.
 - As applicable, the site specific orientation may address any Short Service Employee requirements. Refer to *S3AM-015-PR1 Newly Hired or Transferred Employees*.
 - As applicable, any regulatory or client specific requirements and restrictions.

4.2.2 Employee training requirements are dictated by the work each employee performs (or is expected to perform) and the geographic area(s) where the employee performs these activities. Employees include all AECOM personnel (e.g. office/field personnel, supervisors, managers, etc.).

- The attached *SH&E Training Matrix (S3AM-003-FM1)* is a matrix of the most common courses that may be required, the frequency, and expected participants. The Attachment contains four tables. Table 1 is applicable to all Business Groups of AECOM. Table 2-4 are Business Group-specific requirements. Table 1 and the applicable Business Group-specific table should be used to evaluate an employee's training requirements.
- Additional tools such as a Training Assessment may be developed at the business group level if desired to further define training requirements.

4.2.3 Training requirements shall be evaluated upon hire. Employees shall not undertake a task for which they have not been adequately trained. SH&E training needs shall also be re-evaluated periodically and may also be identified through individual risk assessments, incident investigations, observed non-compliance, when procedures change, or through the annual staff appraisals process, and whenever an employee's assigned duties change significantly.

4.3 Training Competency Levels

4.3.1 Information Dissemination

- Information is provided to employees through verbal or written communication.
- This type of training may be used in scenarios where the goal is to provide information to employees with no expectation of implementation or executing a regulatory requirement or SH&E procedure.
- The communication is mostly one way and there is no confirmation or knowledge assessment (e.g., test, interactive discussion, etc.) that the employee shall pass to demonstrate understanding and meet a training goal. Examples of this type of communication would be newsletters, safety alerts, webinar presentations, video only presentations, etc.

4.3.2 Awareness Level

- Awareness-level training is applicable to training where the primary goal is to transfer knowledge from the organization to participants.
- Training will typically take the form of instructor-led discussions, presentation of related video content, and/or self-directed e-learning modules.
- In most cases comprehension assessment will be performed through discussion of the training topic with the participants and/or a simple quiz. When quizzes are provided employees will successfully complete at least 80% of the questions.

4.3.3 Performance Level

- Performance-level training will build upon the Awareness level. The goal of Performance Training is to have an employee successfully demonstrate that they can apply the knowledge discussed during training and perform the desired skills necessary to perform their job.
- Training materials are provided and discussed, and will incorporate a demonstration of the skills to be completed.
- The instructor will gauge the level of understanding through interactive discussion with participants and a pass/fail designation of demonstrated skills by the employee. A test or quiz of moderate difficulty will be provided, with participants scoring 80% or better, followed by the successful demonstration of the desired skill to receive certification.

4.3.4 Competent Person Level

- Competent Person-level certifications may be applicable to, and dictated by, specific regulatory standards. Refer to *S3AM-202-PR1 Competent Person Designation* for additional guidance.
- When Competent Person-level certifications are offered, comprehension assessments will build upon Performance-level certification.
- Competent Person certifications will incorporate classroom training along with on-the-job mentoring provided by employees previously certified to the Competent Person-level in the area of competency being sought. Candidates for Competent Person certification will be required to score 80% or better on administered written exams.
- Additionally, candidates shall be capable of repeatedly demonstrating the desired skills and regulatory knowledge, both in a classroom setting as well as in an actual work setting to the Instructor, Manager for the program or project the employee is seeking to gain and apply the certification to, and/or the mentoring Competent Person.
- Competent Person(s) will be designated on a program/project-by-program/project basis, in accordance with *S3AM-202-PR1 Competent Person Designation*. Forms to document certification and designation of a Competent Person are provided with the procedure and a record of the designation will be maintained within the project files and LMS.

4.4 Training Delivery

4.4.1 Internal Training

- Internal training is performed by AECOM's internal resources and may include intranet and classroom-based training.
- To ensure consistency in content and duration and in meeting regulatory and company requirements, AECOM training materials should be used as the basis for training whenever they are available. Trainers may always elect to supplement the base training materials for these courses with specifics for the program, project, customer, office, or geographic unit.
- AECOM instructors shall have the experience, education and competency and any required current licensing, registrations and/or certifications relevant to the course taught. Training format and material shall be appropriate to the topic and audience. Refer to *S3AM-003-FM4 SH&E Training Syllabus Template*.

- Course content of training provided on an annual basis will be updated as appropriate, or multiple versions of training may be developed for rotating use, to provide participants with new learning materials and avoid stagnation.
- Course content shall be periodically reviewed, with no greater than five years between reviews.

4.4.2 External Training

- External vendors conduct training that is not available through internal training sources. This training may be classroom or on-line training. External vendors should be pre-approved by the SH&E Department prior to any employee attending a training class.

4.5 Training Evaluation

- 4.5.1 At the conclusion of a training event, participants will be provided with the opportunity to anonymously evaluate the training session with through the use of *S3AM-003-FM3 Course & Instructor Evaluation* or an online survey.
- 4.5.2 Training instructors will review evaluations at the conclusion of training and request assistance addressing consistently noted issues if appropriate.

4.6 Training Expiration

- 4.6.1 Training will expire in accordance with requirements specified in applicable regulations or on syllabus. Expiration of training will be tracked electronically using the AECOM LMS. Employees tracking training outside of the AECOM LMS are responsible for tracking their individual training expiration dates. If training expires for an employee, they will be disqualified from performing tasks associated with the training when training is required by AECOM defined requirements or legislation/regulation to perform the tasks. Once training has been renewed, the employee will again be qualified to perform associated tasks.

5.0 Records

- 5.1 Courses denoted in *S3AM-003-FM1 SH&E Training Matrix* or commonly required training shall be tracked in the AECOM LMS when completed. Employee training tracked in the AECOM LMS shall be retained for the duration of the employee's employment.
- 5.2 Classroom training shall be documented using an attendance record and course agenda. Attachment *S3AM-003-FM2 SH&E Training Sign-In Sheet* may be used to document attendance. Attachment *S3AM-003-FM5 SH&E Training Certificate Template* may be used to document course completion. Course completion may also be documented by LMS-generated certificates when allowed by regulation.
- 5.3 For training provided by customers/vendors, training documentation shall be entered into a training database or LMS and documentation shall be maintained by the employee. Copies of certificates or other evidence of required project training may be included in program or project training files.
- 5.4 In some cases, objective evidence of comprehension is required (passing a test) and this information may be tracked in addition to the course information.
- 5.5 Attendance sheets, agendas, course evaluations, completed tests, and copies of certificates will be maintained. These should be filed in program or project training files by course then by date for easy access/auditing.
- 5.6 Locations/projects/programs will maintain records on any project, program, or location- or site-specific training requirements.

6.0 Attachments

- 6.1 [S3AM-003-FM1 SH&E Training Matrix](#)
- 6.2 [S3AM-003-FM2 SH&E Training Sign-In Sheet](#)

- 6.3 [S3AM-003-FM3 Course and Instructor Evaluation](#)
- 6.4 [S3AM-003-FM4 SH&E Training Syllabus Template](#)
- 6.5 [S3AM-003-FM5 SH&E Training Certificate Template](#)
- 6.6 [S3AM-003-FM6 New Employee SH&E Orientation](#)

Americas

SH&E Training Matrix

S3AM-003-FM1

Employee Name: _____

Employee Number: _____

Location: _____

Date: _____

Table 1 – All Employees

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
10 Hour Outreach Course (OSHA – General Industry or Construction)	N	Once	As required by client or local regulations.	<input type="checkbox"/>	
30 Hour Outreach Course (OSHA – General Industry or Construction)	N	Once	As required by client. Required if you serve as a site safety and health officer on US Army Corps of Engineers (USACE) projects, or other DoD projects which follow the provisions of EM 385-1-1 (USACE Safety and Health Requirements Manual).	<input type="checkbox"/>	
Asbestos Inspector	Y	Annual	You perform asbestos sampling tasks.	<input type="checkbox"/>	
Asbestos Planner	Y	Annual	You serve as the project asbestos planner.	<input type="checkbox"/>	
Automated External Defibrillator (AED)	Y	As established by the training provider	You are designated to be an AED user at an office or project site.	<input type="checkbox"/>	
Bloodborne Pathogens	Y	Annual	Required for employees designated as a first aid responder or others who have a potential bloodborne pathogen exposure.	<input type="checkbox"/>	May be included in first aid or CPR class.
Cardiac Pulmonary Resuscitation (CPR)	Y	As established by the training provider – typically biennial	Required for 1) employees who are designated as first aid responders, 2) employees who are performing high hazard activities (e.g., potential for falls, suffocation, electrocution, amputation) and medical attention is more than 4 minutes away, or 3) required by client contract.	<input type="checkbox"/>	Acquire training from recognized source (e.g., Red Cross, American Heart).
Confined Space Entry	Y	Once	You perform confined space entry/authorizer/attendant duties (including anyone performing non-entry rescue activities).	<input type="checkbox"/>	

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
Confined Space Refresher	N	As needed	Recommended if you perform entry activities.	<input type="checkbox"/>	
Confined Space Rescuer	Y	Once	You may have to enter a confined space to perform a rescue.	<input type="checkbox"/>	
Emergency Preparedness Plan/ Emergency Action Plan	Y	Once	Required for all employees.	<input type="checkbox"/>	For office personnel, this information is covered in employee orientation. For field/site personnel, this is covered in project/site safety training.
Excavations/Trenching	Y	Once and as required by client or training provider	You are or may be involved in excavation or trenching operations	<input type="checkbox"/>	Frequency may be established by an applicable standard (e.g., Gold Shovel Standard - annual)
Experienced Miner Training	Y	Once, followed by annual refreshers	You meet the US Mine Safety and Health Administration (MSHA) definition of an "Experienced Miner."	<input type="checkbox"/>	See Surface Miner and Underground Miner training for information on annual refreshers.
Fall Prevention/Protection	Y	Once	You supervise tasks or perform tasks at heights (on roofs, scaffolding, ladders, unfinished flooring).	<input type="checkbox"/>	May be included in OSHA 10 or other classes
Fire Extinguisher	Y	Annual	You may be expected to use fire extinguishers (fixed facilities and project sites).	<input type="checkbox"/>	
First Aid	Y	As established by the training provider - typically biennial	Required for 1) employees who are designated as first aid responders, 2) employees who are performing high hazard activities (e.g., potential for falls, suffocation, electrocution, amputation) and medical attention is more than 4 minutes away, or 3) required by client contract.	<input type="checkbox"/>	Acquire training from recognized source (e.g., Red Cross, American Heart).
Hazard Communication	Y	Initially and if hazards change	Required for anyone who is potentially exposed to/works with hazardous chemicals.	<input type="checkbox"/>	Training must occur before any work with hazardous chemicals. Included (as needed) in safety orientation. After the initial training, required updates will typically be handled as part of project-specific safety training.
Hazardous Materials Shipping	Y	Biennial	Required for anyone who packages, labels, transports, completes paperwork for, or offers for shipment, hazardous materials/dangerous goods.	<input type="checkbox"/>	

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
Hazardous Waste Operations (40-hours)	Y	Once	Anyone performing work or expected to perform at hazardous waste sites or treatment, storage, and disposal facilities.	<input type="checkbox"/>	Training must have a 'hands-on' component (i.e., donning/doffing PPE). Any exceptions must be approved by a Regional SH&E Manager.
Hazardous Waste Operations – Refresher (8 hours)	Y	Annual	(See Hazardous Waste Operations.)	<input type="checkbox"/>	When offered as a combination of online modules and classroom instruction, online modules must be completed prior to the classroom portion for participants to receive credit. Both portions (online and classroom) need to be completed within the same calendar year.
Hazardous Waste Operations – Supervisor (8 hours)	Y	Once	Required for anyone serving as the site supervisor or overseeing subcontractor activities at a hazardous waste site.	<input type="checkbox"/>	When offered as a combination of online modules and classroom instruction, online modules must be completed prior to the classroom portion for participants to receive credit. Both portions (online and classroom) need to be completed within the same calendar year.
Hearing Conservation	Y	Annual	Employees exposed to noise ≥ 85 decibels averaged over an 8-hour day, or who otherwise utilize hearing protectors.	<input type="checkbox"/>	May be included in OSHA 10 or other classes
Injury/Illness Prevention	Y	Once	You are assigned to California offices or job sites.	<input type="checkbox"/>	Covered in California office/project Safety Orientation.
Laboratory Safety	Y	Once	You work in a fixed or mobile wet chemistry lab.	<input type="checkbox"/>	Completed as part of site or project orientation.
Lead Project Designer	Y	Every 3 years	You are a lead project designer.	<input type="checkbox"/>	
Lead Risk Assessor	Y	Every 3 years	You are a project lead risk assessor inspector.	<input type="checkbox"/>	
Lockout/Tagout Awareness – Affected Person	Y	Once; follow-up as required by regulations	You work with and around equipment that may need to be locked out/tagged out. (You are not responsible for applying tags/locks).	<input type="checkbox"/>	May be included in OSHA 10 or other classes
Lockout/Tagout – Authorized Person	Y	Once; follow-up as required by regulations	You lock out or tag out machines or equipment in order to perform servicing or maintenance on that machine or equipment.	<input type="checkbox"/>	Specific to individual machines.

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
Marine Trash and Debris Awareness and Limitation	Y	Annual	You work on contract operations for lessees and/or operators of oil and gas operations in the Gulf of Mexico.	<input type="checkbox"/>	Provided by lessee or operator.
Nuclear Density Gauge Operator	Y	Once; follow-up as required by regulations	You <u>operate</u> nuclear density gauges / densometers.	<input type="checkbox"/>	Troxler or equivalent training.
Nuclear Density Gauge Transporter	Y	Every 3 years	You <u>transport</u> nuclear density gauges / densometers.	<input type="checkbox"/>	Hazardous Materials shipping.
Orientation Video	N	Within one week of starting at AECOM	Required for all employees.	<input type="checkbox"/>	Training will set the expectations of the AECOM Safety for Life program
Powered Industrial Trucks (Forklifts)	Y	Once	Your job assignments include operating a powered industrial truck (forklift).	<input type="checkbox"/>	Required more frequently if assessments indicate the need.
Radiation Worker	Y	Once; follow-up as required by regulations	You may require non-routine or short-term unescorted access to radiological controlled areas (excluding Radiation Areas and Airborne Radiation Areas), or you work in areas where radioactive materials are stored.	<input type="checkbox"/>	Public dose limits apply. Additional training required when public dose limits may be exceeded.
Radiation Safety Officer	Y	Once	You are designated as a Radiation Safety Officer.	<input type="checkbox"/>	
Respiratory Protection	Y	Annual	Required for any employee who may be required to wear a respirator.	<input type="checkbox"/>	May be included in HAZWOPER refresher training
Safety Trained Supervisor (STS) or Safety Qualified Supervisor (SQS)	N	Once	Any manager directly overseeing revenue generating projects with any aspect of work conducted outside of an AECOM office	<input type="checkbox"/>	Schedule for the associated Business Group established by the applicable VP SH&E or designee..
Self-Contained Breathing Apparatus (SCBA)/Cascade Systems	Y	Once	Required for any employee required to wear SCBAs or to operate a supplied air system.	<input type="checkbox"/>	Part of Project Safety training as needed.
Shipping Specialist	Y	Once	You are designated as a Shipping Specialist.	<input type="checkbox"/>	Updates are required as regulations change.
Substance Specific	Y	Once	Any U.S. employee potentially exposed to a substance covered by the 29 CFR substance specific regulations.	<input type="checkbox"/>	Includes lead, asbestos, benzene, etc. Offered as part of project-specific training.
Surface Miner Training – New (24 hours)	Y	Once	You perform work at surface mine sites regulated by MSHA.	<input type="checkbox"/>	Training is conducted by MSHA-approved instructors under MSHA-approved training plan.

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
Surface Miner Training – Annual Refresher (8 hours)	Y	Annual	You perform work at surface mine sites regulated by MSHA.	<input type="checkbox"/>	Training is conducted by MSHA-approved instructors under MSHA-approved training plan.
Supervisor Training in Accountability and Recognition Techniques (START)	N	Once	Required for all supervisors	<input type="checkbox"/>	
Underground Miner Training – New (40 hours)	Y	Once	You perform work in underground mine sites regulated by MSHA.	<input type="checkbox"/>	Training is conducted by MSHA-approved instructors under MSHA-approved training plan.
Underground Miner Training – Annual Refresher (8 hours)	Y	Annual	You perform work in underground mine sites regulated by MSHA.	<input type="checkbox"/>	Training is conducted by MSHA-approved instructors under MSHA-approved training plan.
Waste Specialist	Y	Once with Annual Refresher	You are responsible for waste management at a small or large quantity generator facility.	<input type="checkbox"/>	
Welding/Brazing/Cutting	Y	Once	You job duties include these activities.	<input type="checkbox"/>	May be included in OSHA 10 or other classes
Workplace Hazardous Materials Information System (WHMIS)	Y	Annual	You are assigned to a Canadian facility and work with or around hazardous materials.	<input type="checkbox"/>	Canadian Hazard Communications

Table 2 – Applicable to Energy, Infrastructure and Industrial Construction (EIC) Group

In addition to the courses in Table 1, the following courses may be applicable.

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
Defensive Driving	N	Once, followed by refresher as required	Required for all employees who are Authorized Drivers. Recommended for other staff that drive on behalf of AECOM.	<input type="checkbox"/>	
Reasonable Suspicion for Substance Abuse	N	Once upon assignment as responsible supervisor	For project and office supervisors with responsibility for administering the Substance Abuse Program (SAP).	<input type="checkbox"/>	On line training provided by the SAP Program Administrator.
New Employee Safety Orientation Training	N	Once and at each new project assignment	Required for new employees and employees assigned to project sites per site requirements	<input type="checkbox"/>	New employees receive orientation per HR program; project employees per site requirements.
First Aid/CPR/AED/BBP	N	Once plus annual refreshers, or as required by regulations	Recommended for office and project safety floor wardens.	<input type="checkbox"/>	Provided by authorized trainers both internal and external as available

Table 3 – Applicable to Management Services Group

In addition to the courses in Table 1, the following courses may be applicable.

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
New Employee Safety Orientation Training (Approx. 1 hour)	N	Once	Required for new employees.	<input type="checkbox"/>	Access through Vision
Standards of Safety Performance (Approx. 1 Hour)	N	Annual	Required for all employees.	<input type="checkbox"/>	Specific content will depend on the site and the employees' expected work.
Site Safety Training (up to 4 hours)	N	Biennial	Site specific training based on site specific work and safety processes (e.g., warehouses, laboratories, vehicle maintenance, and aircraft maintenance).	<input type="checkbox"/>	Specific content will depend on the site and the employees' expected work.
Site Supervisor Safety Training	N	Once	Expected for all Supervisors in the pursuit of STS certification.	<input type="checkbox"/>	

Table 4 – Applicable to Design & Consulting Services (DCS) Group

In addition to the courses in Table 1, the following courses may be applicable.

Course Title	Regulatory	Frequency	Should You Attend?	Check if Required <input checked="" type="checkbox"/>	Comments
10 Hour Outreach Course (OSHA – General Industry or Construction)	Y (as per jurisdiction)	Once	You perform work that exposes you to construction or industrial hazards	<input type="checkbox"/>	
30 Hour Outreach Course (OSHA – General Industry or Construction)	Y (as per jurisdiction)	Once	You manage work with some safety responsibility that exposes you and/or other workers to construction or industrial hazards	<input type="checkbox"/>	
New Employee Orientation	Y	Once	All new employees.	<input type="checkbox"/>	Accomplished via a combination of AECOM University modules and location-specific training.
Vehicle / Driver Safety	N	Once	Required for all employees who drive on behalf of AECOM.	<input type="checkbox"/>	Generally completed upon hire by employees who may become authorized drivers. Available online through the AECOM University.
Ergonomics	N	Once	Required for all employees with significant ergonomic risk.	<input type="checkbox"/>	Generally completed upon hire or change in assignment. Available online through the AECOM University.
Confined Space Entry Awareness	N	As needed	Employees who work around confined spaces but are not responsible for performing entry/authorizer/attendant duties.	<input type="checkbox"/>	Available online through AECOM University.
Defensive Driving	N	Once, followed by refresher every three years	Required for all DCS employees who drive on behalf of AECOM.	<input type="checkbox"/>	National Safety Council, Alert Driving, Smith System or equivalent.
Excavations/Trenching Awareness	N	As needed	Employees who work at sites where excavation/trenching tasks are performed.	<input type="checkbox"/>	Available online through AECOM University.
Field Safety Training (2 hours)	N	Annual	Required for all employees performing field work who are not in the hazardous waste or mine safety training programs. This training is also required for any DCS Project Manager that manages projects where field work is performed. The 10-Hour OSHA course is an acceptable alternative to Field Safety Training.	<input type="checkbox"/>	Specific content and delivery method will depend on the office and the employees' expected work. The Field Safety requirement (every year) continues to apply after the completion of the 10-hr course.

Americas

SH&E Training Sign-In Sheet

S3AM-003-FM2

Course Name:					
Region:		District/Area:			
Business Line:		Dept #:			
Office:		Address:			
Date:		Start Time:		Stop Time:	
Certification Level (Check One): Awareness <input type="checkbox"/> Performance <input type="checkbox"/> Competent Person <input type="checkbox"/>					
Lead Instructor:	Instructor 1:		Instructor 2:		
Employee Name: (PRINT LEGIBLY)	Employee Signature	Region/Office Company (if not AECOM)	Employee ID #:	Instructor Initials verifying completion	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					

By my signature I certify that the individual(s)
beside whom I have initialled on this roster have

Lead Instructor Signature

Date

attended and successfully passed the course
(assessment).

1.0 Purpose and Scope

- 1.1 AECOM is committed to providing a safe workplace for its employees, clients and others. In order to provide a safe work environment, employees must be fit for work, be able to perform their job duties in a safe, secure, productive, and effective manner, and remain able to do so throughout the entire time they are working.
- 1.2 This procedure applies to all AECOM Americas-based employees and any other entity and its personnel contractually required to comply with this document's content.
- 1.3 Fit for duty means an individual is in a state (physical, mental, and emotional) that enables them to perform assignments competently and in a manner that does not threaten the health and safety of themselves or others.
- 1.4 Fitness for duty expectations can vary with specific job tasks, location and regulatory requirements. Fitness for duty may be affected by significant fatigue, stress, emotional issues, illness, injury, or the effects of drugs and alcohol. Employees who are not fit for duty may present a safety hazard to themselves, to other employees, to the Company, or to the public.
- 1.5 The decision to request a fitness for duty examination (and repeat examinations as necessary) can be made by Operations, Safety, Health and Environment (SH&E) and Human Resources (HR). The decision will be based on the need to protect the employee and co-workers when there is concern about an employee's ability to perform his or her job safely, based on the observations of a supervisor, manager, or medical personnel.
- 1.6 Should AECOM require a fitness for duty examination, it shall be performed at no expense to the employee and will be performed by an occupational specialist, physician or other medical specialist designated by the Company or Employee Assistance Program (EAP). Employees awaiting a fitness for duty examination may be temporarily relieved of any work duties or may have their work duties modified.
- 1.7 The purpose of this policy is to establish consistent procedures by which AECOM will evaluate an employee's fitness for duty when an employee is:
 - 1.7.1 Having observable difficulty performing work duties in a manner that is safe for the employee, for the employee's co-workers, for the Company, or for the public, as determined by the supervisor;
 - 1.7.2 Posing an imminent and serious safety threat to self or others; or
 - 1.7.3 Involved in the event of a workplace incident or accident.

2.0 Terms and Definitions

- 2.1 None

3.0 References

- 3.1 None

4.0 Procedure

- 4.1 It is the responsibility of all employees to:
 - 4.1.1 Maintain a safe workplace;
 - 4.1.2 Manage their health in a manner that allows them to safely perform their job responsibilities;

- 4.1.3 Arrive to work fit for duty and capable to perform their job responsibilities in a safe, secure, productive, and effective manner during the entire time they are working and refraining from behavior which could impair safety in the workplace;
- 4.1.4 Notify their supervisor or HR when they are not fit for duty and to declare any medication side effects and/or situations/concerns which may have an impact on their ability to perform work; and
- 4.1.5 Notify a supervisor when they observe a co-worker acting in a manner that indicates the co-worker may be unfit for duty. If the supervisor's behavior is the focus of concern, an employee may inform a senior manager and a HR representative.
- 4.2 The Company will not tolerate retaliation against any employee for filing a complaint or concern or for participating in any way in an investigation. It is the responsibility of AECOM management and supervisors to:
 - 4.2.1 Communicate to all employees the content of this procedure and other applicable safety policies and procedures
 - 4.2.2 Observe (and record when necessary) the attendance, performance, and behavior of the employees they supervise;
 - 4.2.3 Fairly and consistently follow this procedure when presented with circumstances or knowledge that indicate that an employee may be unfit for duty by contacting SH&E and HR as appropriate;
 - 4.2.4 Consider an employee's personal assessment of their own fitness for duty; and
 - 4.2.5 Keep any information of medical conditions or records strictly confidential at all times.
- 4.3 HR and SH&E will assist in the administration of this program, ensuring that the requirements of the procedure are implemented by all responsible departments.
- 4.4 The supervisor who believes they have received reliable information that an employee may be unfit for duty, or through personal observation believes an employee may be unfit for duty, will validate and document the information or observations as soon as is practical and contact SH&E and HR immediately. While there is a great variety and range of acceptable behavior among employees, dramatic or sudden changes in any particular employee's customary behavior may be a cause for concern. Atypical behavior that may trigger the need to evaluate an employee's fitness for duty include, but is not limited to, problems with dexterity, coordination, concentration, memory, alertness, vision, speech, inappropriate interactions with co-workers or supervisors, inappropriate reactions to criticism, or suicidal or threatening statements. Though the mere presence of any one factor or sign of behavior may not be sufficient to require an evaluation, it should not be ignored and may lead to the ordering of an evaluation.
- 4.5 The supervisor will present the information or observations to the employee at the earliest possible time in order to validate them and will allow the employee to explain his or her actions, or to correct any mistakes of fact contained in the description of those actions. An employee is not required to disclose a disability to a supervisor; however, a supervisor may inquire regarding the conduct, behavior or circumstances that give rise to his or her concerns. The supervisor will then determine whether the employee should leave the workplace immediately for safety reasons. Where possible, discussion and meetings with any employee should occur with SH&E and/or HR staff present.
- 4.6 Depending on the severity of the situation or event and the type of behavior, possible actions may include the following:
 - Documenting and noting the event or behaviour.
 - Encouraging the employee to use the EAP (if applicable) or to seek medical treatment.
 - Placing the employee on a paid leave of absence (Paid Time Off (PTO)) or paid administrative leave, depending on the situation).
 - Arranging for the employee's safe transportation home.
 - Making a management referral to the EAP or other local assistance agencies.

- Taking disciplinary action, if appropriate.
 - Calling 911 or local emergency authorities.
- 4.7 If there is a basis for thinking that a crime may have been committed and/or the employee is making threats to harm himself or herself or others, or is acting in a manner that is immediately dangerous to himself or herself or others, contact 911 or local emergency authorities directly. HR and the EAP should be consulted regarding the fitness for duty procedure after the immediate safety issue has been addressed.
- 4.8 In all other circumstances, the supervisor shall take appropriate action, including contacting HR. If it is not immediately practicable to contact HR, managers have the authority and ability to contact the EAP when they receive reports and validate or personally observe an employee's unfit behavior. Depending on circumstances, such as when an employee's conduct immediately or directly threatens safety, a supervisor may immediately relieve the employee of duty pending further evaluation.
- 4.9 The Company will rely on the EAP or occupational specialist, physician or other medical specialist (which may include a registered psychologist or psychiatrist) to assist with the evaluation process. Each case will be evaluated on a case-by-case basis. In all instances, it is imperative that the EAP or medical professional be provided complete and accurate information on the employee's job duties, responsibilities and expectations in order to make a fully informed decision. Please refer to *S3AM-008-FM1 Description of Job Duties*.
- 4.10 The employee must comply and cooperate with all aspects of the fitness for duty and evaluation procedures, including furnishing necessary consent and release forms to the health service provider. Noncompliance (including delayed compliance) may be grounds for disciplinary action up to and including termination. Information will be requested from the health service provider regarding work restrictions and/or accommodations that may be required upon the employee's return to work.
- 4.11 If it is determined that a fitness for duty evaluation is necessary, the employee will be asked to leave the workplace until the evaluation is completed. A recommendation is provided by the occupational specialist, physician or other medical specialist to HR. When it is determined that the employee can return to work safely, a HR manager will contact that employee with the date and conditions of their return to work. If there are conditions that the employee will need to comply with in order to ensure continued safe working habits, they will be required to sign an acknowledgement that they will comply with those conditions.
- 4.12 This procedure is not intended as a substitute for other Company policies or procedures related to performance nor is intended as a substitute for discipline. Situations involving violations of Company policies or practices may result in disciplinary action being taken.

5.0 Records

- 5.1 None

6.0 Attachments

- 6.1 [S3AM-008-FM1 Description of Job Duties](#)

Fatigue Management

S3AM-009-PR1

1.0 Purpose and Scope

- 1.1 The purpose of this procedure is to reduce the potential for employee fatigue by providing criteria for recognition, treatment, and management.
- 1.2 This procedure applies to AECOM Americas-based employees and operations, and any other entity and its personnel contractually required to comply with this document's content, where fatigue can be a factor impacting an employee's fitness for duty. Fatigue is mental or physical exhaustion that stops a person from being able to function normally.
- Fatigue is mainly caused by a lack of sleep, but may also be associated with prolonged periods of physical and/or mental exertion without sufficient time to recover.
 - Fatigue can be caused by work-related stresses, non-work-related stresses, or a combination of both. Work-related stress may be due to items such as pace of work schedule, location of work, environmental conditions of the work area (e.g., noise, lighting, tasks), and degree and duration of concentration required to perform a task.
 - Non-work-related fatigue is influenced by personal lifestyle, health issues, and family and relationship responsibilities.
 - Long-distance travel causes fatigue primarily by disruption of natural biological rhythms through both external factors and internal factors.
 - Acute Mountain Sickness (AMS) is a group of symptoms including fatigue that jeopardizes the well-being and the work capacity of people who are not acclimated when exposing themselves to altitudes above 3,000 meters. It appears in the first hours after exposure, declining after 1 or 2 days because of acclimatization. Its prevalence is directly related to high-altitude work, ascent speed, and personal susceptibility.

2.0 Terms and Definitions

- 2.1 None

3.0 References

- 3.1 None

4.0 Procedure

- 4.1 Implementation of this procedure is the responsibility of the manager directing activities of the facility, site, or project location.
- 4.2 Fatigue, and the level to which it impacts an employee, is associated with a number of factors including:
- 4.2.1 The quantity and quality of rest obtained before and after a working day.
 - 4.2.2 The time of day in which work takes place.
 - 4.2.3 The length of time spent at work and on work-related activities (including travel time to and from work).
 - 4.2.4 The type and duration of a work task and the environment in which it is performed.
 - 4.2.5 The physical and mental demands of work.
 - 4.2.6 Activities outside the workplace, such as sports, family commitments, or second jobs.

- 4.2.7 Disruption of normal circadian rhythms (human clock, bio-rhythms).
- 4.2.8 Individual factors, including existing medical conditions, illnesses, or sleep disorders.
- 4.2.9 Extreme alcohol intake or sleep deprivation.
- 4.2.10 Travel requirements, including daily commute distances and long- distance air travel.
- 4.3 Fatigue Recognition
 - 4.3.1 Employees are expected to carry out their work activities in a manner that does not risk the health and safety of themselves, their fellow employees, or any other personnel on the site (e.g., contractors, clients, the public, etc.). If an employee feels that they are unable to perform their work activities safely due to the effects of fatigue, they are required to stop work immediately and notify their supervisor. If this occurs while an employee is driving a vehicle, the employee is required to stop driving and find a suitable location to rest.
 - 4.3.2 Similarly, if an employee suspects a co-worker (including contractors or clients working with the employee) of suffering from the effects of fatigue, they are required to intervene on behalf of the affected person, stopping work and notifying their supervisor.
 - 4.3.3 Characteristics that may assist in the identification of fatigue may include, but are not limited to:
 - Physical Symptoms
 - Bloodshot eyes
 - Poor coordination
 - Slower movements
 - Slower-than-normal response time (e.g., response to commands or radio signals)
 - Cognitive Function Symptoms
 - Distraction from task
 - Poor concentration or lapses in concentration
 - Inability to complete tasks
 - Short-term memory loss
 - Nodding off momentarily
 - Fixed gaze
 - Reports of blurred vision
 - Emotional/Behavioral Symptoms
 - Appears depressed
 - Does not care about work
 - Easily frustrated with task/irritability
 - Increased or noticeable level of unexplained or unusual absenteeism
- 4.4 Fatigue Treatment
 - 4.4.1 Where fatigue has been identified, employees are suggested to take action to treat the underlying causes of the fatigue. Suggestions include:
 - Getting adequate, undisturbed, regular and consistent amounts of sleep each night. A minimum of 7 hours is recommended.
 - Eating well-balanced and nutritious meals at regular intervals.
 - Ensuring adequate consumption of water throughout the day.

- Exercising or stretching regularly.
- Maintaining a reasonable work and personal schedule.
- Avoiding alcohol, smoking, and drugs. Note that stimulants, including caffeine, may provide temporary relief from certain types of fatigue, but can increase the problem when the effect wears off.
- Changing stressful circumstances through vacation or personal leave.

4.5 Fatigue Management – Managers and Supervisors

- 4.5.1 Identify factors in the work place that may contribute to fatigue. Inform employees of potential fatigue-producing activities and how to manage them. Re-evaluate work tasks periodically to control fatigue.
- 4.5.2 Monitor employees for the signs and symptoms of fatigue.
- 4.5.3 Provide employees with sufficient breaks for food, water, and rest throughout the work day. Calling for unscheduled breaks/meals where fatigue factors are evident may be necessary.
- 4.5.4 Consult with employees regarding fatigue factors when extended work periods or shift work is anticipated.
 - When possible and apart from shift work, minimize early morning starts before 6:00 AM local time, because early start times give employees less time to get adequate sleep.
 - When possible and apart from shift work, minimize late-evening work after 9:00 PM local time (except where shift work is required), because employee alertness tends to decline after this time.
 - Limit extended work days to a maximum of 14 hours, and extended work weeks to 60 hours. Where this is not feasible, develop project-specific fatigue management guidelines for inclusion in site-specific SH&E plans.
 - For emergency work, a single shift should be limited to 16 hours, and an employee should be off work for at least 12 hours before the next shift start.
 - Project-specific extended work schedules shall be reviewed and approved prior to implementation.
 - Shift lengths longer than 12 hours should have two or more long breaks (at least 20 minutes) to allow time for meals.
 - If shift work is required, employees should be given sufficient time to get a continuous 7- to 8-hour period of sleep in each 24 hours, and at least 50 hours every 7 days.
 - At the end of extended night shifts, there should be a minimum of 36 hours or two sleep periods prior to transition to day shift.
- 4.5.5 Project industrial hygienists must consider extended work shifts in personal monitoring, and permissible exposure limits for acute chemical hazard exposures.
- 4.5.6 Review safety observations, near misses, injuries, and incidents that have occurred which may have resulted due to fatigue. Use the findings of these documents to revise project-specific fatigue management procedures, as necessary.
- 4.5.7 Supply adequate supervision for jobs that are physically or mentally demanding, repetitive, or require a high level of vigilance.
- 4.5.8 Develop job rotation and cross-training strategies for repetitive or monotonous work.
- 4.5.9 Consider providing ergonomic equipment such as anti-fatigue mats in areas of prolonged standing and lift assist devices for repetitive lifting tasks.

- 4.5.10 Remove obviously fatigued workers from activities where there is a risk to safety and health. These employees may be rotated to a task that creates a much lower immediate risk, or advised to go home. Where driving presents a further fatigue risk, provide transportation to ensure the employee reaches their destination safely.
- 4.5.11 Encourage employees to take adequate time away from work through vacations and personal leave. There should be at least one personal weekend in every 4 weeks of work.
- 4.5.12 Train employees on how to recognize fatigue, control fatigue through appropriate work and personal habits, and reporting of fatigue to a supervisor.
- 4.5.13 Where fatigue issues recur with an employee, consider referring the employee to the Employee Assistance Program (EAP) for help in the self-management of fatigue or other issues that may have a bearing on fatigue at work. Review working arrangements to assist employees in managing non-work-related fatigue causes.
- 4.5.14 Provide training to all employees as required by project-specific conditions or client-specific requirements (e.g., project startup training, onset of schedule changes, annual refresher training, etc.).
- 4.6 **Fatigue Management – Employees**
 - 4.6.1 Employees are responsible for managing personal fatigue in the work place. This may include the following:
 - 4.6.2 Report to work well-rested and mentally alert. Manage non-work-related choices that enable fitness for duty, including getting sufficient rest and sleep to recover from prior work duties, and managing personal, commuting, medical, and health issues.
 - 4.6.3 Seek medical advice for any personal conditions affecting sleep, such as apnea or insomnia.
 - 4.6.4 Advise your physician of any changes in your regular work schedule if you are taking daily prescriptions. Many medications exhibit important differences in the time course and effects depending on when the medication is administered.
 - 4.6.5 Notify your manager or supervisor when you are feeling fatigued.
 - 4.6.6 Take adequate rest and meal breaks for the working conditions.
 - 4.6.7 Do not operate machinery or perform high-risk activities for at least 24 hours if you travel over 6 or more time zones or if you are required to work at elevations above 3,000 meters without adequate acclimatization.
 - 4.6.8 Inform managers or supervisors when you suspect a co-worker of being fatigued or if you feel fatigued to a point of increased risk of an incident or error.
 - 4.6.9 Consider seeking assistance from the Employee Assistance Program (EAP) for help in the self-management of fatigue or other issues that may have a bearing on fatigue at work.

5.0 Records

- 5.1 The following documentation will be maintained in the project file:
 - 5.1.1 Safety observations, near misses, injuries, and incidents that have occurred as a possible result of fatigue.
 - 5.1.2 Records of site-specific training in fatigue identification and management issues.

6.0 Attachments

- 6.1 None

Substance Abuse Prevention

S3AM-019-PR1

1.0 Purpose and Scope

- 1.1 This policy and procedure is consistent with the U.S. Drug-Free Workplace Act of 1988 and in accordance with federal, state / provincial / territorial, and local laws and regulations. It sets out practices for a drug-free, healthy, productive, safe and secure workplace and provides guidance for employees and supervisors with respect to their responsibilities. Drug and alcohol abuse pose a serious threat to the health and safety of employees, clients, and the general public as well as the security of our job sites, equipment and facilities. The Company is committed to the elimination of illegal drug use and alcohol abuse in its workplace and regards any misuse of drugs or alcohol by employees to be unacceptable.
- 1.2 This policy and procedure apply to all AECOM Americas-based employees and operations and any other entity and its personnel contractually required to comply with this document's content.
- 1.3 AECOM prohibits the use, possession, presence in the body, distribution, manufacture, concealment, transportation, promotion or sale of the following items or substances on company premises:
- Illegal drugs (or their metabolites), designer and synthetic drugs, mood- or mind-altering substances and drug use related paraphernalia unless authorized for administering currently prescribed medication;
 - Controlled substances that are not used in accordance with physician instructions or non-prescribed controlled substances;
 - Alcoholic beverages while at work or while on any customer or AECOM controlled property. This prohibition on alcohol applies whenever an employee is on-duty, including during meal or break periods, while on Company premises, or while representing AECOM. AECOM may make exceptions and permit the consumption of alcohol beverages at work-related events, such as Company-sponsored or approved business meals, conferences, or holiday events. Employees who choose to consume alcohol on approved occasions are expected to exercise good judgment and to refrain from becoming intoxicated or impaired. If an employee has consumed alcohol and needs transportation home, the Company will reimburse the cost of a taxicab or other reasonable costs of transportation so that the employee may avoid driving.
 - This policy does not prohibit lawful use and possession of current medication prescribed in the employee's name or over-the-counter medications. Employees shall consult with their health care provider about any prescribed medication's effect on their ability to perform work safely. An employee who has work restrictions due to his or her consumption of a prescribed medication shall disclose these restrictions to their supervisor.
- 1.4 Substance abuse testing procedures shall meet requirements of various U.S. regulatory agencies and / or those of the applicable jurisdiction, with regard to testing employees for the possession and use of illegal drugs (and their metabolites), mood- or mind-altering substances, synthetic and designer drugs, unauthorized use of prescription drugs and the unauthorized use of alcohol on AECOM or client premises or during working hours. The procedures will also comply with applicable laws and regulations by federal, state / provincial / territorial, and local law. If the law of a particular location differs from the practices expressed in this policy and procedure, AECOM will implement this policy and procedure in accordance with applicable law.
- 1.5 Although some states may pass laws legalizing medical or recreational marijuana use, the use, sale, distribution and possession of marijuana are violations of federal law. Similarly, the use sale, distribution, presence in the body and possession of marijuana or the presence of marijuana on company premises or while on duty including during lunch and breaks violates the *S3AM-019-ATT1 Substance Abuse Policy Statement* (policy) and will subject an employee to disciplinary action up to and including termination in accordance with controlling law.

- 1.6 This policy and procedure have been developed to provide employees, managers, supervisors and administrative support personnel with guidelines and procedures for the implementation, administration, and enforcement of this policy and procedure. The company policy statement for substance abuse prevention is included as Attachment 1 of this document and a copy of the included policy statement shall be posted on employee information boards. New employees shall receive and sign *S3AM-019-FM1 Acknowledgement and Consent Form* upon hire or transfer between sites or clients as acknowledgement of the program requirements. A signed or electronic copy of this form should be kept as part of the employee personnel file.
- 1.7 This policy and procedure do not prohibit employees from the lawful use and possession of current legally prescribed or over-the-counter medications. Employees shall consult with their health care providers about any prescribed medication's effect on their ability to perform work safely. Employees shall disclose any relevant work duty restrictions to their supervisor. Employees are required only to provide information necessary for the Company to make an informed decision regarding the ability to perform required work safely, and to evaluate whether the employee may be entitled to a reasonable accommodation. Employees who shall bring current prescribed medications to work shall carry the medication in the original packaging bearing a current label from a licensed pharmacist for the person in possession of the drugs.
- 1.8 Compliance with this policy is a condition of initial and continued employment. Failure to comply with these requirements will be grounds for disciplinary action, up to and including termination of employment.
- 1.9 This procedure will be administered by the Business Group Substance Abuse Prevention (SAP) Program Administrator in conjunction with Safety, Health & Environment (SH&E) and Human Resources (HR).
- 1.10 This procedure may be further supplemented by Business Group specific and/or client specific Substance Abuse Prevention procedures. These supplementary programs shall either meet or exceed the requirements contained in this document.

2.0 Terms and Definitions

- 2.1 **Adulterated Sample** – A urine sample provided by an applicant, employee or contractor that has been intentionally altered to mask the analysis for illegal substance use. Any applicant or employee who knowingly provides a false sample or attempts to adulterate a sample will be terminated or disqualified from employment.
- 2.2 **Confidentiality** – The principle that the information associated with an individual's participation in the AECOM Substance Abuse Prevention program is private and has limits on how and when it can be disclosed.
- 2.3 **Designated Employer Representative (DER)** – Another name for the drug and alcohol program administrator. The DER provides oversight and manages the applicable Business Group's Substance Abuse Prevention Program(s) in coordination with the requirements of this document.
- 2.4 **Employees/Applicants** – The SAP program will apply to all individuals who may be: regular full-time, part-time, probationary, temporary, craft (direct hires), casual, contract or leased employees, and applicants of employment as permitted by applicable laws
- 2.5 **Employee Assistance Program (EAP)** – All AECOM employees, eligible dependents and family members living in the same household are eligible to utilize the EAP in accordance with Human Resources policy. Check with your HR manager for eligibility for EAP.
- 2.6 **Illegal Drugs, Controlled Substances and Unauthorized Items** – Illegal drugs, designer and synthetic drugs, substances that impair job performance or safety and drug-related paraphernalia: Controlled substances such as medications when usage is abused; Unauthorized alcoholic beverages
- 2.7 **Medical Review Officer (MRO)** – The MRO is a designated Medical Doctor (MD) with experience and certification in the interpretation of urinalysis test results for drug testing. The MRO examines the positive test results with consideration of whether there is a legitimate medical reason for the result. This is accomplished by telephone interviews with the donor and also with their prescribing physician or pharmacist when prescription or over the counter medications are possibly involved.

- 2.8 **Negative Test** – A personal sample (urine, blood, hair, breath, saliva or other permitted by law) that indicates a concentration(s) of any drug on the panel which is below the cut-off limit and also meets all quality control requirements (e.g., temperature, pH) and no evidence of adulterants.
- 2.9 **Positive Test Result** – A personal sample (urine, blood, hair, breath, saliva or other permitted by law) that indicates a concentration(s) of any drug on the panel which is above the cut-off limit and/or the gas chromatography – mass spectrometry (GCMS) confirmation level of that applicable regulation or requirement.
- 2.10 **Prohibited Substances** – Illegal or unprescribed drugs (or their metabolites), controlled substances and mood or mind-altering substances (i.e. any synthetic derivative/product that produces a marijuana-type high and any herbal products not intended for human consumption); or any prescribed drugs used in a manner inconsistent with the prescription, and alcoholic beverages.
- 2.11 **Reasonable Suspicion** – Suspicion based upon the observation of objective facts or specific and articulable behavior. Supervisor should complete a Reasonable Suspicion training course and be able to document the process and observations.
- 2.12 **Refusal to Test** – Refusing to provide a sample, refusing to cooperate, leaving the testing area, or refusing to accept and sign the testing consent form, is considered a breach of company policy and subject to disciplinary action up to termination of employment.
- 2.13 **Safety Sensitive** – A task or position is designated as safety sensitive when the task or position is such that an action would endanger the life of the employee and/or the lives of others. AECOM Business Groups may further define safety sensitive as it applies to their applicable line of work or to a specific project. When identifying safety-sensitive tasks or positions, consideration shall be given to applicable factors such as, but not limited to, the relevant industry (e.g., transportation, railroad, pipeline, etc.), regulatory requirements (e.g., covered tasks) of the given jurisdiction, an employee's direct involvement in the task or position's responsibilities, level of supervision, etc. Examples, but not a complete list, of positions that may be determined to be "safety-sensitive" based upon the applicable factors include:
- Drivers of Commercial Motor Vehicles (CMV)
 - Workers on pipelines carrying fuels or toxic or corrosive substances
 - Example – US requirements: *S4AM(US)-019-ATT1 PHMSA Covered Tasks Flowchart* provides additional guidance for tasks related to pipeline or liquified natural gas (LNG) facilities.
 - Workers at nuclear power plants
 - Employees that operate -regulated devices (e.g., nuclear density gauges)
 - Operators of industrial mobile equipment
 - Workers handling hazardous substances.
- 2.14 **Substance Abuse Prevention Program Administrator (SAP Administrator)** – a person that administers policies for the company and acts as the Designated Employer Representative (DER).

3.0 References

- 3.1 None

4.0 Procedure

- 4.1 Roles and Responsibilities

4.1.1 SAP Administrator

- Engage and coordinate appropriate parties as necessary to execute the SAP Program.
- Receive test results and other Substance Abuse Prevention related communications for AECOM.
- Function as DER

- The DER is authorized by AECOM to take immediate action(s) to remove employees from safety sensitive duties, or cause employees to be removed from these covered duties, and to make decisions required in the testing and evaluation process, such as in the case of a shy bladder or shy lung situation.
- The DER will also refer employees to the Substance Abuse Professional and facilitate the return to duty process of employees who have successfully completed the Substance Abuse Professional's recommendations or identified program, as permitted by AECOM, and as applicable, the client.
- All Service Agents (TPAs, MRO's Labs and Collection Agencies) shall know who the DER is so that they may speak to them if problems arise and/or to include the DER name on the testing forms. A Service Agent may not be a DER for a company.
- The DER is the person that will work directly with auditors during an inspection, including providing all the information about the program and any compliance issues. Therefore, the DER shall be someone who carries some authority and has access to needed resources and is familiar with the company's operation.
- Provide SAP Program related guidance concerning AECOM requirements and report as appropriate on SAP Program status to the applicable party. Refer to *S3AM-019-ATT2 Substance Abuse Prevention Communication Guidelines*.

4.1.2 Supervisors and Managers

- Obtain any client - specific SAP Program related requirements associated with the project as early in the project lifecycle as possible (e.g., contract negotiations).
- Provide SAP Program related guidance and requirements applicable to the respective client and/or project(s) to the SAP administrator as soon as received. Refer to *S3AM-019-ATT2 Substance Abuse Prevention Communication Guidelines*.
- Has received the required and approved Supervisor Reasonable Suspicion training and: knows the signs and symptoms of abuse, knows the required documentation, understands procedures regarding confrontation of the individual, and the importance of confidentiality and has authority to refer an employee for drug and alcohol testing as required.
- Observe and document employee behavior which appears to violate this policy and procedure and refer employees for drug and alcohol testing as required.
- Ensure all employees have been orientated to this procedure and are knowledgeable about, and in compliance with this procedure, associated policy and applicable programs.
- Make appropriate referrals for a drug and/or alcohol test as per this procedure as well as any client contractual agreements or governmental regulation.
- Be current with the Employee and Supervisor Training and education programs so as to be knowledgeable about the use of alcohol and drugs and be able to recognize the signs and effects of alcohol and drug uses.
- Alert and involve Human Resources (HR), the Corporate Safety, Health and Environment (SH&E) Occupational Health Director and the Substance Abuse Program Administrator when an employee is believed to be unfit for duty due to drugs or alcohol use in violation of this policy and/or if an employee is tested for a reasonable suspicion use of drugs or alcohol.
- If any illegal drugs or drug paraphernalia are located on company premises, do not handle the items and immediately notify the following as necessary: HR, Resilience Group, the police department and the applicable Substance Abuse Program Administrator.
- Guide employees who voluntarily seek assistance for a personal substance abuse problem to appropriate resources such as the EAP or other local resource.

4.1.3 Employees

- Commit to a safe and drug-free workplace by complying with this policy and procedure and understanding their responsibilities.
- Read and understand the *S3AM-019-ATT1 Substance Abuse Policy Statement* detailing the Company's commitment to a drug free workplace. The signed *S3AM-019-FM1 Acknowledgement and Consent Form* attests that they have reviewed and are familiar with this procedure and understand that compliance is a condition of employment. Any questions should be directed to the Substance Abuse Administrator.
- Follow the instructions of their supervisor or Substance Abuse Administrator when informed that they have been chosen for a random or client drug test as allowed by federal, state / provincial / territorial, or local law and regulations. Failure to do so may result in discipline up to and including termination.
- Participate in substance abuse training programs as directed.
- Report for work Fit for Duty and remain Fit for Duty while on Company premises and worksites and adhere to the standards set out in this procedure and any applicable program.
- Notify your supervisor, HR or SH&E representative if you believe another employee or subcontractor is not Fit for Duty or exhibits conduct suggesting substance abuse.
- If having a valid driver's license is a condition of employment, report any loss of license related to drug or alcohol use immediately (no later than 24 hours after losing the license) to your supervisor.
- Consult with health care provider about any prescribed medication's effect on the ability to perform work safely and disclose work restrictions due to consumption of prescribed medications to their supervisor to determine if reasonable accommodation is needed.
- Bring legally prescribed medicine in the original packaging bearing a current label in the employee's name from a licensed pharmacist if the employee carries more than a single day of prescribed medications to work.
- An employee who has been convicted of a felony under a criminal drug statute for a violation occurring on Company property or during the employee's working hours shall notify Human Resources no later than five (5) calendar days after the felony conviction becomes final under the law.

4.2 Confidentiality

- 4.2.1 Information and records relating to drug screen test results, drug and alcohol dependencies and medical information shared with the Company in the course of administering this Policy and Procedure shall be treated as confidential and shared with HR and managers on a need-to-know basis. Information will not be released to third parties except with the consent of the individual or where relevant to a grievance, charge, claim, or other legal proceeding initiated by or on behalf of an employee or applicant, or as may be required by law or legal process.

4.3 Types of Testing

- 4.3.1 Employees undertaking Safety-Sensitive tasks or in a Safety Sensitive position may be required to undergo drug and alcohol testing.
- 4.3.2 Pre-employment Testing - Applicants extended a conditional offer of employment may be required to take, and pass, a pre-hire drug test before beginning work. Individuals who test positive or refuse the test will not be hired and will be ineligible to reapply for a minimum period of six months or longer as defined by the applicable Business Group. Employees who transfer from one company Business Group or project to another are not required to take a pre-employment drug test if their employment is without interruption, they are not subject to client testing or safety sensitive testing requirements, and they would have been expected to have taken a pre-hire or client mandated drug test.

4.3.3 Random and Annual Testing - Employees may be subject to random drug and/or alcohol testing in accordance with federal, state / provincial / territorial, and local laws. In addition, employees may be subject to random or annual drug tests to meet contract requirements.

- Selections for random testing will be made by the Substance Abuse Program Administrator or a Certified Third Party Administrator using employee identification numbers and a random selection process. They will be unannounced and once selected for testing, an individual may not be waived from the testing process unless approved by the Substance Abuse Prevention program administrator.
- Employees will be notified to report for random tests at a time when they should be able to stop working and report immediately to the collection site. Failure to report for a test promptly when instructed to do so may be considered a refusal to test.
- Employees who may be required to submit to random or annual tests will be so notified at the time that they are hired into an applicable position, when they transfer into such a position, or when random or scheduled testing becomes applicable to their position.

4.3.4 Reasonable Suspicion Testing - Employees are subject to drug and/or alcohol testing whenever AECOM supervision has reason to believe that the employee may have violated this policy and procedure. Requests for tests will be based upon contemporaneous, articulable observations from supervisors suggesting that the employee may be under the influence of illegal drugs, controlled substances, or alcohol.

- Examples of observations that may lead or further substantiate reasonable suspicion testing can include the employee's appearance, behavior, speech, body odors, absenteeism, job performance, tardiness, etc. The SAP administrator should be consulted when guidance is required, who will engage HR as necessary. Observations shall be documented before the individual is asked to submit to a test.
- An employee asked to take a drug and/or alcohol test will be suspended without pay until test results are received. They may use Paid Time Off (PTO) time during this period. An employee who has negative test results will be returned to work status and the employee will then be paid or have their PTO restored for any lost time during that period.

4.3.5 Post Incident/Accident Testing - Employees may be subject to drug and alcohol testing in accordance with federal, state / provincial / territorial, and local law whenever:

- An employee is subject to post-incident testing in accordance with applicable client requirements and/or regulations or laws that contain specific requirements for testing (e.g., Department of Transportation, state / provincial / territorial, workers' compensation laws);
- An employee sustained or potentially caused or contributed to an injury or illness requiring off-site medical treatment beyond first aid, and there is a reasonable possibility the employees' drug or alcohol use may have contributed to the incident. Employees will not be tested post-incident if management determines that potential drug and/or alcohol use likely did not contribute to the incident such as in the cases of animal or insect bites, repetitive strain injury, poison ivy, etc;
- An employee may have caused or contributed to property damage estimated (including to Company vehicles or equipment) of \$2,500 or more (a lower cost of damage requiring testing may be identified in Business Group specific programs); and
- An employee may have caused or contributed to an incident or serious near miss, whether or not they sustained an injury or illness, or whether property damage resulted. Testing may be appropriate in these circumstances if there is a reasonable possibility the employees' drug or alcohol use may have contributed to the incident and results may provide insight to the root causes of the incident.

In either of these instances, the investigation and substance abuse testing shall take place immediately following the incident and at a minimum within 8 hours for alcohol and 36 for drug testing, except that no investigation or request for test will delay the provision of urgent medical

care to any person in need of assistance. Employees will not be allowed to return to work until a negative drug/alcohol test result is received.

- 4.3.6 Return-to-Work and Follow-up Testing - Employees who test positive for drugs or alcohol or who have otherwise violated this Policy and Procedure are subject to discipline, up to and including discharge. Depending on the eligibility, the Company may offer an employee who violates this Policy and Procedure the opportunity to seek assistance in lieu of termination through an approved counseling program as per Business Group policy. Employees offered this opportunity will be required to be evaluated by a substance abuse professional, and to complete any course of education or treatment prescribed before returning to work. In addition, employees shall have a negative drug/alcohol test prior to their return to work and follow-up drug and/or alcohol testing may be required as a condition of continued employment, for a period of up to two years following the return to work. If subject to a client-specific substance abuse policy, employees who have had a positive test result will not be permitted to return to work on the client site or facility. Return-to-Work Agreements will be tailored to the individual's circumstances and job responsibilities.

4.4 Collection and Testing

- 4.4.1 Consent and Refusals to Test: No sample will be collected, or test conducted on any sample, without the consent of the person being tested. AECOM will pay the costs of all drug and/or alcohol tests it requires. A refusal to submit to a test will be treated as an admission of a policy violation and will usually result in termination of employment. Job applicants who refuse a test will have their job offers withdrawn.
- Attempts to tamper with, substitute, adulterate, dilute or otherwise falsify a test sample are considered refusals to submit to a test, as is a refusal to accept transportation to the testing facility, failure to appear at the testing location promptly after being asked to submit to a test, or other conduct that has the effect of hindering the testing process.
- 4.4.2 Test Methods: Drug test samples may include urine, hair, swab or saliva (oral fluids). All drug test samples will be screened and all presumptive positive drug tests will be confirmed using gas chromatography/ mass spectrometry (GC/MS) (or an equally accurate methodology). Drug tests will be performed by a laboratory certified by the U.S. Substance Abuse and Mental Health Services Administration for federal workplace testing, or as required by the applicable jurisdiction. Breath, blood, swab or urine tests may be used to detect the presence of alcohol. An alcohol test will be considered positive if it shows the presence of .04 percent or more alcohol in a person's system.
- Dilute or invalid results may require a recollection, and the Company may require the individual to provide an alternative test specimen as may be available and consistent with the underlying purpose of the test.
- 4.4.3 Collection and Chain-of-Custody: Persons being tested will be asked to provide a test sample to a trained collector. Procedures for the collection of specimens will allow for reasonable individual privacy. Urine specimens will be tested for temperature and may be subject to other validation procedures as appropriate. The collector and the person being tested will follow chain-of-custody procedures for specimens at all times. Tests will seek only information about the presence of drugs and alcohol in an individual's specimen and will not test for any medical condition.
- 4.4.4 Notification and Medical Review: Any individual whose test sample is confirmed positive for a drug or drugs will be contacted by a Medical Review Officer ("MRO") (a medical professional with an expertise in toxicology) and offered an opportunity to explain in confidence any legitimate reasons he or she may have that would explain the positive test (such as, for example, evidence that the individual holds a valid prescription for the substance detected). The MRO may also review suspected adulterated, substituted, and dilute specimens and make determinations about their validity.
- If the individual provides an explanation acceptable to the MRO that a drug test result is due to factors other than the consumption of illegal drugs, the MRO will order the positive test result

to be disregarded and will report the test as negative to AECOM. Otherwise, the MRO will verify the test as positive and report that test result.

- 4.4.5 Right to Explain and Retest: Within three working days after notice of a verified positive drug or alcohol test result on a confirmatory test conducted under this Policy, the tested individual may submit information to the MRO to explain the positive result. An individual who tests positive for drugs also may ask to have his or her remaining or split test sample sent to an independent certified laboratory for a second confirmatory test, at the individual's expense, and provided that a written request is made within five business days of the date the individual of the positive test result. the MRO will notify the original testing laboratory that the employee or applicant has requested that the laboratory conduct a confirmatory retest or arrange for transfer of the sample to the laboratory selected by the individual to perform the confirmatory retest. Tested individuals will be required to pay the testing laboratory for any confirmatory retest they request. AECOM may suspend, transfer, or take other appropriate employment action against an employee pending the results of any such re-test. However, if the re-test fails to confirm as positive the individual will be reimbursed for the cost of the re-test and the prior test results disregarded.
- 4.4.6 The Company will provide drug and alcohol tests results to candidates and employees automatically, where applicable law so requires, and otherwise upon written request as may be required by law or as approved by legal counsel.
- 4.5 Workplace Searches and Inspections
 - 4.5.1 The Company reserves the right to inspect and search all portions of its premises for drugs and other contraband. All employees, contract workers, and visitors may be asked to cooperate in inspections of their persons, work areas, and property brought on site in connection with an inspection. Testing may be warranted based on search or disclosure of evidence obtained on a work site or company controlled property. Employees who refuse to cooperate in any such inspections are subject to discipline, up to and including discharge.
- 4.6 Employee Assistance Program and Drug Free Awareness
 - 4.6.1 Illegal drug use and alcohol misuse result in a number of adverse health and safety consequences. Information about those consequences and source of help for drug/alcohol problems is available from HR representatives who can also refer employees to the EAP for assistance with drug/alcohol related problems. Information about the EAP program is available on the Company intranet.
 - 4.6.2 The Company will provide support to employees who voluntarily seek help for drug or alcohol problems. Depending upon the eligibility, the employee may be referred for evaluation and allowed to use accrued paid time off or be placed on leave as may be necessary to complete any prescribed education and/or treatment. Employees also may be required to document that they are successfully following a prescribed education and/or treatment plan and pass return to duty and follow-up drug and/or alcohol testing. A request for assistance will be considered voluntary only if made before the employee becomes subject to disciplinary action for violating this or another Company policy, and cannot excuse substandard performance, so AECOM encourages employees who may need assistance to seek it promptly:
 - 4.6.3 In conjunction with the EAP, the Company will promote a drug-free workplace and provide awareness concerning the AECOM SAP program to inform employees about:
 - The dangers of substance abuse in the workplace.
 - Available counseling, rehabilitation, and EAPs (both for self-referral or supervisory referral).
 - The penalties that may be imposed for violations of this procedure.
 - The Company's commitment to promoting a drug-free workplace.

5.0 Records

- 5.1 None.

6.0 Attachments

- 6.1 [S3AM-019-ATT1 Substance Abuse Policy Statement](#)
- 6.2 [S3AM-019-ATT2 Substance Abuse Prevention Communication Guidelines](#)
- 6.3 [S3AM-019-FM1 Acknowledgement & Consent Form](#)
- 6.4 [S4AM\(US\)-019-ATT1 Pipeline & Hazardous Materials Safety Administration \(PHMSA\) Covered Tasks Flowchart](#)

1.0 Purpose and Scope

- 1.1 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 where the potential for hand injuries is present.
- 1.2 This procedure is intended to protect employees from activities that may expose them to hand injury. This procedure provides information on recognizing those conditions that require personal protective equipment (PPE) or specific work practices to reduce the risk of hand injury.
- 1.3 All personnel shall have gloves in their immediate possession 100% of the time when in a shop or on a work site. Appropriate gloves shall be worn when employees work with or near any materials or equipment that present the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc.

2.0 Terms and Definitions

- 2.1 None

3.0 References

- 3.1 S3AM-003-PR1 SH&E Training
- 3.2 S3AM-208-PR1 – Personal Protective Equipment
- 3.3 S3AM-209-PR1 – Risk Assessment & Management
- 3.4 S3AM-325-PR1 – Lockout Tagout

4.0 Procedure

- 4.1 Roles and Responsibilities

4.1.1 Manager / Supervisor

- Implementation of this standard for the applicable facility, site, or project location.
- Confirm employees are familiar with this procedure and have appropriate training.
- Confirm the appropriate hand protection is available on site as necessary.

4.1.2 Employees

- Recognize hazards to hands.
- Comply with this procedure as well as client or work location requirements.

4.1.3 SH&E Manager

- Advise supervisors and site personnel on matters relating to hand safety.
- Work with the manager / supervisor to confirm that sufficient PPE and equipment are available.
- Maintain contact with manager / supervisor to regularly evaluate site conditions and new information that might require modifications to this procedure.
- Conduct training or briefings, when necessary, and to explain the content of this procedure and site hazards to employees.

- Assist in investigation of incidents that resulted or could have resulted in an injury.

4.2 Hazard Assessment

4.2.1 Perform hazard assessments for those work activities likely to require Personal Protective Equipment (PPE).

- Use the Task Hazard Assessment (THA) to perform the hazard assessment (in accordance with *S3AM-209-PR1 Risk Assessment & Management*). The THA will accompany AECOM personnel at jobsites for use in the event of a job or task change, or
- Use the *Gloves Needs Assessment – S3AM-317-FM1* or equivalent to perform the assessment.
- Re-evaluate completed hazard assessments when the job or task changes.

4.2.2 The hierarchy of controls should be considered during the THA process to minimize or eliminate the need for hand protection PPE or material handling tools. Examples of controls are chemical substitution, machine guarding, and use of different tools.

4.2.3 Select PPE that will protect employees if hazards cannot be eliminated.

- Review Safety Data Sheets for project or task-specific chemicals to determine appropriate PPE. If needed, consult with a SH&E Manager for assistance.
- Review glove manufacturer recommendations for both physical and chemical protection.
- Obtain gloves of the correct size for the employees.
- When both chemical and physical protection is of concern, wear the chemical protection gloves (e.g., nitrile) inside the physical protection gloves (e.g., leather, Kevlar®).
- Nitrile gloves or equivalent chemical resistant shall always be used for protection from hazardous fluids or non-corrosive chemicals.
- Do not wear metal or metal-reinforced gloves when working with electrical equipment or on electrical services. Proper leather and/or rubber gloves designed and tested for this purpose shall be used.
- Refer to *S3AM-208-PR1 – Personal Protective Equipment* for additional information.

4.2.4 Follow glove requirements in the applicable SH&E plan.

4.3 Guidelines for Working With and Around Equipment (Hand Tools, Portable Powered Equipment)

4.3.1 General

- As applicable, employees shall be trained in the use of all tools. Refer to *S3AM-003-PR1 SH&E Training*.
- Keep hand and power tools in good repair and use them only for the task for which they were designed.
- Inspect tools before use and remove damaged or defective tools from service.
- Operate tools in accordance with manufacturer's instructions.
- Do not remove or bypass a guarding device for any reason.
- Keep surfaces and handles clean and free of excess oil to prevent slipping.
- Do not carry sharp tools in pockets.
- Clean tools and return to the toolbox or storage area upon completion of a job.

- Confirm that the wrench is in full contact (fully seated, "flat", not tilted) with the nut or bolt before applying pressure.
 - Place the body in the proper position for optimal balance and bracing to prevent falls if the tool slips.
 - Make sure hands and fingers have sufficient clearance in the event the tool slips.
 - Whenever possible, pull on a wrench and avoid pushing.
- When working with tools overhead, place tools in a holding receptacle when not in use.
- Do not throw tools from place to place or from person to person, or drop tools from heights.
- Inspect all tools prior to start-up or use to identify any defects.
- Powered hand tools shall not be capable of being locked in the ON position.
- Require that all power-fastening devices be equipped with a safety interlock capable of activation only when in contact with the work surface.
- Do not allow loose clothing, long hair, loose jewelry, rings, and chains to be worn while working with power tools or rotating equipment.
- Do not increase the leverage by adding sleeved additions (e.g. a pipe or snipe) to increase tool handle length.
- Make provisions to prevent machines from restarting through proper lockout/tagout (refer to *S3AM-325-PR1 – Lockout Tagout*).

4.3.2 Cutting Tools

- Always use the specific tool designed for the task. Tubing cutters, snips, self-retracting knives, concealed blade cutters, and related tools are task specific and minimize the risk of hand injury. For more information about cutting tools, see *S3AM-317-ATT1 Safe Alternative Tools*.
- Fixed open-blade knives (FOBK) are prohibited from use during the course of AECOM work.
 - Examples of fixed open-blade knives include pocket knives, multi-tools, hunting knives, and standard utility knives.
 - Any exception to this requirement shall require approval of the Manager / Supervisor and SH&E Manager.
- When utilizing cutting tools, personnel will observe the following precautions to the fullest extent possible:
 - Use the correct tool and correct size tool for the job.
 - Cut in a direction away from yourself and not toward other workers in the area.
 - Maintain the noncutting hand and arm toward the body and out of the direction of the cutting tool if it were to slip out of the material being cut.
 - Ensure that the tool is sharp and clean; dirty and dull tools typically cause poor cuts and more hazard than a sharp, clean cutting tool.
 - Store these tools correctly with covers in place or blades retracted, as provided by the manufacturer.
 - On tasks where cutting may be very frequent or last all day (e.g., liner samples), consider Kevlar® gloves in the PPE evaluation for the project.
 - Do not remove guards on paper cutters.
 - In office locations, paper cutters must always be kept in a locked position when not in use.

4.3.3 Moving/Rotating Equipment

- General Requirements for Rotating Equipment (feed augers, chippers, conveyors, etc.)

- Never place hands, fingers, or extremities near hoppers and operational areas of machinery.
- When the equipment is rotating, stay clear of the rotating components and only operate equipment with proper machine guarding in place.
- Never clean a jammed piece of equipment unless the transmission is in neutral and the power source or the engine is off, locked out, and the moving parts of the equipment have stopped rotating. Refer to *S3AM-325-PR1 – Lockout Tagout*.

4.3.4 Other Physical Hazards

- Activities such as drum handling, fencing, work near razor wire, manhole cover removal, and demolition also pose hazards to hands. Use tools instead of hands for high hazard tasks whenever possible.
- Plan work to avoid pinch points for hands when moving drums, moving manhole covers into position, and handling other heavy objects.
- Work handling scrap metal, glass or other sharp edges requires proper hand PPE (Kevlar® or leather gloves).
- Activities involving hoisting, lifting and landing of a load shall be done “hands-free” when possible. Refer to *S3AM-317-ATT2 – Safe Hands-Free Lifting Guidelines*.

4.4 Ergonomics – Hand and Wrist Care

- 4.4.1 Keep your wrist in neutral. Avoid using your wrist in a bent (flexed), extended, or twisted position for long periods of time. Instead try to maintain a neutral (straight) wrist position. Ergonomic tools may be needed for long-term work.
- 4.4.2 Watch your grip. Gripping, grasping, or lifting with the thumb and index finger can put stress on your wrist. When practical, use the whole hand and all the fingers to grasp an object.
- 4.4.3 Minimize repetition. Even simple, light tasks may eventually cause injury. If possible, avoid repetitive movements or holding an object in the same way for extended periods of time.
- 4.4.4 Reduce speed and force. Reducing the speed with which you do a forceful, repetitive movement gives your wrist time to recover from the effort. Using power tools helps reduce the force.
- 4.4.5 Rest your hands. Periodically give your hands a break by letting them rest briefly. Or you may be able to alternate easy and hard tasks, switch hands, or rotate work activities.
- 4.4.6 Consider low vibration or anti- vibration hand power tools when possible.

4.5 Cleaning Hands

- 4.5.1 Avoid contamination of hands by proper use of gloves when contact with physical, chemical, or biological hazards is possible.
- 4.5.2 Use soap and water for normal hand cleaning. Do not use solvents for cleaning as they remove essential oils in the skin and may cause dermatitis. Do not use pressure washers for hand cleaning.
- 4.5.3 If the hands contact a corrosive (e.g., nitric acid), wash the area with water for fifteen minutes and then seek medical attention.
- 4.5.4 Use antibiotic ointment and skin protection on minor breaks/scratches of the skin.
- 4.5.5 In some cases barrier creams may be used to provide limited protection for hands exposed to greases and oils.

4.6 Safe Hands Observation Tool

- 4.6.1 The *Safe Hand Task Review Card S3AM-317-FM2* may be used to supplement and reinforce safe work practices and the requirements of this procedure.

4.6.2 The observer's responsibilities include:

- Two-way conversation with the employees being observed.
- Completing the card and mark the applicable fields on the back of the card.
- Submitting the completed cards to the supervisor.

4.6.3 The supervisor's responsibilities include:

- Reviewing the completed cards.
- Identifying best work practices and any improvements.
- Communicating any changes back the employee(s).

5.0 Records

The following documentation will be maintained:

5.1 Hand tool training records, as applicable.

6.0 Attachments

- 6.1 [S3AM-317-FM1](#) [Glove Needs Assessment](#)
- 6.2 [S3AM-317-FM2](#) [Safe Hands Task Review Card](#)
- 6.3 [S3AM-317-ATT1](#) [Safe Alternative Tools](#)
- 6.4 [S3AM-317-ATT2](#) [Safe Hands-Free Lifting Guidelines](#)

Americas

Glove Needs Assessment

S3AM-317-FM1

Mgr. / Supervisor Name:

Work Area Name:

Task/Operation Being Evaluated:

Date:

1.0 Using the Protection and Performance Needs Assessment Table Below

- 1.1 Function and performance needs must be evaluated thoroughly. If employees have a strong need for dexterity, tactility, and/or grip this should be identified as a priority. Rank properties in the table below with 1 being the highest priority. Do not assign the same priority more than once. It is only necessary to rank the applicable properties. If all properties are ranked, the lowest priority would be ranked 12.

Protection and Performance Needs Assessment			
Category	Properties	Protection and Performance Needs	Priority (1=Top Priority)
Mechanical	Cut Resistance	Protection from sharp edges, blades, and other cutting hazards	
	Puncture Resistance	Protection from sharp objects like nails, pins, needles, wire	
	Abrasion Resistance	Durability and resistance to abrasive objects or materials	
	Shielding	Protection from impact, ricochet, small projectiles.	
Chemical	Degradation & Absorption Resistance	Durability and resistance to breaking down and/or permeating the glove from exposure to chemicals. Refer to the chemical's Safety Data Sheet for the appropriate glove choice.	
Thermal	Heat Resistance	Thermal protection from hot objects or materials	
	Cold Resistance	Thermal protection from cold weather, objects, or materials	
Vibration	Anti-Vibration	Vibration reduction from operating certain tools and equipment	
Electrical	Insulation	If performing work on electrical equipment, this must be the top priority	
Function	Dexterity	Ability to manipulate objects and control hands in the desired manner	
	Tactility	Ability to sense objects by touch	
	Grip	Ability to exert pressure on an object when holding it	

- 1.2 Identify a glove that meets the top protection and performance priorities.

In most cases there are trade-offs between hazard protection and functional performance of a glove. These factors are equally important. The higher the severity of the hazard, the more important hazard protection is. The table below offers additional guidance on key considerations when selecting a glove for certain protection and performance properties.

Category	Properties	Key Considerations and Selection Criteria
Mechanical	Cut Resistance	Testing Standard: ASTM F1790 and ASTM F1970-05 There are 5 levels of cut resistance. 5 is the highest.
	Puncture Resistance	Testing Standard: EN 388:2003 This testing measures the force required to pierce the sample with a standard sized point.
	Abrasion Resistance	Testing Standard: ASTM D3389-05 and ASTM D3884-09 Abrasion resistance testing measures how well the glove material resists loss of material from rubbing on rough surfaces.
	Shielding	Some gloves offer thick padding or hard guards around the back of the hand or knuckles. These can offer good protection against impact.
Chemical	Degradation & Absorption Resistance	Identify products / chemicals that present potential exposures. Refer to the chemical's Safety Data Sheet and glove manufacturer's specifications for the appropriate glove choice.
Thermal	Heat Resistance	Testing Standard: ASTM F1060-08 This testing measures the insulation provided by the glove when contacting a hot surface. Higher temperatures reported indicate a glove with greater insulation.
	Cold Resistance	Testing Standard: EN 511:1994 (for ambient temperature) Testing Standard: ISO 5085:1989-1 (for cold surfaces) Choosing the right glove depends on whether protection is needed from cold weather or cold surfaces.
Vibration	Anti-Vibration	Testing Standard: ANSI S2.73-2002 (R2007) This testing method measures the vibration transmission of the glove.
Electrical	Insulation	Testing Standard: ASTM D120-09 Glove protection depends on the maximum voltage of energized components.
		50 – 480V Class 00 with Leather Protectors
		480 – 600V Class 0 with Leather Protectors
		600V and above Class 0 or higher (depending on maximum voltage) with Leather Protectors
Function	Dexterity	Testing Method: EN 420:2003 Ability to manipulate objects and control hands in the desired manner. This testing method assesses the wearer's ability to pick up small diameter pins lying on a flat surface with their thumb and forefinger. If high dexterity is needed, and the hazards are relatively low to the forefinger and thumb, consider a glove that is tip less for those two digits.
	Tactility	Ability to sense objects by touch. There is no standard test. However, a common field test is to determine if the wearer can feel a pulse while wearing the glove. This is affected by the thickness of the glove, presence of liners, glove surface characteristics, and properties of the coating material.
	Grip	Testing Standard: NFPA 1971 (Grip) Ability to exert pressure on an object when holding it.

Americas

Safe Alternative Tools

S3AM-317-ATT1

1.0 Types of Safety Knives or Alternative Cutting Tools

- 1.1 Self-retracting utility knives (brands – OLFA, Martor, Allway Tools)



- 1.2 Guarded utility knives (brands – The Safety Knife Co., Martor)



- 1.3 Shears, snips, scissors (brands – Ridgid, Craftsman, Wolfcraft)



- 1.4 Concealed blade cutters (brands – The Safety Knife Co., Martor)



- 1.5 Pipe cutters (brands – Ridgid, Empire)



- 1.6 Specialty cutter (brand – Geoprobe)



Medical Screening & Surveillance

S3AM-128-PR1

1.0 Purpose and Scope

- 1.1 Provides a streamlined process to determine if employees meet the physical requirements to perform assigned duties as defined by applicable regulations.
- 1.2 Designed to provide a means to collect data relevant to exposure to chemical and physical agents for the protection of the workers and to confirm the effectiveness of health and safety programs.
- 1.3 Applies to all AECOM Americas 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 **Employee Exposure Record** - A record containing any of the following kinds of information:
 - Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe or other form of sampling, as well as related collection and analytical methodologies, calculations and other background data relevant to interpretation of the results obtained.
 - Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, etc.), but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs.
 - Safety data sheets indicating that the material may pose a hazard to human health.
 - In the absence of the above, a chemical inventory or any other record which reveals where and when used and the identity (e.g., chemical, common, or trade name) of a toxic substance of harmful physical agent
- 2.2 **Medical Director** – A physician, board-certified in occupational medicine, employed by the Medical Services Provider (MSP). The Medical Director manages the services provided by the MSP and provides to AECOM guidance on medical matters.
- 2.3 **Medical Services Provider (MSP)** – Manages all occupational medical services, including medical surveillance programs, travel medicine, documentation, and injury intervention for first aid support for employees with occupational injuries or illnesses.
- 2.4 **Participating Employee** – Those employees required to participate in the medical screening and surveillance program will be identified by the Supervisor, Operations and SH&E Manager. Medical surveillance is required for employees who are or may be:
 - Exposed to substances at or above the occupational exposure limits.
 - Required to participate by regulatory provisions (e.g., asbestos, lead OSHA standards, designated substances).
 - Fit-tested for or wearing a respirator in the field.
 - Working on sites/projects with specific state, provincial/territorial or federal medical surveillance requirements.
 - Driving a commercial motor vehicle.
 - Performing safety sensitive tasks.

- 2.5 **Physical Activity Restriction** – To prevent aggravation of an existing condition, the Medical Doctor recommends a physical activity restriction to limit exposure to a chemical or class of chemicals (e.g., benzene, lead), a physical agent (e.g., noise), or an activity (e.g., heavy lifting).

3.0 References

- 3.1 S3AM-214-PR1 International Travel

4.0 Procedure

- 4.1 Roles and Responsibilities

4.1.1 Employees

- Ensuring that he/she maintains a current work clearance as required for the performance of assigned work duties.
- All employees designated to participate, called Participating Employees, in the medical surveillance program as a condition of employment or participate voluntarily and will be notified in advance if they will be assigned to a location, project or client which requires a Medical Surveillance and Surveillance program.
- If employee knows or suspects that he/she may have an adverse reaction to completing elements of the physical, (such as blood draws, physical limitation, etc.) then the employee should notify the MSP at the time they schedule the physical so that appropriate safeguards may be taken to protect the health of the employee.
- Communicate any change in medical condition (e.g. medications, pregnancy), to MSP to allow for evaluation of the need for additional precautions.

4.1.2 Supervisors and Operations Managers

- Evaluates the duties of each employee and prospective employee reporting to him or her for potential participation in the medical screening and surveillance program.
- Responsible for ensuring that the employee is enrolled in the medical screening and surveillance program if the employee's position requires participation. Consult with a SH&E Manager if assistance is needed in determining if an employee is required to participate in the program.
- Assures employees in positions that require medical surveillance in order to meet their job description may not be on site until they have satisfactorily completed the baseline or pre-employment medical examination.

4.1.3 Safety, Health, & Environment (SH&E) Department

- Serves as the primary point of contact between the employee, employee's supervisor, the MSP and the SH&E Department.
- Provides information regarding medical surveillance documentation, forms, and scheduling of services.
- Maintains a medical surveillance database and other associated documents (medical records are maintained by the MSP).
- Assists employees with scheduling of exams with the MSP.
- Participates in initial SH&E training and subsequent reviews and updates that will provide guidance on exam protocols.

4.1.4 SH&E Manager

- Reviews employee assignments with managers to ensure that all employees who should be participating in the medical surveillance program have been enrolled.
- Provides all assistance necessary to ensure all required information is provided to the Medical

Director.

- Report any change in requirements, protocols or concerns with the MSP to the Occupational Health Manager.

4.1.5 Occupational Health Manager

- Provide the MSP with appropriate references (e.g., a copy of this procedure, regulations).
- Designate other employees to participate in certain parameters of the medical screening and surveillance program after consultation with the Medical Director.

4.1.6 Medical Director

- Requires an exposure-specific examination when he/she has reason.
- Determine the frequency of the exposure-specific medical examinations.
- Consults with the Occupational Health Manager.

4.2 General Requirements

- 4.2.1 All AECOM employees whose work assignments involve potential exposure to harmful chemical and/or physical agents should participate in the medical surveillance program. Guidance as to harmful potential exposures is presented in *S3AM-128-FM1 Medical Surveillance Evaluation (MSE)*. The form provides the primary guidance for determining whether medical screening is required for an employee and the frequency of periodic exams. The MSE is to be completed by the employee and his/her supervisor at the time of hire for any employee who may work outside an office environment. At each annual performance review, the MSE is to be reviewed for accuracy. Other reviews are required whenever there is a change in job tasks.
- 4.2.2 In addition, employees may be requested to participate in the medical surveillance program if they perform a task that requires an assessment for fitness for duty (e.g., lifting, climbing, etc.). The Supervisor, Operations Manager and SH&E Manager will identify activities/tasks that will require fit-for-duty assessments.
- 4.2.3 Medical screening and surveillance will only be performed where required by regulatory requirements or this procedure. Screening and surveillance provided at no cost to employees.
- 4.2.4 For medical screening and surveillance related to international travel, refer to *S3AM-214-PR1 International Travel*.

4.3 Types of Medical Examinations

The medical surveillance program consists of the following types of examinations:

- Baseline (initial)
 - The baseline medical examination is used to identify physical capabilities and medical limitations that may have an impact on the candidate's ability to perform in the position for which he/she is being considered and to provide a baseline against which periodic or project-specific monitoring can be compared. The baseline medical examination is used to determine the suitability of an existing employee for a new assignment (pre-placement) or a candidate's suitability to be hired (pre-employment) for a particular position.
- Periodic (annual or biennial)
 - The periodic medical examination is used to evaluate an employee's continued fitness for duty and to assess any impact occupational exposures may have on his/her health status. The periodic examination includes an update to the medical and work history, results of any occupational exposure assessments and a detailed medical examination tailored to the job description.
 - The SH&E Manager will assist in determining the frequency of the periodic medical examinations based on regulatory requirements, the position held by the employee, and the level of exposure to physical, chemical, and biological agents.

- Employees performing work activities on HAZWOPER sites will receive exams based on the following schedule:

Annual	Working in an exclusion zone and the regulatory required exposure limit is exceeded for 30 or more days a year.
Biennial	Working in an exclusion zone more than 30 days a year and the regulatory required exposure limit is not exceeded.

- Exposure-specific
 - The exposure-specific examination consists of medical tests to assess the impact of occupational exposures associated with a particular activity or project. The Medical Director or SH&E Manager will require an exposure-specific examination when he/she has reason to believe occupational exposures are impacting or may be impacting the health of an employee.
- Exit/termination
 - Employees currently participating in an examination program will receive exit exams when they leave their work assignment as identified in *S3AM-128-ATT1 Exit Exam Determination*. In the event an employee declines the exit exam, the employee will be requested to sign *S3AM-128-FM2 Waiver of Exit Medical Surveillance Exam*.
 - An exit medical examination is offered when an employee leaves the medical surveillance program, either because of termination of employment with AECOM or because of reassignment to a position not designated to participate in the medical surveillance program or if conditions in the workplace no longer constitutes the need for the medical surveillance (e.g., change in product).
 - The exit examination assesses any impact occupational exposures may have had on the employee's health status.

4.4 Exam Protocols

- 4.4.1 *S3AM-128-ATT2 Exam Protocol* identifies the medical exam components of exam.
- 4.4.2 The evaluation will be confidential and provided during normal business hours. Employees will be offered the opportunity to discuss the results of the evaluation with the MSP. All exam results are considered personal and confidential information, and will not be stored in any unsecured records not transmitted without the employee's permission.

4.5 Participating Employee Guidance and Documentation

- 4.5.1 When necessary, based on the position being filled, the hiring Supervisor and Human Resources Representative informs the candidate that the offer of employment is contingent on the candidate being physically and medically qualified to perform the duties of the position for which he/she is being hired. The hiring Supervisor and Human Resources Representative may not allow the candidate to begin employment until the conditions of the offer letter have been satisfied.
- 4.5.2 When designated to participate in the medical surveillance program, the Employee completes and signs the following documents:
 - Medical and Work History Questionnaire (provided by the MSP).
 - Medical Records Release authorizing MSP to receive the work clearance certificate.
- 4.5.3 Any Employee that has not completed the required medical evaluation after 30 days of an expiration date will be issued a non-qualified statement. The Employee is not permitted to perform the associated task and/or work until the required medical evaluation is completed and a qualified statement is issued by the Medical Director.
- 4.5.4 If an exam becomes due during an employee's pregnancy, it is advised to defer the exam until after delivery and the employee returns to work from family/medical leave status.
- 4.5.5 Human Resources Representative

- Notifies the SH&E Manager or designee to arrange for exit medical examination, upon notification of termination or impending termination from the Supervisor. In the event an employee declines the exit exam, the employee will be requested to sign *S3AM-128-FM2 Waiver of Exit Medical Surveillance Exam*.
- Place the original waiver in the employee's Human Resources personnel file and send a copy to the MSP.

4.5.6 Medical Services Provider (MSP)

- Provides notification approximately 30 days before subsequent periodic or exposure-specific medical examination is due.
- Notify the employee 30 days before the periodic or exposure-specific medical examination is due.
- Provides notification of delinquent medical examinations.

4.5.7 Operations Manager

- Facilitate the management and exchange of documentation regarding the medical screening and surveillance program between AECOM (typically employee's supervisor) and MSP using the *S3AM-128-FM3 Scheduling Request Form*. If exams for multiple employees is required, the information from page 1 of the Scheduling Request Form and the requested exams can be placed in a spreadsheet and sent to the MSP.
- Schedule the initial exam for newly hired or re-assigned employees as needed. Special requests should be coordinated with the SH&E Manager, prior to contacting MSP to schedule.
- Assist employees with scheduling examinations as necessary.
- Coordinate medical surveillance program information exchange between Human Resources Representative and the MSP as necessary.
- Notify the candidate's manager and Human Resources upon receipt of the work clearance.
- Provide information from previous examinations that may not be readily available.

4.5.8 SH&E Manager

- Provides such assistance as is requested by the hiring Supervisor to ensure the job description for the position being filled adequately describes the physical, chemical, and biological stresses of the position, and the PPE used or which may be used, including respiratory protection.
- Provides all necessary assistance to ensure that required and appropriate information is provided with the request and authorization for medical examination.
- Provides assistance to the hiring Supervisor to interpret physical activity restrictions if such restrictions are noted on the work clearance certificate.
- Confirms that all relevant exposure assessments have been appropriately annotated to show the applicability to the employee and forwarded to the MSP.
- Confirms that employees on the delinquent medical examination list have been removed from designated assignments.
- Provides assistance to ensure that terminating and reassigned employees are offered the opportunity to take an exit medical examination.

4.5.9 Supervisor

- Arranges work assignments so that the employee is available to take the medical examination before the work clearance certificate expires.

- Removes the employee from the work assignment before the work clearance certificate expires until the medical evaluation is completed and a qualified statement is issued by the Medical Director.
- Contacts the Human Resources Representative, upon notification of termination or reassignment and requests they arrange for the MSP to perform an exit medical examination.
- Releases the terminating or reassigned employee from duties as necessary to complete the exit medical examination.

4.6 Reports

4.6.1 Report of Examination

- The MSP provides AECOM and the employee with a copy of the work clearance certificate, which will include any medical restrictions and address the employee's ability to use personal protective equipment. AECOM requires the employee to preserve the work clearance certificate in a safe place and provide copies to AECOM managers and clients when requested.
- The MSP will mail a confidential letter detailing the results of the exam to the employee's home address within 30 days of the exam date.

4.6.2 Examinations Due Report

- The MSP produces a list by organization code of employees due to be examined 30 days before the expiration of their work clearance certificate. This list is provided to SH&E Department, who ensures each Supervisor is notified of the employees in his/her charge who are due examinations so they may be scheduled appropriately.
- The MSP notifies each employee via email or phone to the office of record 30 days before the periodic or exposure-specific medical examination is due.

4.6.3 Delinquent Examinations Report

- The MSP distributes a report of delinquent medical examinations to the SH&E Department.
- When an employee's name appears on the delinquent examination report for two consecutive months, the SH&E Department must notify the SH&E Manager, who will bring this to the attention of the employee's Supervisor for resolution. If the delinquency issue is not resolved, the employee's regional management will be notified for final resolution.

4.6.4 Physical Activity Restriction Report

- The Supervisor maintains a list of employees who have physical activity restrictions.
- The SH&E Manager shall evaluate locations and projects periodically to ensure employees with physical activity restrictions are not exceeding their limitations. Concerns of an employee exceeding his/her physical activity restriction is brought to the attention of the employee's Supervisor for resolution.

4.6.5 Annual Reports

- The MSP provides annual reports of utilization, medical trends, and statistical analyses. These reports are prepared to improve the service, manage trends, and reduce the cost of the medical screening and surveillance program.

5.0 Records

- 5.1 Employees who participate in a medical surveillance or physical examination program or had exposure monitoring conducted will have access to all employee exposure and medical records maintained for that employee by AECOM and the MSP.

- 5.2 Upon an employee entering into a medical surveillance or physical examination program, the employee shall be informed of the following:
- The existence, location and availability of any records covered by this procedure
 - The MSP responsible for maintaining and providing access to records and
 - The employee's right of access to these confidential records.
- 5.3 Employees in medical monitoring programs are notified initially and annually thereafter, of the existence, location and ability to access medical records maintained by the MSP. Upon request, each employee (or designated representative) will have access to the employee's medical records. Prior to the release of health information to the employee (or designated representative), a specific written consent must be signed by the employee. Records will be provided in a reasonable time and manner at no cost to the employee.
- 5.4 Medical records must be preserved and protected in accordance with applicable legislative requirements for the duration of employment plus 30 years, verify local, state or federal regulations to confirm time period. Medical records contain information that is protected by the Privacy Act. To meet the obligations of preserving the medical records and protecting the information they contain, AECOM has arranged for the MSP to manage the medical records.
- 5.5 An employee or designated representative may request to review his/her medical. Such a request must be in writing and be signed and dated. The SH&E Manager or the SH&E Department will forward the request to the MSP, who will provide the employee with a copy of the medical records.
- The MSP provides employees with a copy of their results after each physical. If employee would like a copy of their historical records, the MSP will supply the copy within 15 days after the request has been submitted by the employee or designated representative.
- 5.6 MSP performs quality control checks on all medical records to ensure examining physicians appropriately record the findings of the examination and tests.
- The MSP has access to all medical records to perform quality assurance checks to ensure proper recording and preservation
- 5.7 Projects that use local clinics or employer/client clinics may store records at that site, but at the termination of the project, all employee medical records must be transferred to long-term record retention.
- 5.8 If in the event AECOM ceases operations, medical records will be transferred to the successor employer. If no successor employer is available, records will be transferred to the National Institute for Occupational Safety and Health.

6.0 Attachments

- 6.1 [S3AM-128-ATT1](#) [Exit Exam Determination](#)
- 6.2 [S3AM-128-ATT2](#) [Exam Protocols](#)
- 6.3 [S3AM-128-FM1](#) [Medical Surveillance Evaluation](#)
- 6.4 [S3AM-128-FM2](#) [Waiver of Exit Medical Surveillance Exam](#)
- 6.5 [S3AM-128-FM3](#) [Scheduling Request Form](#)
- 6.6 [S3AM-128-FM4](#) [Waiver of Medical Screening & Surveillance Program](#)

Competent Person Designation

S3AM-202-PR1

1.0 Purpose and Scope

- 1.1 Outlines the process and minimum requirements necessary for classifying an AECOM employee as a "Competent Person" to oversee and/or self-perform activities involved with tasks listed in this procedure. Employee competency to perform work activities is addressed elsewhere.
- 1.2 This procedure applies to all AECOM Americas-based employees and operations where AECOM is self-performing the identified activities and where AECOM controls projects performing activities requiring a Competent Person. This procedure also applies to any other entity and its personnel contractually required to comply with this document's content. Client-mandated requirements may apply on a project-specific basis and shall be addressed in supplemental documents (e.g. Task Hazard Assessment, SH&E Plan, etc.).
- 1.3 It is recognized that local regulations and legislation may contain alternate definitions for Competent Person and it will be the responsibility of the manager responsible for the work (e.g. Manager, Superintendent) in conjunction with the local SH&E Manager to determine if conflicts exist between AECOM and applicable regulatory/legislative definitions and resolve the conflict.
- 1.4 When a qualified employee within AECOM is not available to be designated as the AECOM Competent Person, the Manager in coordination with their SH&E Manager may designate an appropriately qualified and trained Contractor employee as the Competent Person for the AECOM operations.

2.0 Terms and Definitions

- 2.1 **Competent Person** – An employee, through education, training and experience who has knowledge of applicable regulatory requirements, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

3.0 References

- 3.1 S3AM--213-PR1 Subcontractor Management

4.0 Procedure

- 4.1 Roles and Responsibilities

4.1.1 Manager

- Confirm that all assigned personnel, including personnel utilized from other offices to support their operations, comply with the requirements of this procedure. The manager responsible for the work shall:
 - Identify the need for a designated Competent Person or persons based on anticipated work activities.
 - Communicate competent person training/experience requirements with the employee and documenting completion of these requirements using *S3AM-202-FM-1 Competent Person Designation* or equivalent.
 - Identify supplemental employee training needs based on local/client requirements.
- For projects controlled by AECOM, when these activities are contracted to another party:
 - Confirm and secure the identity of the Contractor's Competent Person(s) for its activities. Refer to *S3AM-213-PR1 Subcontractor Management*.

- S3AM-202-FM1 *Competent Person Designation* or equivalent may be used for this purpose.
- Provide the Contractor with a copy of this SH&E Procedure to verify the Contractor's capability to comply with the requirements within, and obtain documentation to support the designation of the Contractor employee as a Competent Person for AECOM.
- Verify the designation of the Competent Person for a specific activity is documented and effectively communicated to field personnel on site during daily tailgate safety meetings.

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

- Assist the Manager responsible for the work in assessing the competency of all designated persons based on specific requirements outlined in this procedure.
- Assist the Manager in:
 - Establishing competent person training/experience requirements and communicating these requirements to the supervisor.
 - Monitoring the overall implementation of this SH&E Procedure.
 - Monitoring field compliance of this procedure.
 - Providing technical assistance/support as requested.
 - Coordinating internal safety training classes as requested.
- Support the Manager in establishing minimum competent person requirements for regulated job activities based on individual job descriptions, applicable regulatory requirements, operational considerations, and management directives.
- Review as requested by designated operations representatives the Competent Person's qualifications for AECOM employees.

4.1.3 **Competent Person**

- Predict, identify, and control hazards when either AECOM self-performs associated field work or oversees and directs the work of subcontractors.
 - For operations where AECOM is providing oversight of subcontractors (e.g. drilling services), it is the subcontractor's employee who shall be designated as the Competent Person.
- Contractor Competent Persons - Unless AECOM is self-performing, the Contractor shall:
 - Determine the safe means and methods of its work activities.
 - Designate its Competent Person(s) for each category of work the Contractor undertakes and/or controls as required by this procedure.
 - If the contractor is unable to designate a Competent Person, AECOM may designate an appropriate AECOM employee as the contractor's Competent Person only if AECOM is contractually responsible for safety oversight of the contractor's activities.
- The Contractor's Competent Person shall:
 - Technically support the Contractor's site operations for the safe execution of its activities. Identify and remove any field hazards
 - Maintain appropriate knowledge about the work activities, the Contractor's work practices and procedures and compliance with the associated safety and health regulations.

4.2 **General Requirements**

- #### 4.2.1
- The AECOM Competent Person project or worksite functions are dependent on the project activities and AECOM's project or worksite function.

- 4.2.2 Refer to each SH&E Procedure for the activities listed below and the associated legislative standards to determine the details of responsibility.
- 4.2.3 The following activities require an individual to be designated as a Competent Person:
- Asbestos
 - Assured Equipment Grounding Conductor
 - Blasting & Explosives
 - Concrete & Masonry Construction
 - Confined Spaces
 - Control of Hazardous Energy (Lockout-Tagout)
 - Cranes & Derricks
 - Crane Assembly / Disassembly
 - Demolition
 - Electrical Wiring Design & Protections
 - Elevated Work Platforms & Aerial Lifts
 - Fall Protection
 - Hearing Protection
 - Heavy Equipment
 - Ionizing Radiation
 - Lead
 - Material Hoists & Personnel Hoists
 - Stairways & Ladders
 - Respiratory Protection
 - Rigging Equipment
 - Scaffolds
 - Steel Erection
 - Trench & Excavations
 - Underground Construction
 - Welding & Cutting
- 4.2.4 Generally, it is the responsibility of the Competent Person(s) to be on site at all times when respective staff (AECOM, subcontractor) are performing work governed by this procedure, make daily inspections of the conditions and work activities, and take actions to control any hazards associated with those activities.
- 4.2.5 The *S3AM-202-FM1 Competent Person Designation* or equivalent shall be used for all programs or on all projects for documenting Competent Person designations. Documentation shall be filled out completely and updated as necessary.
- 4.2.6 *S3AM-202-ATT1 Competent Persons in General Industry (29 CFR 1910)* and *S3AM-202-ATT2 Competent Persons in Construction (29 CFR 1926)* include descriptions of various U.S. Occupational Safety and Health Administration requirements for competent persons. The list is not comprehensive and as such 29 CFR 1910 and 1926 shall be consulted for any additional competent person requirements.

5.0 Records

- 5.1 AECOM Competent Person Designation forms shall be maintained in the program / project file.
- 5.2 Documentation as to daily inspections and corrective measures by the AECOM Competent Person shall be maintained in the program / project file.

6.0 Attachments

- 6.1 [S3AM-202-FM1](#) [Competent Person Designation](#)
- 6.2 [S3AM-202-ATT1](#) [Competent Persons in General Industry \(29 CFR 1910\)](#)
- 6.3 [S3AM-202-ATT2](#) [Competent Persons in Construction \(29 CFR 1926\)](#)

1.0 Purpose and Scope

- 1.1 This procedure applies to the operations of AECOM and its subsidiary companies, and any other entity and its personnel contractually required to comply with this document's content, where employees may be exposed to airborne concentrations of hazardous air contaminants potentially exceeding permissible limits. Note that this standard does not cover monitoring for asbestos operations (S3AM-109-PR1), toxic and hazardous substances (S3AM-110-PR1), radiation (S3AM-120-PR1), non-ionizing radiation (S3AM-121-PR1), confined spaces (S3AM-301-PR1), heat stress (S3AM-113-PR1), or noise (S3AM-118-PR1).
- 1.2 The purpose of this procedure is to assist and provide guidance to AECOM personnel who need to conduct personal industrial hygiene monitoring and to control employee exposures to toxic or hazardous substances to the lowest level practicable, including those specified under applicable jurisdictional legislation. Monitoring will be conducted to evaluate the potential exposure of AECOM employees to airborne concentrations of hazardous particulates, fibers, gases, vapors, mists, pathogens, hazardous biological agents, or to oxygen-deficient atmospheres.
- 1.3 Personal monitoring shall be conducted under the following conditions:
- 1.3.1 Where directed by a facility or site-specific health and safety plan.
 - 1.3.2 Where employees are exposed to known or suspected human carcinogens (e.g., beryllium, vinyl chloride, etc.).
 - 1.3.3 Where regulations require "initial exposure assessments" (e.g., lead, asbestos, methylene chloride, hexavalent chromium). Certain regulations allow for an exemption to initial exposure assessments when exposure monitoring of similar exposure groups has been conducted under the same site conditions and for equivalent tasks within 1 year prior to the start of work on the current project or site.
 - 1.3.4 When directed by a client or required by contract.
 - 1.3.5 At the direction of a Safety Manager in response to employee concerns or incidents involving chemical exposure.
 - 1.3.6 Co-sampling during regulatory inspections.
 - 1.3.7 Routine monitoring in compliance with regulatory requirements.

2.0 Terms and Definitions

- 2.1 **Action Level (AL)** – An airborne concentration of a potentially toxic or hazardous substance, measured in parts per million by volume (ppm), microgram per cubic meter ($\mu\text{g}/\text{m}^3$) milligram per cubic meter (mg/m^3) or fibres per cubic centimetre (f/cc), that triggers certain provisions as required by the applicable jurisdictional legislation. In many cases the action level is 50% of the established exposure limit.
- 2.2 **Established Exposure Limit** – The maximum regulatory exposure concentration to which an individual may be exposed to for an 8- hour time weighted average (TWA).
- This limit is referred to by different terminology depending upon the given jurisdiction (e.g. Permissible Exposure Limit (PEL), Contamination Limit, Occupational Exposure Limit (OEL), Threshold Limit Value (TLV), etc.).

Acceptable methods of adjusting this limit to correspond to a different exposure period (e.g. 10 hours) vary by jurisdiction and substance.

3.0 References

- 3.1 S3AM-109-PR1 Asbestos
- 3.2 S3AM-301-PR1 Confined Spaces
- 3.3 S3AM-113-PR1 Heat Stress
- 3.4 S3AM-118-PR1 Hearing Conservation
- 3.5 S3AM-123-PR1 Respiratory Protection
- 3.6 S3AM-110-PR1 Toxic & Hazardous Substances

4.0 Procedure

- 4.1 Implementation of this standard is the responsibility of the AECOM manager directing activities of the facility, site, or project location.
- 4.2 Hazard assessments shall be completed to identify potential employee exposure to toxic or hazardous substances. Industrial hygiene monitoring conducted and prioritized as appropriate to the potential risk and in accordance with regulatory requirements.
- 4.3 Procedures for Personal Industrial Hygiene Monitoring
 - 4.3.1 Personal industrial hygiene monitoring documentation shall include accurate and detailed descriptions of the work environment and of the work activities of each employee being monitored to evidence monitoring results are tied to the work operations conducted. This permits demonstration that suggested corrective actions are appropriate or adequate to control the exposure.
 - 4.3.2 Individuals responsible for equipment maintenance and collection shall be appropriately trained. Engage applicable subject matter experts as necessary (e.g., industrial hygienists / technicians).
 - 4.3.3 Maintain, service, and calibrate sampling equipment in accordance with the manufacturer's recommendations and, as applicable, the approved sampling methodology (may include both pre- and post-calibration to confirm consistent flow rates).
 - 4.3.4 Collect samples using current applicable methodologies established by the National Institute for Occupational Safety and Health (NIOSH) *Manual of Analytical Methods*, U.S. Department of Labor – Occupational Safety and Health Administration (OSHA) *Sampling and Analytical Methods*, American Society for Testing Materials (ASTM), the Environmental Protection Agency (EPA), or applicable guidelines for the host country.
 - 4.3.5 Select an analytical laboratory accredited by the American Industrial Hygiene Association (AIHA), or equivalent host country certification, licensing, or accreditation, to analyze the personal air samples.
Note: There are several programs under which a laboratory may receive AIHA accreditation. The laboratory shall be currently accredited for the specific program, scope category, and field of testing for the analysis that will be performed, not merely hold AIHA accreditation.
 - 4.3.6 Confirm samples are submitted to the laboratory for analysis in a timely manner to confirm sample viability.
 - 4.3.7 Require the selected laboratory to use the applicable analytical methodologies and document quality control procedures.
 - 4.3.8 Confirm equipment is maintained, serviced, and calibrated in accordance with manufacturer's recommendations.

- 4.3.9 Document personal monitoring activities and work operations using the appropriate AECOM Industrial Hygiene Monitoring Form; require that all laboratory chain-of-custody forms be properly completed; and confirm samples are sealed and secured according to Quality Assurance procedures.
- 4.3.10 Confirm workers are being protected (e.g., engineering controls, administrative controls, and PPE, including respiratory protection) during the monitoring phase. Refer to *S3AM-123-PR1 Respiratory Protection* and *S3AM-208-PR1 Personal Protective Equipment*.
- 4.3.11 Reassessment of exposure hazards shall be conducted as appropriate when there are changes in conditions or work processes, and at suitable intervals based on potential risk and regulatory requirements.
- 4.3.12 Determine whether medical surveillance is required. Refer to jurisdictional requirements and *S3AM-128-PR1 Medical Screening & Surveillance*.
- 4.4 Evaluation of Personal Monitoring Results
 - 4.4.1 Samples sent out for independent laboratory analysis will follow chain of custody requirements.
 - 4.4.2 An AECOM Certified Industrial Hygienist (CIH) approved by a Safety Manager should evaluate the analytical results when feasible.
 - 4.4.3 Obtain a written evaluation report from the SH&E manager. If exposures exceed the Action Level and/or Established Exposure Limit for the air contaminant(s) of concern, a verbal report is to be made to the senior facility, project, or site manager immediately, and follow up with the written report within any established timeframe. The evaluation report will include required corrective actions.
 - 4.4.4 Complete evaluation reports within 5 working days of the receipt of the analytical results.
 - 4.4.5 Results of all personal exposure monitoring will be provided to the SH&E department for inclusion in the employee medical records, refer to *S3AM-017-PR1 Injury & Illness Recordkeeping*.
- 4.5 Procedures for Direct-Read Air Monitoring
 - 4.5.1 Direct-read air monitoring instruments are used primarily as screening tools to provide real-time evaluations of hazardous airborne contaminants at a project site.
 - 4.5.2 Select an appropriate air monitor for the air contaminant to be measured.
 - 4.5.3 Calibrate monitor in accordance with manufacturer's recommendations. Dates of full instrument calibration will be recorded on the direct-read instrument and on any associated calibration data sheets. If instrument calibrations are not performed daily, then daily bump tests (exposure to a known concentration of contaminant) will be performed to verify calibration and confirm alarms are working appropriately.
 - 4.5.4 Conduct air monitoring using techniques identified by the instrument manufacturer and according to any identified methods (e.g. NIOSH, EPA, etc.).
 - 4.5.5 Confirm equipment is maintained, serviced, and calibrated in accordance with manufacturer's recommendations.
 - 4.5.6 Document personal monitoring activities using the appropriate AECOM Industrial Hygiene Monitoring Form.
 - 4.5.7 Confirm workers are being protected (e.g., engineering controls, administrative controls, and PPE, including respiratory protection) during the monitoring phase. Determine whether medical surveillance is required.
 - 4.5.8 Where required by client request or by unique or high hazard areas, individual portable direct-read monitors shall be used.

4.6 Evaluation of Personal Monitoring Results

- 4.6.1 Compare measured results with project-specific Action Levels and/or published Established Exposure Limits. If exposures exceed the Action Level and/or Established Exposure Limit for the air contaminant(s) of concern, take corrective actions as identified in the site-specific SH&E plan. If the SH&E Plan did not account for the identified hazard, or where questions exist about the results, contact the SH&E Manager to evaluate the analytical results for appropriate corrective action (this may involve consultation with a Certified Industrial Hygienist). The SH&E Plan should be updated accordingly.

4.7 Communication of Sample Results and Evaluation

- 4.7.1 Provide copies of the evaluation report to the employee(s) monitored and to employees working in the area for which the exposures could be representative, within 5 days of receipt of lab results.
- 4.7.2 Exposure results will be posted on site and explained in a safety briefing.
- 4.7.3 Provide a copy of the evaluation report and monitoring data to the client, owner, or manager directing activities of the facility or site for filing purposes.
- 4.7.4 Personal identifiers (e.g., name, address, employee number) or information which could reasonably be used to identify specific employees (e.g., exact age, height, weight, race, sex, date of initial employment, job title), shall be removed from analysis reports before access to the exposure data is provided.

4.8 Corrective Actions

- 4.8.1 Implement required corrective actions immediately.
- 4.8.2 If the exposure hazard cannot be eliminated or otherwise controlled through the use of engineering controls, the reason shall be documented and suitable administrative controls and personal protective equipment requirements developed.
- 4.8.3 Workers who may be exposed above the Established Exposure Limit or Action Limit, shall be appropriately trained and wear respiratory protection in accordance with *S3AM-123-PR1 – Respiratory Protection Program*.

4.9 Exposure Records

- 4.9.1 Exposure records include work activities / process descriptions, workplace monitoring, biological monitoring, material safety data sheets and chemical inventories. Sampling results, the collection methodology (sampling plan), a description of the analytical and mathematical methods used, and a summary of other background data relevant to interpretation of the results obtained, shall be retained for at least thirty (30) years.

5.0 Records

The following documents will be maintained in the project profile:

- 5.1 Calibration data.
- 5.2 Completed IH Monitoring Form(s).
- 5.3 Evaluation Report with sample results (provide copy to affected employee as well).
- 5.4 Corrective actions, including engineering controls.
- 5.5 Relevant prior initial exposure assessments.

6.0 Attachments

- 6.1 [S3AM-127-FM1 General Industrial Hygiene Survey](#)

- 6.2 [S3AM-127-FM2 Industrial Hygiene Sample Field Sheet](#)
- 6.3 [S3AM-127-FM3 Total Dust Industrial Hygiene Sample Field Sheet](#)
- 6.4 [S3AM-127-FM4 Respirable Dust Industrial Hygiene Sample Summary](#)
- 6.5 [S3AM-127-FM5 Detector Tube Industrial Hygiene Sample Summary](#)
- 6.6 [S3AM-127-FM6 Gas/Vapor/Fume/Mist Industrial Hygiene Sample Summary](#)
- 6.7 [S3AM-127-FM7 Toxic Gas Monitor Industrial Hygiene Sample Summary](#)
- 6.8 [S3AM-127-FM8 PID/FID Monitoring Report](#)
- 6.9 [S3AM-127-FM9 Industrial Hygiene Evaluation Form](#)
- 6.10 [S3AM-127-FM10 Instrument Calibration Log](#)

Environmental Compliance

S3AM-204-PR1

1.0 Purpose and Scope

- 1.1 This procedure establishes a process for assuring compliance with applicable environmental laws and regulations.
- 1.2 This procedure applies to all AECOM America-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

The terms and definitions relating to environmental compliance and hazardous waste management are included in the respective laws and regulations in Canada, Latin America and the United States.

- 2.1 **Applicable Environmental and Hazardous Waste Management Laws and Regulations** – The specific legal requirements that apply to an AECOM office or project. Laws and regulations vary considerably throughout the Americas.
- 2.2 **Compliance Map** – a document defining and detailing the actions necessary to assure compliance with applicable environmental legal requirements.
- 2.3 **Reportable Quantity (RQ)** – quantities of hazardous substances, which when released to the environment require notification to the appropriate authorities / agencies (e.g., National Response Center, local police, coast guard, state / provincial / territorial reporting agency, etc.). Multiple agencies and regulations have established RQs; RQs may differ by agency.
- 2.4 **Subject Matter Expert** – a person who is an expert in a particular topic or area based on experience, technical/regulatory knowledge, and/or training.
- 2.5 **Hazardous Wastes** – Hazardous waste laws and regulations are complex and vary considerably throughout the Americas. For example, based on the Canadian Environmental Protection Act of 1999, in Canada hazardous wastes and hazardous recyclable materials are defined as those with properties such as flammability, corrosiveness or inherent toxicity. According to EPA regulations, a hazardous waste is a waste with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous waste can take many physical forms and may be solid, semi-solid, liquid, or even contained gases. Hazardous wastes fall into the categories of listed wastes and characteristic wastes. The characteristic wastes exhibit one of more of the following characteristics: ignitability, corrosivity, reactivity and toxicity.
- 2.6 **Generator of Hazardous Wastes** – For example, based on the Resource Conservation and Recovery Act (RCRA) and Environmental Protection Agency (EPA) regulations in the United States, a hazardous waste generator is any person or site whose processes and actions create hazardous waste. Generators are divided into three categories based on the quantity of waste they produce. Large quantity generators generate 1,000 kilograms per month or more of hazardous waste, more than 1 kilogram per month of acutely hazardous waste, or more than 100 kilograms per month of acute spill residue or soil. Small quantity generators generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month. Very Small Quantity Generators generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste, or less than 100 kilograms per month of acute spill residue or contaminated soil, water, or other debris.
- 2.7 **Storage** – Per EPA regulations, storage is defined as the temporary holding of waste before the waste is treated, disposed of or stored somewhere else.
- 2.8 **Treatment and Disposal** – Per EPA regulations, treatment and disposal is any process that changes the physical, chemical or biological characteristics of a waste to minimize its threat to the environment.

3.0 References

- 3.1 AECOM Safety, Health and Environment Policy Statement
- 3.2 S3AM-004-PR1 Incident Reporting, Notifications & Investigation
- 3.3 S3AM-017-PR1 Injury & Illness Recordkeeping
- 3.4 S3AM-109-PR1 Asbestos
- 3.5 S3AM-116-PR1 Hazardous Materials Shipping
- 3.6 S3AM-119-PR1 Laboratories
- 3.7 S3AM-209-PR1 Risk Assessment & Management
- 3.8 S3AM-216-PR1 Compliance Assurance

4.0 Procedure

Subject matter experts knowledgeable in Canada, Latin Americas and the United States environmental and hazardous waste laws and regulations should be consulted for clarification of the requirements. Hazardous waste laws and regulation may vary by provinces in Canada, countries in Latin Americas and states in the United States. It is critical to understand the specific requirements in the various offices and project locations in the Americas.

4.1 Roles and Responsibilities

4.1.1 Managers (Operations) directing activities of the facility, site, or project location

- Ensure the areas they manage are in compliance with applicable environmental and hazardous waste laws and regulations. The SH&E Plan shall identify all applicable SH&E requirements the particular project/location is responsible for meeting.
- Participate in assessing the applicable activities, products or services for associated environmental impacts. Refer to *S3AM-204-ATT2 Aspects and Environmental Impacts Assessment* as a guideline.
- Ensure the necessary resources exist to comply with these requirements and is responsible for working with the SH&E team to audit compliance.
- Consult subject matter experts on an ongoing basis to ensure up-to-date specific requirements of applicable legislation and regulation are met.
- Ensure relevant information and compliance requirements are communicated to all affected personnel. As applicable, refer to *S3AM-204-ATT3 Environmental Management Plan (Sample)*.

4.1.2 Project / Location Manager

- Identifying and implementing the actions necessary to ensure compliance with the project / location's applicable environmental and hazardous waste requirements. As applicable, this may include:
 - Participating in the assessment of applicable activities, products or services for associated environmental impacts. Refer to *S3AM-204-ATT2 Aspects and Environmental Impacts Assessment* as a guideline.
 - Ensuring procedures for conducting any activities that could have a significant environmental impact are established.
 - Ensuring procedures for identification of significant environmental aspects of goods and services used by AECOM are established.
 - Identifying and understanding the applicable legal requirements that apply to the project / location's activities.

- Verifying that staff have the appropriate environmental and hazardous waste management training prior to performing assigned activities.
- Budgeting the necessary resources into each project / location to achieve compliance with applicable legal requirements.
- As applicable, verifying that Legal Counsel and Office of Risk Management (ORM) have reviewed and approved the signed client's Agency Agreement authorizing AECOM to sign a waste manifest or sign shipping papers "as an agent of that client." NOTE: It is AECOM's policy that AECOM personnel will not sign client waste manifests or shipping papers unless authorized to do so by AECOM Legal Counsel and ORM.
- Obtaining all applicable environmental permits prior to the start of any regulatory permitted activity, including those permits held by the client which may impact AECOM's activities.
- Assessing the compliance status of AECOM's activities.
- Implementing any identified corrective actions relative to noted potential environmental compliance deficiencies.
- Identifying environmental regulatory noncompliance or near misses to AECOM's incident report system
- Ensuring project / location-specific environmental compliance plan is developed and documented in the form of Environmental Management Plans (EMP) or equivalent (refer to *S3AM-204-ATT3 Environmental Management Plan (Sample)* as a guideline and to *S3AM-204-ATT1 Environmental Compliance Maps* for examples of Compliance Maps).
- Consult subject matter experts on an ongoing basis to ensure up-to-date specific requirements of environmental legislation and regulation are met.
- Ensure relevant information and compliance requirements are communicated to all affected staff.

4.1.3 SH&E Manager

- Assisting operations personnel in assuring that activities undertaken by Operations are in compliance with environmental legal requirements, including but not limited to:
 - Assisting operations in identifying applicable environmental and hazardous waste laws and regulations and Subject Matter Experts.
 - Supporting compliance assessments of operations activities as needed. Refer to *S3AM-204-ATT2 Aspects and Environmental Impacts Assessment* as a guideline.
 - Reporting regulatory potential noncompliance events that result in a notice of violation, notice of noncompliance, or other indication of noncompliance to both management and region counsel.
 - Reporting to management and legal counsel, as applicable, on the status of identified corrective actions.

4.1.4 Legal Counsel

- Reviewing, commenting on, and approving a client's signed Agency Agreement letter authorizing AECOM to sign a waste manifest or shipping papers "as an agent of the client."
- Taking appropriate action upon notification that AECOM received a notice of violation or any other written notice of noncompliance, or becoming aware of a noncompliance situation.
- Supporting operation's response to notices of violation or any other written notice of noncompliance issued to AECOM from a regulatory agency.

4.1.5 America's Office of Risk Management

- Reviewing, commenting on, and approving a client's signed Agency Agreement letter

authorizing AECOM to sign a waste manifest or shipping papers “as an agent of the client.”

4.1.6 Employees

- Reporting all environmental releases or permit exceedances immediately as per *S3AM-004-PR1 Incident Reporting, Notifications & Investigation*.
- Performing all project-related tasks in compliance with applicable environmental legal requirements.
- Signing waste manifests only if authorized by the Project Manager and Region Counsel. Refer to *S3AM-116-PR1 Hazardous Materials Shipping*.

4.2 Office Compliance

- 4.2.1 Overall – AECOM offices must comply with the applicable environmental and hazardous waste laws and regulations. This section describes some potential office related activities that can be subject to environmental laws and regulations.
- 4.2.2 Shipping Materials – The shipping and manifesting of hazardous materials from an AECOM office is subject to *S3AM-116-PR1 Hazardous Materials Shipping* procedure. Employees associated with shipping (such as with Federal Express, UPS and others) must be trained in their responsibilities and ensure they comply with the applicable shipping and manifesting requirements.
- 4.2.3 Storage of Chemicals and Wastes - Some AECOM offices may store chemicals and wastes. If so, these offices must comply with the applicable laws and regulations governing these activities.
- 4.2.4 Applicable Permits – Most AECOM offices will not require an air or water permit for discharges. If hazardous wastes are present in AECOM offices, they should be properly managed, stored, and disposed of in compliance with the applicable regulation and permitting requirements (e.g., United States EPA – storage permit required if hazardous waste is to be stored in excess of 90 days without having obtained regulator extension). The off-site disposal of hazardous waste from AECOM offices shall be properly manifested and both the waste hauler and the disposal facility shall be certified / permitted by the applicable environmental agencies.

4.3 Project Compliance

4.3.1 Obtaining Necessary Permits

- 4.3.1.1 Air Permits – If a project will result in emissions to the air, the project may require an air permit. It is important to work closely with the client as the permit may need to be applied for by the client.
- 4.3.1.2 Water Permits – For projects that involve discharges to receiving bodies of water (rivers, streams, etc.), storm sewers and sanitary sewers, AECOM needs to work closely with our clients to ensure all water related permits are obtained prior to start-up of the projects.
- 4.3.1.3 Waste Management and Waste Storage Permits – Federal, state, provincial and local environmental agencies have many regulations related to proper waste management (i.e. approval of spill containment plans, wastes placed in drums and containers must be properly labeled, etc.). Ensure appropriate approvals and permits are in place where required (i.e. British Columbia – approval of Operational Plan; United States – permit required for hazardous wastes stored on sites longer than generator status allowances). This may require working closely with the client to obtain required approvals and/or permits.
- 4.3.1.4 For projects where a client is authorizing AECOM to manage their waste, AECOM Employees must never sign a waste manifest indicating AECOM is the generator of the waste unless approved to do so by AECOM Legal Counsel and Americas Office of Risk Management.

- 4.3.2 Incident Reporting – Employees must promptly report to the client and work closely with the client in reporting to regulatory agencies any spills or releases into the environment. This includes: discharges of contaminated groundwater to a sanitary sewer or storm water sewer system unless authorized by the regulatory agencies involved to do so; spills of oil, petroleum products, or other chemicals to the ground or water bodies; and any release of hazardous substances in amounts greater than their “reportable quantities” –as defined by regulations. Employees must also report these incidents into AECOM’s incident reporting system.
- 4.3.3 Laboratory Operations – Where AECOM has laboratory operations, the disposal of laboratory chemicals into laboratory drains is not allowed. Water discharges from laboratory operations must meet applicable environmental legal requirements.
- 4.3.4 Asbestos Management – There are many regulations governing asbestos management. Regulations may include implementing an Asbestos Management Plan; providing notice to air and other regulatory agencies relating to demolition or asbestos abatement plans within the specified timelines prior to the start of any abatement operations; and the abatement and disposal of asbestos. Refer to *S3AM-109-PR1 Asbestos*.
- 4.3.5 Environmental Management Plan (EMP) or equivalent – Documented at the site/office and project level, to ensure proper planning of operations with respect to the environment (as determined by the aspects and impacts assessment). Refer to *S3AM-204-ATT3 Environmental Management Plan (Sample)*.
- Initial steps in developing the EMP include assessing environmental impacts of the activities, products or services to be undertaken. Refer to *S3AM-204-ATT2 Aspects and Environmental Impacts Assessment* as a guideline. This completed assessment may be included in the EMP.
 - As required, each office / project must identify and document applicable environmental regulatory requirements in their EMP, or equivalent.
 - It is advisable to develop a Compliance Map for those projects where AECOM is a permit holder or where AECOM is operating under a client’s permit. Compliance maps can indicate the applicable actions, limits, records retention requirements, and applicable submittals to ensure compliance with applicable environmental legal requirements.
 - Refer to *S3AM-204-ATT1 Environmental Compliance Maps* for examples of Compliance Maps.
 - EMP (or equivalent) shall include documented procedures for conducting any activities that could have a significant environmental impact (e.g., requirements to maintain segregation of hazardous wastes from other wastes, disposal requirements, remodeling activities, laboratory operations, etc.).
 - If AECOM is responsible for selecting the waste disposal site/facility, the identified disposal site/facility shall meet regulatory requirements of the applicable jurisdiction.
 - EMP shall identify required records management with respect to any environmental-related monitoring equipment (e.g., tank monitoring equipment, pH meters used prior to discharge to sanitary sewers, etc.).
 - As applicable, the EMP, or equivalent, shall include procedures for identification of significant environmental aspects of goods and services used by AECOM (e.g., office supplies, utilities, subcontractors, commuting, and project- and overhead-related travel).
 - If customer, client, or facility owner EMP fully encompasses AECOM operations, it is not necessary to create an AECOM - specific EMP.
 - If not already included in SH&E Plans and Emergency Response plans, the EMP or equivalent shall include procedures to identify the potential for and response to upsets, incidents, and emergency situations. These plans also include procedures for preventing and mitigating the negative impacts of any emergencies.
 - EMP (or equivalent) shall include provisions for a commitment to conduct (at least annually) an

evaluation of compliance with relevant environmental legislation, as well as opportunities for improvements.

- As applicable, EMP (or equivalent) shall identify opportunities and procedures to prevent and reduce the generation of waste, as well as recycle or reuse waste, both in the execution of activities or services and in the procurement of goods and services used by AECOM.
- *S3AM-204-ATT3 Environmental Management Plan* may be used as a template to prepare an EMP.

4.3.6 Releases/Spills – Where the possibility of an environmental release exists due to AECOM activities, the Reportable Quantity for regulated substances must be identified prior to the start of work. Any release or spill must be immediately reported to the client and depending on the material and quantity of material released or spilled, reported to regulatory agencies.

4.3.7 Subject Matter Experts – When necessary, project teams will consult with Subject Matter Experts to identify the necessary permitting/licensing and/or applicable regulations governing the planned scope of work. Example guiding questions that project teams may use to initially assess their project's environmental compliance needs include, but are not limited to:

- Will AECOM's activities have the potential to discharge any hazardous or other regulated chemicals/materials to the air?
- Is there any equipment on site that has an air permit or similar regulatory requirement governing air discharges to the environment? Note: This should include client-owned equipment that AECOM will operate and have contractual regulatory liability for during the planned scope of work.
- Will AECOM manage characteristic or listed hazardous waste for the client?
- Will AECOM activities generate nonhazardous, universal, or hazardous waste subject to requirements?
- Is this a site or facility where AECOM will perform activities under the Resource Conservation and Recovery Act (RCRA – United States), Canadian Environmental Protection Act (CEPA – Canada), a Consent Order or any other applicable jurisdictional regulatory body?
- Is the site or facility a hazardous waste generator (e.g., large quantity, small quantity, or very small quantity)?
- Will AECOM be required to select a waste disposal facility?
- What oil storage capacity does the site or facility have (count containers/equipment with capacities of 55 gal or greater)?
- Will AECOM's activities create a discharge into a surface water body?
- Will AECOM's activities disturb ≥ 1 acre of land surface area?
- Will AECOM's activities physically disturb or impact a wetland?

4.4 Environmental Compliance Assessments

4.4.1 AECOM will periodically assess its operations (offices and project sites) and activities to verify ongoing activities comply with applicable environmental legal requirements. Assessments shall be conducted, as a minimum, on an annual basis. The frequency of these documented environmental compliance assessments should be based on the complexity of the project/size of the office and the associated environmental compliance risks to AECOM.

4.4.2 The Managers (Operations) or Project/Location Managers will conduct the assessment or designate a qualified individual to conduct the assessment.

4.4.3 The environmental compliance assessment, refer to *S3AM-204-FM1 Office/Project Environmental Compliance Assessment Checklist*, will provide information to AECOM management on the

environmental compliance performance of specific operations.

- 4.4.4 The assessment can be combined into a periodic, comprehensive audit; typically, a business systems audit incorporating quality assurance, health and safety, and environmental components.
- 4.5 Environmental Incident or Non-Compliance
 - 4.5.1 Should an assessment identify non-compliance issues or an environmental incident occurs, the severity level must be assessed for appropriate response. Refer to *S3AM-004-PR1 Incident Reporting, Notifications & Investigation*. Ensure the parties appropriate to the severity are contacted and involved with issue resolution (e.g., Legal Counsel).
 - 4.5.2 If a regulatory Notice of Violation (NOV) is received by an AECOM facility or project, Legal Counsel shall be contacted and involved with issue resolution.
 - 4.5.3 The issue or incident must be investigated and will be documented and tracked. Refer to *S3AM-004-PR1 Incident Reporting, Notifications & Investigation*. The documented investigation must:
 - Identify the cause (root cause).
 - Identify corrective actions.
 - Assign responsibility to implement or modify controls to prevent reoccurrences and establish scheduled date of completion.
 - Identify methods to inform impacted staff of any revisions to written procedures.
 - 4.5.4 The documentation must be reviewed for actual completion and effectiveness of controls.
 - 4.5.5 Document, review, and communicate appropriate lessons learned for incidents and near misses (including environmental).

5.0 Records

- 5.1 Comply with *S3AM-017-PR1 Injury & Illness Recordkeeping* requirements.
- 5.2 Maintain or keep accessible the following additional records/documentation:
 - 5.2.1 Relevant laws and regulations (may be accessed via the web).
 - 5.2.2 Facility and project non-compliance records.
 - 5.2.3 Training records (maintained at the facility level, with the exception of modules tracked in computer-based training).
 - 5.2.4 Required equipment inspections, waste storage area inspections, maintenance, and calibration information (in accordance with site EMP).
 - 5.2.5 Relevant contractor/supplier information (in accordance with the site EMP or project-specific waste management plans) with respect to waste disposal vendors, transportation companies, etc.
 - 5.2.6 Agency citations/Notice of Violations and any supporting information.
 - 5.2.7 Information on emergency preparation and response.
 - 5.2.8 Copies of Environmental Aspect and Impact Assessments (maintained by the safety representative for office locations or in the project files for project-related assessments). Refer to *S3AM-204-ATT2 Aspects and Environmental Impacts Assessment*.
 - 5.2.9 Completed Compliance Assessment checklists and audit results.

6.0 Attachments

- 6.1 [S3AM-204-FM1 Office/Project Environmental Compliance Assessment Checklist](#)
- 6.2 [S3AM-204-ATT1 Environmental Compliance Maps](#)

- 6.3 [S3AM-204-ATT2 Aspects and Environmental Impacts Assessment](#)
- 6.4 [S3AM-204-ATT3 Environmental Management Plan \(Sample\)](#)

Personal Protective Equipment

S3AM-208-PR1

1.0 Purpose and Scope

- 1.1 Provide an effective Personal Protective Equipment (PPE) Program to protect AECOM employees from potential workplace safety and health 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.
- 1.3 The proper use of appropriate PPE, in combination with effective engineering and administrative controls, can provide AECOM employees with protection against potential workplace hazards and can reduce the potential for workplace injury and illness.

2.0 Terms and Definitions

- 2.1 **ANSI** – American National Standards Institute
- 2.2 **CSA** – Canadian Standards Association
- 2.3 **PPE** – Personal Protective Equipment
- 2.4 **SDS** – Safety Data Sheets
- 2.5 **THA** – Task Hazard Assessment

3.0 References

- 3.1 S3AM-123-PR1 Respiratory Protection
- 3.2 S3AM-209-PR1 Risk Assessment & Management
- 3.3 S3AM-301-PR1 Confined Spaces
- 3.4 S3AM-304-PR1 Fall Protection
- 3.5 S3AM-315-PR1 Working On & Near Water
- 3.6 S3AM-317-PR1 Hand Safety

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Managers or Supervisors

- Confirm the location specific SH&E Plan documents required hazard controls.
- Confirm Task Hazard Assessments (THAs) are conducted and hazards identified are eliminated through substitution, engineering, or administrative controls first before assigning PPE for hazard mitigation.
- Confirm appropriate subject matter experts, manufacturer's specifications, and regulatory requirements are consulted as necessary to assist with proper PPE selection.
- Match the appropriate PPE to those hazards that cannot be eliminated; support employees in exercising Stop Work Authority if the task is too hazardous to be mitigated
- Provide and document employee training on use and care of PPE.
- Determine which staff requires employee-issued PPE.

- Determine PPE requirements for visitors.
- If applicable, manage medical monitoring of employees using PPE (e.g. respirators, hearing protection, radiation, etc.).
- Approve the purchase of company-issued PPE.
- Confirm that appropriate PPE is utilized by employees when required or necessary. This may periodically be documented using *S3AM-208-FM2 Personal Protective Equipment Inspection*.
- Exercise Stop Work Authority if PPE is inadequate to address hazards.

4.1.2 **SH&E Managers**

- Provide guidance to Managers, Supervisors, and staff on the assessment of hazards and the selection of PPE.
- Provide training materials to Managers and Supervisors for employee training

4.1.3 **Employee**

- Review all relevant SH&E Plans, THAs and applicable SDS prior to commencing work.
- Exercise Stop Work Authority if the task is too hazardous.
- In accordance with training and instructions, utilize appropriate PPE that has been issued when required or necessary.
- Inspect PPE prior to and after use to confirm that it is functional, and maintain PPE in a clean and functional condition.
- Follow instructions and manufacturers' guidance on the care, use, and storage of PPE.
- Replace PPE when worn out, expired or damaged.
- Refrain from wearing PPE outside of the work area for which it is required if doing so would constitute a hazard.

4.2 Hazard Assessment

- 4.2.1 The location specific SH&E plan and THA shall assess the hazards and identify the necessary control measures. Refer to *S3AM-209-PR1 Risk Assessment & Management*.
- 4.2.2 These control measures shall include direction and guidance concerning the appropriate PPE required as the last line of defense to the anticipated hazards of the specific operations and tasks. A PPE specific assessment may assist in identifying PPE requirements. *S3AM-208-FM1 Personal Protective Equipment Assessment* may be completed and included in the SH&E Plan.
- 4.2.3 Various tasks and operations, including but not limited to, demolition, remediation, spill response, asbestos abatement, and lead removal, may require additional direction concerning selection, use, care, and disposal of PPE from a subject matter expert (e.g. protector manufacturer, industrial hygienist, asbestos professional, etc.).
- Obtained direction shall be included in the SH&E Plan.
 - Consultation with subject matters may be limited to the planning phase or they may be retained to provide technical assistance for a portion of or duration of the project.

4.3 Training

- 4.3.1 All employees shall be informed of their right to Stop Work if the task is too hazardous to mitigate through use of elimination, substitution, engineering controls, administrative controls, and PPE.
- 4.3.2 Staff will receive adequate instruction on the correct use, limitations, and assigned maintenance duties for the equipment to be used. The following information, at a minimum, will be covered during PPE training:

- What PPE is required.
 - When it is required.
 - Why it is required.
 - How to properly don, doff, adjust, and wear the PPE described.
 - The limitations of the PPE, including its expected useful life.
 - How to properly care for, maintain, and dispose of the PPE.
- 4.3.3 Retraining may be required as applicable (e.g., observed non-compliance, changes in procedure, etc.).
- 4.3.4 Staff are responsible for confirming that they have reviewed the operation manual/instructions for the PPE before work commences.
- 4.3.5 All staff will receive a location specific orientation to the hazards on the job site as well as appropriate PPE requirements.
- 4.4 Determining the Need for PPE
- 4.4.1 Prior to beginning work, the SH&E plan shall be consulted and THAs developed to identify the PPE requirements.
- 4.4.2 After the hazard assessments have been completed, the manager and/or employee shall select the appropriate PPE for each job category or task, as necessary. PPE will be provided to each employee appropriate for the hazards present.
- All PPE selected, purchased and used by AECOM will meet or exceed the appropriate ANSI/CSA standards or other standards as determined by federal, provincial, territorial, or state legislation.
- 4.4.3 If the hazard can be mitigated through using appropriate PPE shall:
- Properly fit the employee's body. Reasonable attempts shall be made to procure gender-specific gear / sizing.
 - Be selected and used in accordance with recognized standards and provide effective protection.
 - Not in itself create a hazard to the wearer (e.g., scratched safety glasses which could cause impaired vision should be replaced with clear safety glasses).
 - Be compatible so that one item of PPE does not interfere with other PPE.
 - Be maintained in good working order and in a sanitary condition.
 - Not be altered in any way.
- 4.4.4 Prior to entering any controlled or restricted work area, employees shall review the SH&E plan and corresponding THA(s) to confirm that they are equipped with the applicable ANSI/CSA-approved PPE, appropriate to the specific work area's hazards.
- 4.5 Eye and Face Protection
- 4.5.1 AECOM employees shall use appropriate eye and face protection when eye or face hazards are present or potential from flying particles, molten metal, liquid chemicals, acid and caustic liquids, chemical gases or vapors, or injurious light radiation.
- 4.5.2 Safety glasses with side protection is the minimum eye protection requirement. Additional eye protection shall be suitable to the anticipated hazards (e.g. goggles, safety glasses with a face-shield, welder's helmet, etc.). Refer to *S3AM-208-ATT1 Eye & Face Protection*.
- 4.6 Head Protection

- 4.6.1 Appropriate protective hardhats are required when employees are working in areas where there is any potential for injury to the head.
- 4.6.2 Head protection shall be suitable to the anticipated hazards (e.g. working near exposed electrical conductors requires hardhats designed to reduce electrical shock). Refer to *S3AM-208-ATT2 Head Protection*.
- 4.7 Foot Protection
 - 4.7.1 AECOM employees shall use appropriate foot protection when hazards to feet are present or potential; including impact, puncture, cut, electrical, thermal or chemical hazards.
 - 4.7.2 Refer to *S3AM-208-ATT3 Foot Protection*.
- 4.8 Hand Protection
 - 4.8.1 Appropriate hand protection is required when employee's hands are exposed to hazards such as those from skin absorption of harmful substances, cuts and lacerations, abrasions, punctures, chemical burns, thermal burns, electricity, or harmful temperature extremes.
 - 4.8.2 Refer to *S3AM-208-ATT4 Hand Protection* and *S3AM-317-PR1 Hand Safety*.
- 4.9 Chemically Resistant Clothing
 - 4.9.1 Chemically resistant clothing is required when there is significant potential for the employee to come in direct contact with the chemicals being handled. Tasks that involve chemical handling will be evaluated for potential splashing or spilling. Refer to *S3AM-208-ATT5 Limb & Body Protection*.
 - 4.9.2 The process for selecting chemical resistant clothing will be similar for the selection of chemical resistant gloves (refer to *S3AM-208-ATT4-Hand Protection* and *S3AM-317-PR1 Hand Safety*).
- 4.10 High-Visibility Apparel
 - 4.10.1 "High visibility safety apparel" means personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage and that meets the Performance Class II or III requirements of ANSI/CSA standards. Refer to *S3AM-208-ATT6 High Visibility Safety Apparel*.
 - 4.10.2 Color of apparel (orange or lime) may be client/project-specific. If there is a specific need to be visible to the passing public, to machine operators, or to other crew members, high visibility vests shall be worn (and retro-reflective striping on arms and legs at night).
 - 4.10.3 Work conducted at night may require that the minimum level of apparel worn be, at minimum, ANSI/CSA Class III, and in accordance with the governing legislation.
- 4.11 Personal Clothing
 - 4.11.1 Employees on a project site shall wear full length trousers and shirts that cover shoulders.
 - 4.11.2 For personal safety on the job site, do not wear
 - Loose or unsecured clothing or loose fitting cuffs;
 - Greasy or oily clothing, gloves, or boots; or
 - Torn or ragged clothing.
 - Jewelry (e.g. rings, bracelets, neck chains) when working with moving parts or there is a risk or entanglement.
 - 4.11.3 Long hair shall be tied back or otherwise confined when working with moving parts or there is a risk of entanglement.
 - 4.11.4 Clothing made of synthetic fibers can be readily ignited and melted by electric flash or extreme heat sources. Cotton or wool fabrics are recommended for general use.

- 4.11.5 Footwear shall be suitable for the site conditions and task requirements. No athletic shoes, sandals, flip flops, permitted on active job sites.
- 4.11.6 It is recommended to use clothing with sun protection properties when working in high sun UV exposure
- 4.12 Specialized PPE
 - 4.12.1 In addition to basic PPE, additional specialized PPE may be required to provide appropriate protection to the employee. Refer to applicable legislation and related SH&E procedures for additional information on PPE requirements.
 - Fall Protection – Only full-body harnesses with shock-absorbing lanyards will be used for personal fall arrest. Refer to *S3AM-304-PR1 Fall Protection*.
 - Respiratory Protection – Respiratory protection shall be selected based on the contaminant and concentration to which the employee will be exposed. Refer to *S3AM-123-PR1 Respiratory Protection*, the task- or project-specific hazard assessments and the applicable SDSs for specific requirements.
 - Fire Resistant Clothing (FRC) – Approved fire-resistant outer clothing may be required at work locations with flammable or explosive materials or environments. Refer to *S3AM-208-ATT5 Limb & Body Protection*.
 - Other Head Protection – Operators and passengers (if trained and permitted) of all-terrain vehicles and snowmobiles will wear approved helmets. Refer to *S3AM-208-ATT2 Head Protection*.
 - Protection from Drowning – Appropriate personal floatation devices shall be worn when work working over and near water. Refer to *S3AM-315 Working On & Near Water*.
 - Temperature Extremes – Work in cold environments may require additional layers and insulated clothing, gloves, boots and accessories such as balaclavas, hardhat liners. Confirm these items are approved and do not introduce additional unacceptable hazards (e.g. insufficient visibility, conductivity, etc.).
 - Hearing Protection – Noise levels in the work environment that cannot be eliminated or reduced to acceptable levels requires worker be protected from exposure. Refer to *S3AM-118-PR1 Hearing Conservation*.
 - Traction Devices – Traction devices applied to the base of work boots may be necessary if the employee may be walking on icy surfaces. Refer to *S3AM-208-ATT3 Foot Protection*.
 - Rescue – Confined spaces hazards may necessitate the use of specific harnesses attached to retrieval lines to facilitate rescue. Refer to *S3AM-301-PR1 Confined Spaces*.
- 4.13 Maintaining PPE Supplies
 - 4.13.1 Employees shall inspect their required PPE prior to use. Defective equipment shall be removed from service and replaced.
 - 4.13.2 Each AECOM location will maintain a supply of safety equipment of appropriate types and sizes, including hard hats, high visibility vests, safety glasses, gloves, hearing protection and chemically resistant clothing based on the nature of their field activities. The Manager or designee will be responsible for maintaining this inventory.
 - 4.13.3 Use of PPE by employees and adequacy of protection should be evaluated on a routine basis. This may periodically be documented using *S3AM-208-FM2 Personal Protective Equipment Inspection*.
 - 4.13.4 At a minimum, locations will review their PPE program annually.
- 4.14 Obtaining Personalized Safety Gear
 - 4.14.1 Employees are not expected to provide their own general PPE. Most basic PPE will be provided to the employee at no charge (e.g. safety glasses, hard hat, gloves, hearing protection, etc.) with the

exception of the below personalized safety equipment (prescription safety glasses, safety-toed boots, any washable coveralls).

- 4.14.2 Certain personalized safety gear such as prescription safety glasses, safety-toed (capped) boots, and any washable coveralls will be ordered and sized specifically by the user. A partial cost reimbursement to the employee may be made if their location provides a specialized PPE purchase program.
- 4.14.3 All specialized PPE (e.g. fall protection equipment, respirators, helmets, etc.) will be provided by AECOM for employee use at no charge to the employee, with the exception of the above personalized safety equipment (prescription safety glasses, safety-toed boots, any washable coveralls).

5.0 Records

- 5.1 Completed SH&E plans, THAs documenting PPE requirements, and as applicable, PPE assessments and PPE inspections, will be maintained in the location's safety files.

6.0 Attachments

- 6.1 [S3AM-208-ATT1 Eye & Face Protection](#)
- 6.2 [S3AM-208-ATT2 Head Protection](#)
- 6.3 [S3AM-208-ATT3 Foot Protection](#)
- 6.4 [S3AM-208-ATT4 Hand Protection](#)
- 6.5 [S3AM-208-ATT5 Limb & Body Protection](#)
- 6.6 [S3AM-208-ATT6 High Visibility Safety Apparel](#)
- 6.7 [S3AM-208-FM1 Personal Protective Equipment Assessment](#)
- 6.8 [S3AM-208-FM2 Personal Protective Equipment Inspection](#)

Americas

Personal Protective Equipment Assessment

S3AM-208-FM1

Location: _____ Job No.: _____

Date: _____ Assessment conducted by: _____

Specific tasks performed at this location: _____

*If any of the indicated hazards are present, eliminate the hazard or use the indicated PPE.
Include any additional guidance in the available section below each item.*

Overhead Hazards

- | | | |
|---|--|---|
| 1. Suspended/elevated loads, beams, or objects that could fall or strike head | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hard hat, ANSI Z89, Class G, E or C |
| 2. Flying objects that could strike head | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hard hat, ANSI Z89, Class G, E or C |
| 3. Energized wires or equipment that could strike head | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hard hat, ANSI Z89, Class G or E (dependent on potential voltage) |
| 4. Sharp objects or corners at head level | <input type="checkbox"/> Yes <input type="checkbox"/> No | Hard hat, ANSI Z89, Class G, E or C |

Eye Hazards

- | | | |
|--|--|--|
| 5. Chemical splashes or irritating mists | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety goggles |
| 6. Excessive dust | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety glasses or goggles |
| 7. Smoke and/or fumes | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety goggles |
| 8. Welding operations | <input type="checkbox"/> Yes <input type="checkbox"/> No | Welding goggles |
| 9. Lasers/optical radiation | <input type="checkbox"/> Yes <input type="checkbox"/> No | Consult subject matter expert for proper selection |
| 10. Projectiles | <input type="checkbox"/> Yes <input type="checkbox"/> No | Dual eye protection |
| 11. Sawing, cutting, chipping, and/or grinding | <input type="checkbox"/> Yes <input type="checkbox"/> No | Dual eye protection |

Face Hazards

- | | | |
|---|--|-----------------------------------|
| 12. Chemical splashes or irritating mists | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety goggles |
| 13. Welding operations | <input type="checkbox"/> Yes <input type="checkbox"/> No | Welding goggles or welding helmet |
| 14. Projectiles | <input type="checkbox"/> Yes <input type="checkbox"/> No | Dual eye protection |

***If any of the indicated hazards are present, eliminate the hazard or use the indicated PPE.
Include any additional guidance in the available section below each item.***

Hand Hazards

- | | | |
|--|--|--|
| 15. Chemical exposure | <input type="checkbox"/> Yes <input type="checkbox"/> No | Use chemical-resistant gloves specific to hazard; consult SDS, subject matter expert, and/or Safety Representative |
| 16. Sharp edges, splinters, sharp tools, machine parts, etc. | <input type="checkbox"/> Yes <input type="checkbox"/> No | Leather or Kevlar gloves |
| 17. Impact or crush hazards | <input type="checkbox"/> Yes <input type="checkbox"/> No | Impact resistant gloves |
| 18. Temperature extremes – heat | <input type="checkbox"/> Yes <input type="checkbox"/> No | Leather gloves, welder's gloves, hot mill gloves |
| 19. Temperature extremes – cold | <input type="checkbox"/> Yes <input type="checkbox"/> No | Insulated gloves |
| 20. Blood, fungus, biological agents | <input type="checkbox"/> Yes <input type="checkbox"/> No | Nitrile gloves |
| 21. Exposure to live electrical currents | <input type="checkbox"/> Yes <input type="checkbox"/> No | Electrical gloves; consult Safety representative |
| 22. Vibrating tool operation | <input type="checkbox"/> Yes <input type="checkbox"/> No | Anti-Vibration gloves |
| 23. Material handling | <input type="checkbox"/> Yes <input type="checkbox"/> No | Leather, cotton, synthetic gloves |

Foot Hazards

- | | | |
|---|--|---|
| 24. Heavy materials (greater than 50 pounds) handled by employees | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety shoes or boots |
| 25. Potential to crush or cut whole foot | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety shoes or boots with metatarsal guard |
| 26. Sharp edges or points (puncture risk) | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety shoes or boots |
| 27. Exposure to electrical hazards | <input type="checkbox"/> Yes <input type="checkbox"/> No | <p>Safety shoes or boots with:</p> <p>Conductive - Protects the wearer in an environment where the accumulation of static electricity on the body is a hazard.</p> <p>Static dissipative - Reduces accumulation of excess static electricity by conducting body charge to ground while maintaining a sufficiently high level of resistance.</p> <p>Electrical hazard - Provides a secondary source of protection against accidental contact with live electrical circuits, electrically energized conductors, parts or apparatus, and is manufactured with non-conductive electrical shock resistant soles and heels.</p> |

***If any of the indicated hazards are present, eliminate the hazard or use the indicated PPE.
Include any additional guidance in the available section below each item.***

- | | | |
|-----------------------------|--|---|
| 28. Slippery conditions | <input type="checkbox"/> Yes <input type="checkbox"/> No | Rubber-soled boots or grips |
| 29. Chemical contamination | <input type="checkbox"/> Yes <input type="checkbox"/> No | Rubber, PVC, or polyurethane boots or boot covers with puncture and protective toe if task required |
| 30. Wet conditions | <input type="checkbox"/> Yes <input type="checkbox"/> No | Rubber boots or boot covers |
| 31. Construction/demolition | <input type="checkbox"/> Yes <input type="checkbox"/> No | Safety boots with metatarsal guard if foot-crushing hazard exists |

Fall Hazards

- | | | |
|---|--|---------------------------------------|
| 32. Elevations above 4 feet (general industry) or 6 feet (construction) without guardrails | <input type="checkbox"/> Yes <input type="checkbox"/> No | ANSI A-10.14 Type 1 full-body harness |
| 33. Suspended scaffolds, boatswain's chairs, float scaffolds, or suspended staging | <input type="checkbox"/> Yes <input type="checkbox"/> No | ANSI A-10.14 Type 1 full-body harness |
| 34. Working in trees | <input type="checkbox"/> Yes <input type="checkbox"/> No | ANSI A-10.14 Type 1 full-body harness |
| 35. Working in vehicle-mounted elevating work platforms (e.g., bucket trucks, aerial lifts) | <input type="checkbox"/> Yes <input type="checkbox"/> No | ANSI A-10.14 Type 1 full-body harness |

Water Hazards

- | | | |
|--|--|--|
| 36. Working on or above water where a risk of drowning exist | <input type="checkbox"/> Yes <input type="checkbox"/> No | U.S. Coast Guard approved personal floatation device; Type I, II, or III |
|--|--|--|

Excessive Heat or Flame

- | | | |
|---|--|--|
| 37. Full body chemical protective clothing in temperatures greater than 80 °F | <input type="checkbox"/> Yes <input type="checkbox"/> No | Cooling vest |
| 38. Work around molten metal or flame | <input type="checkbox"/> Yes <input type="checkbox"/> No | Nomex or heat reflective clothing |
| 39. Welding activities | <input type="checkbox"/> Yes <input type="checkbox"/> No | Welding leathers for those areas that are exposed to flame, spark, or molten metal |

Respiratory Hazards

- | | | |
|---|--|---|
| 40. Airborne particulates, gases, vapors, or mists in excess of established exposure limits | <input type="checkbox"/> Yes <input type="checkbox"/> No | Refer to <i>S3AM-123-PR1 Respiratory Protection</i> for respirator selection guidance |
|---|--|---|

Excessive Noise

- | | | |
|-----------------------|--|--------------------------|
| 41. Exposure to noise | <input type="checkbox"/> Yes <input type="checkbox"/> No | Ear plugs, muffs or both |
|-----------------------|--|--------------------------|

***If any of the indicated hazards are present, eliminate the hazard or use the indicated PPE.
Include any additional guidance in the available section below each item.***

Body and Leg Protection

- | | | | |
|-----|--|--|---|
| 42. | Chemical exposure | <input type="checkbox"/> Yes <input type="checkbox"/> No | Contact SH&E Representative and/or subject matter expert for assistance in proper selection |
| 43. | Using chainsaw, cutting brush | <input type="checkbox"/> Yes <input type="checkbox"/> No | Chainsaw chaps |
| 44. | Exposure to snakes | <input type="checkbox"/> Yes <input type="checkbox"/> No | Snake chaps |
| 45. | Exposure to vehicle traffic or heavy equipment | <input type="checkbox"/> Yes <input type="checkbox"/> No | High visibility apparel |

I certify that the above inspection was performed to the best of my knowledge and ability, based on the hazards present on: _____

Name _____ Signature _____

This document should be included in the location specific SH&E Plan.

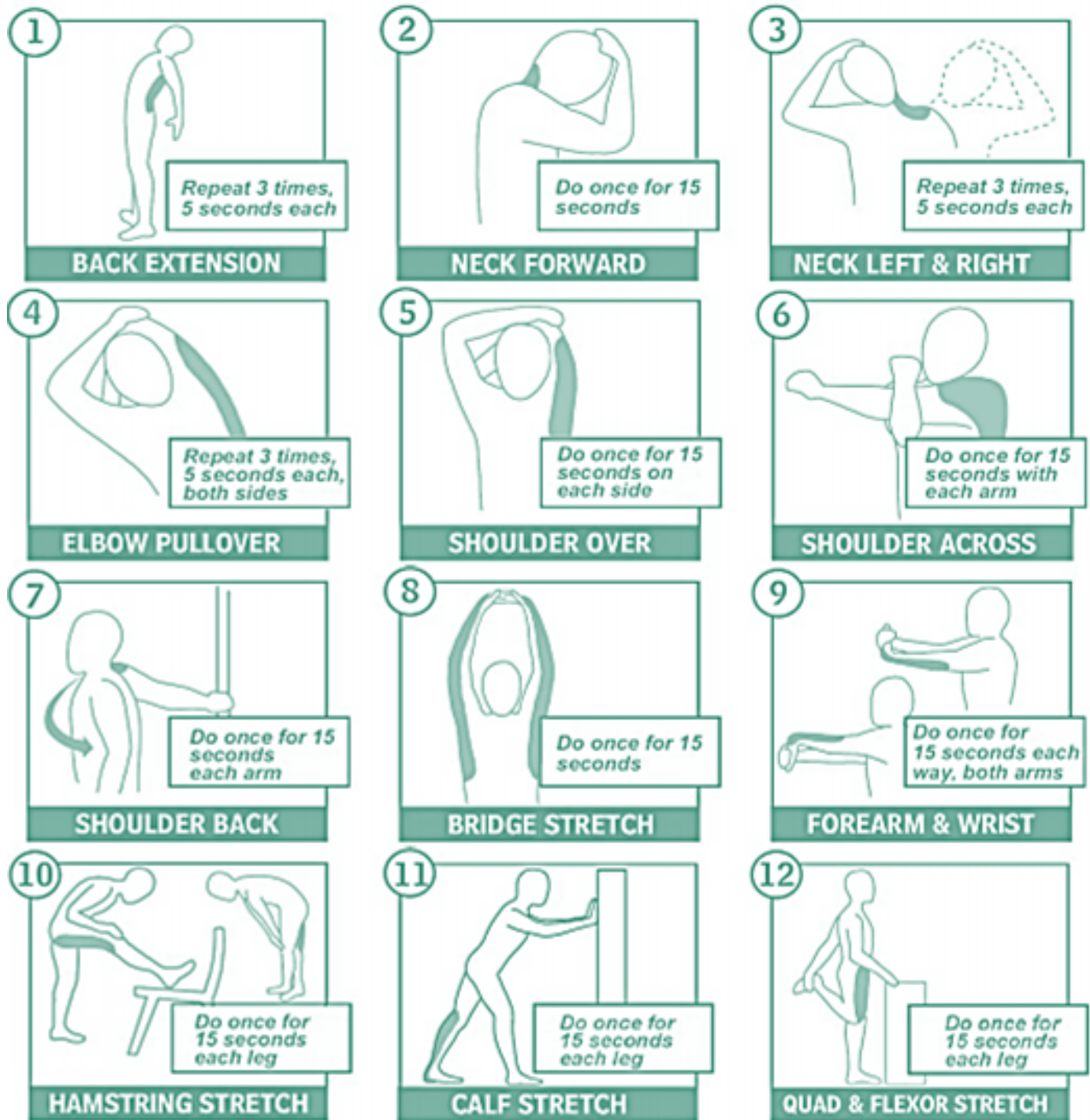
Attachment **E**

Stretch/Flex Poster



Attachment E: Stretch/Flex Poster

Examples of Stretches



Attachment **F**

Site Safety Orientation



Attachment F: Site Safety Orientation

AECOM will conduct a site safety briefing for a person's initial visit to the site. The briefing will be conducted:

- Prior to the start of work;
- For any new AECOM or subconsultant personnel;
- For Site Visitors; and
- At each mobilization, or whenever there is a change in task or significant change in task location.

All personnel working on the project who have received the site briefing (including the SWP review) will sign the Personal Acknowledgement located in **Section 18**. Visitors may receive a shortened version to address the hazards specific to their visit.

The following topics, at minimum, will be discussed during the site safety briefing:

- Contents of this SWP;
- The Emergency Response Plan (Table 7-1);
- Contractor SHE Management expectations;
- Injury management, including notification and hospital and occupational clinic locations;
- The AECOM 4-Sight program;
- Stop Work authority;
- The THAs (**Attachment C**) for the activities that will be performed on a given job;
- Types of hazards at the site and means for minimizing exposure to them;
- Instructions for new operations to be conducted, and safe work practices;
- PPE that must be used;
- Lone worker check-in procedures;
- Emergency evacuation routes, muster points, and tornado/storm shelters; and
- Location and use of emergency equipment.
- **These briefings must be documented and maintained in the project files.**

Attachment **G**

Safety Data Sheets



Attachment G: Safety Data Sheets

There are no safety data sheets applicable to this Health and Safety Plan.

Attachment **H**

Work Plan/Client SH&E Requirements



Attachment H: Work Plan/Client SH&E Requirements

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FOREWORD

National Grid's vision is to be a world-class safety organization with zero injuries every day. This includes working to help ensure the safety of our employees, contractors and the community. National Grid is committed to delivering operational excellence, including excellent levels of safety internally and in cooperation with the external contractors we rely on.

The Executive Safety Committee provides review and input for Safety Policies and Procedures through the Safety Policies and Procedures Subcommittee.

The Safety department is the owner of this procedure and is responsible for maintaining and implementing this procedure, soliciting comments from stakeholders and revising as necessary.

This document, "Contractor Safety Requirements", represents the current contractor safety requirements that are unique to operations and various functional groups at National Grid. This document does not specifically reference actions that are required by OSHA, other laws, rules, or regulations. These are requirements that should be understood by the contractor and contractor compliance with all applicable federal, state and local laws, rules, and regulations is expected by National Grid as a contractual condition.

Questions regarding this procedure should be referred to the National Grid Safety Department.

This document will be updated as necessary to communicate all aspects of National Grid's contractor safety to bidders, current contractors and to reflect changes in National Grid's Safety Policies and Procedures.

Date of Review/Revision:

Revision	Date	Description
1	08/5/2004	Initial
2	3/2/2005	Additions
3	01/30/2007	Additions
4	08/01/2008	Additions
5	08/01/2010	Additions
6	02/01/2011	Audit recommendations included

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Date of Review/Revision Continued:		
Revision	Date	Description
7	09/11/2013	Additions included OH; technical changes; Compliance Monitoring; Ethics; Job Briefs
8	11/02/2015	Additions include Audit & IA recommendations; ISN alignment; technical changes, 1910. 269 updates
9	8/17/2016	Format update and technical changes
10	3/29/2017	Additions to sections 2.2.6 and 6.5
11	2/26/2018	Process Safety, PM&CC Electric and PM&CC Vegetation Additions
12	3/12/2019	Contaminated Site Work Additions
13	10/24/2019	Job brief, Hi-Vis clothing, ladder use, and air gap revisions

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14	1/13/2020	Hi-Vis clothing and ladder use revisions; Fatigue Risk Addition in HASPs
15	3/10/2021	EH rated work boot and Dielectric (DI) footwear definitions and requirements; OSHA 1910.136(a) reference; requirement not to wear loose clothing; Hi-Vis vest or garment requirements
16	3/24/2021	One HASP form; HASP revisions; self-assessments; qualifications; and notice of subcontractors
17	6/14/2021	Loose garments/items for heavy equipment operators revision; addition of heavy equipment definition

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1.0 CONTRACTOR SAFETY AT NATIONAL GRID

1.1 Definitions

Adverse Public Impact

Incident that disrupts service to the public or results in adverse public reaction.

Bulk Commodity Transportation

Activities involved in the movement of bulk commodities via truck, rail, plane or water vessel onsite and offsite on behalf of National Grid that if released could have safety and / or environmental consequences. Examples include but are not limited to: gasoline, oil, boiler chemicals, LNG, Nitrogen.

Compliance Assessments (CAs)

An act of observing and engaging in discussion with employees at a job site or work area locations. Compliance Assessments are documented using the Compliance Assessment checklist for each segment of operation and are not considered anonymous. Compliance Assessments are utilized to comply with internal policy and external regulatory requirements.

Contracted Services

Contracted Services refers to any activity that is conducted by an organization or individual under the terms of a purchase order or through other financial arrangements (Procurement Card or credit card) between a National Grid representative and a contractor. Contracted services may include all types of construction and maintenance services, tree trimming, building maintenance and demolition, electrical structure dismantling, site restoration, engineering design, recycling and waste disposal, drilling, rigging, electrical, and utility pole/structure maintenance.

Contractor

An independent person or company that undertakes a contract to provide materials or labor to perform a service or do a job and are responsible for the safety of his/her employees and subcontractors.

Contractor Orientation

Contractor orientation is intended to serve as a resource in order to provide the contractor with the tools necessary to educate their employees and subcontractors. The session is not intended to train the contractor management, their employees or subcontractors. The extent and content of the orientation session shall be commensurate with the scope and type of the contractor's activities.

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Dielectric (DI) Footwear

This term describes either boots or overshoes that are labeled in accordance with ASTM F1117, marked clearly and permanently with the name of the manufacturer or supplier, the size and AC voltage rating. The footwear shall meet dielectric strength testing prescribed in ASTM F1116. Dielectric footwear shall have a minimum rating of 15kV.

Effective Safety Discussion (ESD)

A discussion with an individual or group about their safety programs, issues or concerns (safety plans, tools, equipment, procedures, etc.). They are safety discussions amongst employees that share similar work environments...office to office, field to field.

EH Rated Work Boot

ASTM F2413 EH rated work boots are the minimum foot protection standard. This boot protects against impact, compression, and low voltage exposure.

Health & Safety Plan (HASP)

Contractors who perform high or medium risk-ranked services shall submit a project-specific HASP prior to the start of the project. In this plan, the contractor shall identify all significant tasks, their anticipated hazards and mitigation steps.

Hazardous Conditions

A condition that can and is rectified immediately by the person who identified the hazard.

Heavy Equipment

Maintenance and construction equipment including excavators, compact (mini) excavators, backhoe loaders, towable compact backhoes, front end loaders, skid-steer loaders, compact loaders, digger derricks, boom trucks, cranes and bulldozers.

Incident

An unplanned event that has a human component and results in or could potentially result in harm to people, damage to property and/or adverse public impact.

Incident Management System (IMS)

National Grid's online incident management tool that allows the company to report safety, environmental and asset-related incidents, perform incident analysis, generate safety reports and monitor the organization's safety performance.

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ISNetworld, Inc. (ISN or ISN System)

Third party contractor that is a global resource for connecting Hiring Clients with safe and reliable contractors and is a contractor information management system currently contracted with National Grid.

Job Brief

A planned interactive discussion that covers, but is not limited to, potential hazards associated with the job including situational awareness (assets or other items which may impact the job at hand), work procedures involved, special precautions, and personal protective equipment requirements. The discussion should include all contractor employees, sub-contractors and team members working on a job that occurs just prior to a job, task or project. A new job brief shall be conducted for each of the following events: prior to a change in planned work specific to the job site, changes in weather conditions, extended breaks (i.e. lunch breaks) or when a new worker or company joins the crew. When possible and reasonably practical, a National Grid Representative should be present at contractor job briefings. Truck drivers for daily, non-hazardous material deliveries such as stone, gravel, concrete material or porta john cleaning are exempt from completing a job brief unless there are potential hazards associated to the driver or delivery. A National Grid representative shall talk to the driver to determine if a job brief is needed.

Major Hazard Asset (MHA)

A class of assets at National Grid, including Compressed Natural Gas (CNG), Gas Transmission (≥ 125 psig), Power Generation sites, Liquefied Natural Gas (LNG) plants, and LNG Trucking, in which any condition, or set of conditions, presents potential for a major accident to occur. Also referred to as process safety assets.

Major Accident

An event involving the release of potentially dangerous materials, the sudden and uncontrolled release of large amounts of energy (such as fires and explosions), or both. These can have catastrophic effects and can result in multiple injuries and fatalities, as well as substantial reputational, economic, property, and environmental damage

Operator Qualification (OQ)

As defined in the Code of Federal Regulations, Transportation, 49 Subpart 192.801 through 192.809 and/or DOT pipeline qualified for gas contractors doing work at National Grid. Additional state requirements pursuant to the state the contractor is working may be required.

Process Safety Management

Method of focusing and mitigating concerns of major hazards impacting safety, environmental damage and business losses. It is an organized effort to identify

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and analyze the significance of hazardous situations associated with a process or activity to aid management in making critical safety decisions

Project Representative

National Grid Owner's Representative or designee who is assigned to certain contracted projects and communicates regularly with the contractor during the course of the contracted service. This person also ensures the work is being performed in accordance with the contract, including the safety requirements.

Purchase Order (P.O.)

An agreement/contract between National Grid and a contractor to provide services and/or materials. The P.O. is set up by Procurement. The term "Contract" and "P.O." are similar and may be used interchangeably. A "Blanket P.O." is set up for contractors whose work is on-going. A "one-time P.O." is set up for project work.

Qualified Electrical Worker

Those who are knowledgeable in the construction and operation of the electric power generation, transmission and/or distribution equipment involved, along with the associated hazards.

Qualified Gas Worker

Any contractor who performs covered tasks in accordance with National Grid's Operator Qualification Program and the Northeast Gas Association are required to be knowledgeable and meet all regulatory standards.

Risk Assessment

A risk assessment is the process of identifying hazards and calculating or ranking the associated risks according to: the likelihood of occurrence, the severity of the harm from the hazard, and the amount of time of exposure to the hazard.

Safety Observer

A person who is responsible for alerting the work team to any potential unsafe conditions or lack of compliance with approved work practices, procedures or guidelines.

Transportation Advisor

Third party agency specializing in federal and company mandated drug and alcohol testing programs.

1.2 Introduction

Safety performance is a prime consideration in the selection of contractors. National Grid will stipulate safety performance requirements and responsibilities in

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our contracts, purchase orders (POs) and will hold the contractor accountable for meeting the contractual requirements.

National Grid's goal is to establish a long-term working relationship with contractors who share the same safety values and demonstrate those values through their work performance.

Contractor safety at National Grid involves three broad areas:

1. The Contractor Procurement (Selection) Process

Contractor safety begins with the selection of contractors who have demonstrated a strong safety record. National Grid will complete a review during the procurement process that involves determining a contractors' risk and the scope(s) of work involved. National Grid currently uses ISNetworld, Inc. as a third (3rd) party assessment process for assisting with contractor procurement. The 3rd party entity will vet and continually monitor individual contractors' compliance with applicable safety and/or risk and insurance program requirements.

2. Safety Communication

Safety communication covers all the avenues and forums in which National Grid and the contractor communicates safety. Communication begins early in the bidding phase and is on-going as an integral part of the contractor-customer relationship. The goal is to ensure clarity, transparency and to limit misunderstandings.

3. Safety Compliance

Safety compliance is the process of ensuring that the necessary technical provisions of the contract are being followed. National Grid will assign a project representative or other designee to provide guidance and oversight. The Contractor is responsible for their employees and subcontractors and shall be held accountable for ensuring compliance with all applicable safety rules while working on National Grid property, rights of way (ROWs) and our assets. Primary contractors are required to notify National Grid of any subcontractors and ensure that there is an appropriate contractual relationship in place in line with the terms and conditions of their contract.

1.3 Risk Ranking of Work

1. National Grid characterizes and ranks risk by the scopes of work performed. The categories are classified as high, medium or low risk. Prior to being considered for work at National Grid, contractors who perform High or

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Medium Risk work must be pre-qualified in ISN. See Appendix A for more information regarding the National Grid Contractor Risk Matrix.

2. Activities that are designated as “high risk” means that catastrophic event can result if safety measures are not followed. Activities designated as “medium” risk present certain opportunities for moderate to significant injuries, property or reputational damage, and/or loss of service and/or possibly business continuity. Activities designated as “low” risk may still require safety compliance and control measures, although the contractor performing the work does not necessarily need to be enrolled in ISN, if that is the only classification of work that contractor performs for National Grid.
3. The designation High Risk, Medium Risk, or Low Risk, refers only to the inherent risk associated with the work activity and is not an opinion on the ability of a contractor to work safely.
4. If ,at any time, the risk changes from low to medium/high, per the risk matrix, then the medium/high risk process shall be followed. It’s the contractor’s responsibility to identify if the risk changed and to escalate to National Grid personnel.
5. The Procurement Agent will notify the bidder/contractor at the beginning of the procurement process if their contracted service has been ranked as high or medium risk.

1.4 Bidder Information Request – High and Medium Risk Work

1. Any contractor bidding on high or medium risk work shall be required to complete a questionnaire regarding the Contractor’s safety program, compliance and history of occupational illnesses and injuries (ISNetworld New Vendor Onboarding application form, located on the ISNetworld website). Contractors will also be required to demonstrate in ISN that all employees, including subcontractors, are qualified to perform the scope of services.
2. ISNetworld then thoroughly reviews contractors’ qualifications against a prerequisite list of National Grid criteria. National Grid has established that contractors performing high or medium risk work MUST HAVE and MAINTAIN a grade of “C” or better in the ISN system to perform work and services for National Grid. ISN will track and manage the National Grid pre-qualified contractor bidder lists. This bidder list is the first step for a contractor in establishing a working relationship with National Grid. For active ISN contractors, ISN will request updated information monthly. Contractors who do not have a current PO, contract, or authorized scope of work with National Grid will be considered as a Prospective bidder and will

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be asked to submit information quarterly. It is understood that insurance may not be maintained within National Grid standards, however, once a contractor is awarded a contract, proper and adequate insurance must be provided to ISNetworld to achieve a passing grade. Lack of insurance or inadequate insurance is an immediate "F" grade in the ISN system per National Grid criteria.

3. Project representatives may request an exemption or variance from requiring a contractor to be placed in ISNetworld for various reasons. A Supplier Exemption Request form (located in the safety policies and procedures section of Grid:home) shall be completed, documented and signed by the business unit VP and Corporate Safety Director prior to contract award.
4. The information that the Bidder provides National Grid via ISN serves as the basis for assessing safety qualification. For this reason, it is important for contractors to maintain transparency throughout the process. National Grid and ISN will review all submitted information. Any effort in avoiding complete disclosure will disqualify the Bidder from bidding work at National Grid.

1.5 Safety Compliance

1. National Grid representatives evaluate contractor compliance by conducting routine site visits, Compliance Assessments (CA's), Effective Safety Discussion (ESD) visits and attending periodic contractor safety meetings. Contractors should also perform and document safety self-assessments to ensure compliance to federal, state, local and National Grid regulations. This combined effort enhances, solidifies safety compliance and has the added benefit of quality control / quality assurance of the work performed.
2. Contractors bidding on new work shall provide worker qualifications to the National Grid procurement representative via the "Bidder Information Request" form and/or ISN National Grid On-boarding form.
3. If a safety violation is observed by a National Grid representative, the violation will be discussed with the contractor at the time of discovery.
4. Contractor employees enrolled in ISNetworld that are involved in any accident, incident or significant near-miss event, will be required to lead an investigation and root cause determination process. In addition, the contractor must implement corrective actions and establish measures to prevent a recurrence through an incident investigation process and document the details within ISN.

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5. Individual contractor personnel who habitually violate any safety rules should be identified, and the contractor should remove the individual(s) from the project. National Grid reserves the right to remove any contractor employee(s) who violate safety rules or procedures; pose a safety risk to themselves, other contractors; our employees; or the general public.
6. If a contractor is observed to be operating in a manner that creates an imminent danger to persons or property, it is the responsibility of all individuals observing the hazard to cease the hazardous operation impacted until the issue has been resolved to the satisfaction of National Grid, the Owners Representative or Safety Representative.
7. Contracts/POs shall require the contractor to immediately forward any citations, notices, or OSHA reportable cases per 29 CFR 1904.39 from a National Grid project, upon receipt to the appropriate project representative and/or ISN. The project representative shall distribute copies of the citation or notice to senior management, Safety, Procurement, and the Legal Department.
8. Willful and/or repeat violations of safety requirements by the contractor may be considered a breach of the contract and reason for contract termination.
9. If the contractor's overall safety performance is viewed as being unsatisfactory or noncompliant with contract provisions, and if the contractor is unwilling to demonstrate satisfactory program improvement, the result may be considered a breach of the contract and reason for contract termination.
10. National Grid project managers and/or construction supervisors shall document safety compliance by completing a "Contractor Performance Evaluation" for each project. This documents both positive and negative safety performance or behaviors and this feedback will be used in the decision process for awarding future contracts.

2.0 GENERAL SAFETY REQUIREMENTS

2.1 Introduction

1. All contractors are required, and expected to comply with all applicable requirements of the Occupational Safety and Health Administration (OSHA), and all other applicable federal, state and local laws, ordinances, regulations, and other project and site-specific permits unless superseded by identified National Grid procedures.

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2. This document represents policies and safety-related work methods unique to National Grid and they may be more stringent than OSHA regulations. Contractors must follow these requirements as well as their own rules or regulations that meet or exceed OSHA and other regulatory requirements.
3. National Grid will provide more detailed information and guidance regarding specific procedures prior to commencement of work.
4. Per OSHA 1910.136(a) general requirements, the employer shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, or when the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures.

2.2 Applicability

Applies to: All contractors, as needed

1. In any contracted task, where a safety observer is required, it is the responsibility of the contractor to provide that person and ensure that he/she is qualified to perform the role when needed.
2. A 4:1 pitch shall be maintained when using an extension ladder or the ladder shall be tied off and/or secured and 3 points of contact shall be maintained by the climber. If both hands are needed to perform work, then fall protection is required.
3. Although not preferred, if hard hats are worn backwards, the suspension adjuster must always face the rear. Class E hard hats are required for all electrical work.
4. ASTM F1117 Dielectric (DI) footwear is required when:
 - Workers on the ground are working within 50' of the master ground connection point to earth.
 - Operating a wire trailer and pulling/tensioning machine.
 - Operating a winch truck or reel trailer with its payout in an energized area that may result in inadvertent contact.
 - Hand digging in close proximity to energized cables within the tolerance zone.

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- Making repairs in a trench to a faulted primary cable without de-energizing any adjacent energized primary cables within close proximity.
 - Using approved live line tools to move energized primary cables in a trench.
 - If removing underground cable rubber covering or arc suppression blankets from an energized cable.
 - Working within minimum approach distance (MAD) of downed electrical wires or foot patrolling for such wires.
 - If setting poles in proximity to energized lines or equipment and using truck controls from the ground.
5. National Grid expects that all cargo will be secured in accordance with U.S. DOT requirements.
- As of January 2004, the Federal Motor Carrier Safety Administration (FMCSA) within the U.S. DOT published Cargo Securement Rules 393.100-136 Subpart I – Protection Against Shifting and Falling Cargo.
6. Chaps are required to be worn by ANY person using a chainsaw to make a cut on the ground or assisting in that cut and within striking distance. Other situations where cut off machines are used, chaps designed for the purpose of providing durable protection from abrasion, spatter and sparks from cutting ferrous metals shall be required; however, a hazard assessment should be completed to determine the need. Always use proper cutting techniques and push blades away from the body when using tools that may slip or inadvertently make contact with the leg. Never leave any equipment running while not in use.
7. All applicable contractors must meet the requirements of drug and alcohol testing in accordance with FMCSA DOT 49 CFR Part 40 and Pipeline and Hazardous Materials Safety Administration (PHMSA) DOT 49 CFR Part 199. National Grid shall monitor contractor compliance to the drug and alcohol regulatory requirements through Transportation Advisor or ISNetworld as needed.
8. Contractors who drive regularly in delivery of service for National Grid shall:
- a. Have a safe motor vehicle operations policy which must be communicated to their employees before they begin driving for company business. The contractor is expected to follow National Grid's *Safe Motor Vehicle Operations* policy to include the following:

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- Prior to moving any vehicle, the driver shall perform a “circle of safety” inspection. This is to confirm not any person, animal, equipment, or property will be injured or damaged when the vehicle is moved.
 - Drivers should back into or pull through a parking space so that when you re-enter the vehicle, the first move is forward.
 - No driver shall use a hand-held mobile telephone while driving a vehicle for National Grid business.
 - The driver shall eliminate or minimize sources of potential driving distractions to include, eating, smoking, reading, writing, grooming, use of any electronic devices, mirror or seat adjustment. These shall be done when the vehicle is not in motion.
- b. Comply with all requirements of all federal, state and local regulations regarding safe motor vehicle operations.
 - c. Ensure that new and existing employees have a valid Driver’s License in accordance with requirements of specific job duties and classification/type of the vehicle they are operating. Contractors must have an acceptable driving record. If their driving record is unacceptable, the driver shall not be permitted to operate a vehicle on behalf of National Grid.
 - d. Provide vehicles in safe operating condition, in accordance with federal state and local regulations. The vehicle should be equipped with proper safety equipment as appropriate for the vehicle type and its intended use.
 - e. Track and evaluate any vehicular accidents or incidents experienced by their employees. Corrective actions, such as driver coaching, corrective action driver training and medical/vision tests should be recommended and acted upon where appropriate. All accidents or near misses while performing work for National Grid shall be communicated to the National Grid project representative or designee and documented in the ISN system.
 - f. For more information, contact a National Grid representative for a copy of the National Grid Safety Policy *Safe Motor Vehicle Operations*

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9. All contractors that require the use of heavy equipment shall ensure that competent, appropriately licensed, skilled and qualified personnel are in control of this equipment at all times. In addition, contractors shall ensure the following:
- Equipment is inspected for safety and use at the beginning of the work period of shift. All failing or defective equipment and components shall be removed from service.
 - Equipment is under the control of trained operators who are always aware of their location and the locations/presence of persons working near the equipment, its swing zones and blind spots.
 - While operating heavy equipment, operators shall ensure that loose fitting vests, jackets or other garments/items shall not be worn that could inadvertently get caught on equipment controls. Upon exiting the heavy equipment, the operator shall immediately put on their hi-vis vest/garment.
 - Equipment is kept free of debris, water, oil, grease, mud or anything that could create a slip/fall hazard inside the cab.
 - Keep hands, feet, and clothing away from power-driven and moving parts.
 - Equipment cab windows should be kept clean and free of mud, ice, snow and/or fog for maximum visibility.
 - Never carry passengers on heavy equipment or any equipment unless it is equipped to do so.
 - Ensure that stabilizers are extended prior to starting a task.
 - Before making a swing, operators shall always look out the windows and mirrors for confirmation that the area is clear. If visual confirmation is impaired or the operator is unsure due to weather, lighting or other interferences, the operator shall cease operation until an independent spotter can check the swing area and confirm it is clear.
 - All excavations shall have signs posted, demarcation and controlled to prevent unauthorized persons from entering and falling inadvertently into the excavation. Excavations shall only

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be opened under the supervision of a competent person for excavation.

- All pot holing/test holing and exploratory excavations shall utilize vacuum excavation whenever near known or the possibility of unknown hazards such as live electrical or gas conveyances. When using vacuum excavation in combination with air blowing/air knife tools, all persons in the immediate area shall be wearing safety glasses in addition to a full face shield.
- No one is to work under a suspended load.
- Never use a bucket to lift personnel.
- Ensure stabilizers are in the upright and stored position before moving equipment.
- Operators shall not leave heavy equipment running unless the following requirements are met:
 - Parking break is engaged and wheels are chocked (if applicable)
 - Surroundings create no hazard of unqualified personnel entering unattended equipment
 - Vehicles and equipment idling limited to that designated state and local environmental regulations (generally, 3 to 5 minutes maximum). See table below for additional information

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Region	Vehicles	Idling Limit	Exemptions Include
New York	Diesel trucks	5 minutes	<ul style="list-style-type: none"> Traffic conditions Temperatures < 25°F and motionless for two hrs Hybrid electric engine charging battery vehicles To provide power to auxiliary sources
NYC	All Motor vehicles	3 minutes	<ul style="list-style-type: none"> Emergency vehicles Loading/unloading Temperatures <40°F
New Hampshire	Diesel/ Gas vehicles	5 minutes >32°F 15 minutes -10°F to 32°F No Limit <-10°F and no nuisance created	<ul style="list-style-type: none"> Traffic conditions Emergency vehicles takeoff power for auxiliary uses Vehicles being serviced or repaired Operated solely to defrost windshield
Massachusetts	All Motor Vehicles	5 minutes	<ul style="list-style-type: none"> Vehicles being serviced or repaired Vehicles in operation for which associated power is needed Delivery vehicle in which engine power is needed
Rhode Island	Diesel Motor Vehicles	5 minutes	<ul style="list-style-type: none"> Traffic conditions Operate defrosting, heating, or cooling equipment to ensure health and safety of the driver or passenger. Temperatures between 0 & 32°F - 15 minutes per hour. If < 0°F idling as needed for heat To provide power to auxiliary sources Vehicles being serviced or repaired
Vermont	All Motor Vehicles	5 minutes within any 60-minute period	<ul style="list-style-type: none"> Emergency/public safety vehicles while engaged in "official operations" Idling necessary to operate safety equipment Vehicles in operation for which associated power is needed Vehicles being serviced or repaired

- All lifts that occur on National Grid properties, ROWs or near critical assets require formal lifting plans developed by the contractor and reviewed with the National Grid project representative. Some lifts will also require formal critical lifting plans and this may include PE or geotechnical assessments to ensure a stable lifting base for the crane or other apparatus.

10. All temporary, metal fencing installed or located under transmission lines shall be grounded and have signage according to National Grid grounding standards. Contact a National Grid representative for a copy of the Engineering Documents ST 03.05.001 ST 03.06.001 and SP 08.00.001.

3.0 ADMINISTRATIVE SAFETY REQUIREMENTS

3.1 Worker Qualification Assurance

1. In order to meet National Grid safety requirements, the contractor must describe how workers, including subcontractors, are qualified. The contractor must supply information concerning the type of skills assessment performed, training programs and how they ensure that employees

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demonstrate competencies. National Grid reserves the right to review this information and request additional training requirements. All documents shall be uploaded and maintained in the ISN system for high/medium contractors. For work on process safety assets, the contractor shall ensure all workers and sub-contractors are trained and receive appropriate refresher training to maintain their appropriate level of certification and qualifications needed to perform work safely.

2. For low-risk contractors who perform activities that require PPE, which excludes office-based contractors and/or consultants, or other non-physical low-risk contractors, the contractor is required to watch an on-boarding video annually prior to any jobs starting for that year. The contractor employees and subcontractors are required to watch the video to be clear on safety expectations. Contractor to ensure that any new employees performing services for National Grid watch the on-boarding video if they hadn't watched it in the annual release. A link to the video can be obtained from the Project Representative.
3. Medium/high risk contractors shall complete an annual in-person on-boarding hosted by National Grid supervisor or project manager. The on-boarding shall emphasize required qualifications, HASP requirements, and requirements on revisions to HASPs when changes to the scope of work on the site or changes to risk occur. The National Grid supervisor or project manager are to conduct the on-boarding and determine the appropriate material to be used to communicate and emphasize the expectations.
4. Contractors shall conduct their own safety self-assessments.

Periodic field visits and/or verbal contact shall be conducted by the National Grid supervisor or project manager who are familiar with the work and existing scope. The National Grid supervisor or project manager shall review the work performed during the field checks and/or verbal contact and can ask the contractor to provide qualifications upon request.

During the field visits/verbal contacts, National Grid supervisor or project manager shall also review existing HASPs and/or job briefs as applicable for current work scope and require any revisions based on observations. The field checks/contacts are to be documented using Compliance Assessments, Contractor Evaluations, or ESDs.

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If HASP or job brief does not cover observed hazards and risk mitigation, work shall be stopped until a revised HASP or job brief and approval of the revision occurs, which is required before work can continue.

The frequency of the field visits/verbal contacts are based on risk perception of the job, including variability of conditions, and if there is greater chance of serious injury or fatality based on high-energy presence (gravity, pressure, energy). Higher volume of visits should be conducted if it's a new contractor, based on contractor's performance (review IMS, Compliance Assessments, etc.), or if variations exist including: change in project scope, weather, change in crew and/or subcontractors, change in equipment on site, new high energy factors are present (greater chance of SIF), and long duration job.

5. The contractor shall provide management personnel qualifications through resumes or other documents. National Grid may interview and/or approve management personnel if considered necessary.
6. For work on Process Safety assets (Gas Transmission, Generation, LNG, LNG Transportation and CNG), contractors shall provide a description of their experience in the business asset and specific tasks including similar projects, lists of licenses/certifications, and references from previous similar projects. Contractors shall be made knowledgeable of National Grid process safety requirements that are relevant to their specific work activities by the business hiring them.

3.2 Meetings

Applies to: All contractors; as needed

1. The pre-bid meeting is coordinated by National Grid Procurement to provide bidders with an opportunity to become acquainted with contractual requirements and specific safety issues concerning the project, including company-specific safety rules and known site conditions.
 - a. For contractors working on Major Hazard Assets, contractual language including designation of site medical facilities, locker rooms, bathrooms, etc. should be discussed by the project team with the contractor at this time.
2. At this time, Procurement will notify the prospective bidders of the following:
 - a. If they are required to submit a project safety plan (HASP) prior to the pre-construction meeting

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- b. The cost of specific safety equipment, practices and personal protective equipment shall be factored into their bid/proposal.

3.3 Project Health & Safety Plan (HASP)

Applies to: Contractors performing high or medium risk work

All HASPs shall be submitted to the National Grid project owner for review and approval before work commences. The National Grid project owner shall ensure the HASP meets National Grid criteria and includes all aspects of the project prior to a review by Field Safety (if applicable). The project owner shall review the HASP. Field Safety shall also review the HASP after the business conducts its review only if the work is unique, there's a new project manager or supervisor, the work involves PHAs, or there's unfamiliarity with the project or safety standards.

If changes are required, a new HASP shall be created and rereviewed.

If the scope of work on the job site changes from the approved HASP, work shall be stopped. The HASP shall be revised and rereviewed by National Grid Business (Field Safety review as applicable), and work can continue once the revised HASP has been reviewed for risk controls of changed scope. Until the HASP is updated work shall remain stopped. Failure to update the HASP will be considered a violation of safety requirements in line with section 1.5. It's the contractor's responsibility to inform National Grid personnel if the scope changes.

1. Contractors who perform high or medium risk-ranked services shall submit a project-specific HASP plan prior to the start of the project and/or at pre-construction meeting. The HASP is to be followed by the contractor's employees and its subcontractors.
2. At a minimum, the HASP shall include the following elements:
 - a. Roles and Responsibilities
 - b. Scope of Work
 - c. For contractors working on Major Hazard Assets - List of all equipment contractor is expected to use in work activities and indication that it meets regulatory and National Grid requirements
 - d. For contractors working on Major Hazard Assets - List of contractor materials to be brought onto work site for review and approval by National Grid

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- e. Task and hazard identification and risk assessment of the hazards
- f. Hazard mitigation/control procedures and work methods
- g. Incident investigation and reporting
- h. Compliance and monitoring

For an example of a HASP, a National Grid representative can provide related policies and procedures under the *Contractor Safety* website in Grid:home.

3. The following requirements shall be included in the HASP for all work at contaminated sites. The HASP shall be site-specific and meet the requirements of 29 CFR 1910.120(b)(4)(ii). The HASP must include at a minimum:
 - a. A safety and health risk or hazard analysis for each site task and operation
 - b. Personal Protective Equipment to be used by employees for each of the site tasks and operations
 - c. Medical surveillance requirements
 - d. Frequency and types of air monitoring and personnel monitoring to be used
 - e. Site control measures
 - f. Decontamination procedures
 - g. An emergency response plan for safe and effective responses to emergencies, including the necessary PPE and other equipment

The contractor/National Grid project representative shall contact the Environmental Department for guidance on site requirements and to initiate any required regulatory notifications.

For contractors performing bulk commodity transportation activities, a risk assessment including the potential consequences, frequency and safeguards to be used shall be performed and included in the HASP. If a preexisting National Grid requirement is in place for managing bulk commodity transportation activities, one shall follow those requirements, with no additional risk assessment being required.

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Every contracted and subcontracted employee, including those working alone, performing work on the project shall review the HASP to ensure steps in the plan are adhered to in order to mitigate hazards during the pre-job orientation. These mitigation steps shall be incorporated into all work plans and job briefs.

Truck drivers for daily, non-hazardous material deliveries such as stone, gravel, concrete material or porta john cleaning are exempt from completing a job brief unless there are potential hazards associated to the driver or delivery. A National Grid representative shall talk to the driver to determine if a job brief is needed.

In addition, all workers shall sign an attendance sheet during the pre-job orientation that they have reviewed the plan, will adhere to the mitigation steps and they fully understand the plan. This document will be kept at the job site and available for review as needed and if requested by any National Grid representative, or any other parties.

A. Roles and Responsibilities

The HASP shall identify who is providing project oversight and how they are qualified. For example, if the work requires excavation, there must be someone on-site who is qualified as an excavation competent person.

For multi-employer work-sites, the general contractor is responsible for all their employees and subcontractors. The safety plan shall clearly state this responsibility.

If requested to do so, Contractors shall designate a competent person to participate in or conduct a process hazard analysis (PHA) regarding a portion or the entirety of the project. National Grid will not be responsible for training the contractor on the PHA methodology.

B. Scope of Work

The Contractor shall clearly and briefly state the scope of work as provided by National Grid. The plan must specifically address the project or services requested by National Grid.

C. Task and Hazard Identification and Risk Assessment

The contractor shall perform a risk assessment by identifying all significant tasks, the anticipated hazards and hazard mitigation procedures.

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If, at any time, the risk level changes on the job site, the contractor is to stop work until a revised HASP or job brief is created and discussed on site and reviewed by National Grid personnel.

Contractors performing work where their employees are exposed to fatigue, shall assess fatigue risk in their HASPs and identify the mitigations they will take to manage the risk to their employees.

The contractor's cost to provide adequate safety measures and to comply with National Grid requirements must be considered and budgeted in the bid/proposal.

D. Hazard Mitigation Procedures and Work Methods

For each hazard, the contractor shall specify measures that will be taken to eliminate, control or mitigate these hazards.

A table below is an example of a method to simply and clearly organize and present the task, hazard, and mitigation steps:

Location: Substation Yard		
Task	Hazard	Mitigation Steps
Material Handling	Contact with overhead energized lines/equipment	Off load in the clear and have a safety observer present

E. Incident Investigation and Reporting

All work related incidents involving injury or illness to employees, the public or property damage (including contractor vehicle accidents) shall be reported to the National Grid project representative and documented in the ISN system.

F. Compliance Monitoring

To ensure that both contractor employees and subcontractors will achieve safety compliance, jobs with over 100 workers at any point in time or in excess of \$1 million will require a full time safety professional hired by the contractor. This safety professional must be qualified, competent and be on site anytime work is performed. Qualifications of this safety representative must be acceptable to National Grid prior to hire by the contractor and may be documented in the ISN system.

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For other jobs that don't meet the above criteria, contractors shall monitor jobs in line with their safety management system.

G. Environmental Compliance

Unless otherwise specified and based on the scope of work, any potential environmental risks shall be determined and addressed by the contractor following all applicable National Grid procedures. For more information, contact a National Grid representative regarding Environmental Procedure No.6 *Contracted Services* and Environmental Procedure No.25 Appendix A, *Environmental Screening Checklist*.

3.4 Contractor Orientation/Pre-Construction Meeting

Applies to: All contractors, as needed

1. A National Grid project representative, construction supervisor, or other designated National Grid representative may hold a contractor orientation or pre-construction meeting prior to the start of a project/service. Other attendees may include; the Safety department, Environmental representatives, as well as contractor management as needed.
2. It is intended to serve as a method to provide the contractor with the tools necessary to educate their employees and subcontractors on National Grid's procedures and requirements. The session is not intended to train the contractor management, their employees or subcontractors.
3. All contractors are required to attend a National Grid orientation program specific to the type of work they will be performing. Contractor management representation shall also be present meeting and all documentation of attendance shall be kept at the job site and available to any National Grid representative. For visitors and contractors working on Major Hazard Assets, site orientation shall at a minimum include the following:
 - General site hazards
 - Specific hazards involved in each task the employee may perform
 - Safety policies and work rules, including Process Safety policies
 - Location of emergency equipment like fire extinguishers, eyewash stations, and first-aid supplies
 - Smoking regulations and designated smoking areas if applicable
 - Steps to take following an accident or injury

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- Proper reporting of emergencies, accidents, and near misses
- Selection, use, and care of personal protective equipment
- Emergency evacuation procedures, routes, and security systems
- Safe housekeeping rules
- Safe use of tools and equipment
- Hazardous materials in use and location of safety data sheets

Site access shall not be granted to contract employees working on process safety assets until orientation is conducted.

4. The contractor's Project Health & Safety Plan will be discussed at this meeting including a final review of the safety hazards checklist to ensure proper hazard identification and mitigation plan has been implemented.
5. These hazard mitigation measures shall be reviewed and work shall not commence until these hazards have been adequately addressed. The National Grid project representative will discuss the methods by which compliance will be achieved to National Grid safety requirements with the contractor.
6. An Emergency Call List shall be exchanged with the National Grid project representative for high or medium risk projects or as applicable. This list must contain 24-hour contact information for key contractor and project personnel, including the project representative and Safety representatives. This list should be distributed to all concerned, as determined by the project team, prior to the start of work. For contractors working on process safety assets who have an emergency response role, the emergency response plan shall be updated to clarify the contractor's role in the event of an emergency on site.
7. For routine maintenance services, a review of associated safety issues and specific facility issues, restrictions or practices, such as evacuation procedures, shall be discussed with the contractor upon initial hiring. Any changes in the facility that may affect the safety of contractor or National Grid employees or third parties must be communicated immediately.
8. Upon completion of the contractor orientation or preconstruction meeting, the

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contractor management official shall certify in writing that: (1) the contractor has been informed of National Grid safety requirements; (2) that employees and subcontractors have the appropriate qualifications to perform the work, and; (3) the contractor agrees to comply with all applicable safety requirements. The certification shall be completed annually in ISNetworld as an acknowledgement of the above requirements.

3.5 Job Safety Briefs

Applies to: All contractors; as needed

1. Job safety briefs shall be documented in writing. Written job safety briefs, permits, and/or plans shall be available at the job site for inspection and retained for 30 days after the job is completed.
2. National Grid reserves the right to perform a safety stand-down with any contractor for purposes including, but not limited to: recent injuries, incidents or near misses; identified hazards at job site or equivalent, and for other reasons to communicate with the contractor crew.
3. Each crew shall conduct these job safety briefs prior to commencing work at the job location. A new job brief is required when there are changes to the day's work order or plan, when there are changes in weather conditions, when a new worker or company joins the crew, and if the crew members take any extended breaks (i.e. lunch breaks). Working alone: A contractor working alone need not conduct a job brief; however, the contractor must review the hazards associated with the job as if a formal job brief had been performed.
4. Each worker must have the opportunity to voice concern. The work cannot begin until each worker signs off on the job safety brief stating that they have discussed the work, raised any questions, and agree with the plan.
5. Visitors to the work site shall be asked to read and sign the job brief acknowledging they understand contents. Contractors shall review the job brief and discuss the elements of the hazards and mitigation steps with each visitor prior to entering the job site. If a visitor refuses to sign, the general foreman will note it on the brief and will not allow the visitor to enter.
6. SITE SIGNAGE: An assessment of the work site should be conducted by the National Grid project representative overseeing the work with the contractor to determine if site signage will be needed to protect site visitors,

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the public or any other persons entering the work site. If Site Signage is required at the site, the signage shall be posted at the main entrance to the work site. The sign shall direct all visitors to check in with the Person in Charge (PIC), be escorted to the designated safe area and advised of all work currently in progress. The visitor is expected to comply with all related safety requirements and sign off on the Job Brief before entering the work site.

3.6 Safety Meetings

1. In addition to job safety briefs, the contractor shall have regular safety meetings with their employees and subcontractors. Contractors performing high or medium risk work shall have weekly safety meetings, while low risk contractors, at a minimum, shall have safety meetings monthly and attendance must be documented.
2. The safety meetings shall include the following topics: statistics, incidents, near misses, updates on old business and new business raised. It will include the round table discussion by the workers and the action items discussed. Meeting minutes must be documented and shall include specific action items, their due dates, persons responsible and a completion date. This documentation shall be available for inspection during the project period, and for 30 days after the project is completed. For contractors working on Process Safety assets, meeting minutes from contractor shall be shared and discussed with National Grid site management.
3. Routine Safety meetings/calls between National Grid and the Contractor shall be coordinated on a regular basis. Safety meetings may include but are not limited to ESD/Compliance Assessments, Safety Briefs, Safety Day discussions and regularly scheduled calls to promote safety and best safety practices. Contractors working on Process Safety assets for more than 6 months shall schedule leadership visits to discuss process safety topics.
4. Contractors are to perform their own safety self-assessments.
5. Contractors working on process safety assets for greater than three (3) months, or as needed, shall hold project planning meetings to discuss short term and long term work items. Project planning meetings shall include safety performance monitoring against project targets and should include a National Grid SHE representative for jobs on Major Hazard Assets in addition to a National Grid site representative.

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3.7 Incident Investigation

Applies to: All contractors (regardless of risk ranking)

1. All contractors are required to report any work-related incidents involving injury or illness to employees, the public or property damage to the National Grid project representative. The first priority is to ensure that anyone injured receives medical treatment. Examples of incidents may include, but is not limited to: injury, property damage, adverse public impact, near miss, a hazardous condition and road traffic collisions (RTC).
2. Contractors will then be responsible to perform an incident investigation immediately following the incident and document root cause/corrective actions in the ISN system and to National Grid.

Incident Response Steps

In the event of an incident, the contractor shall provide details of the incident to National Grid that follows the steps below.

1. Contractor supervisor collects basic information about the incident from the employee or witnesses:
 - What happened?
 - Who and how many people were injured?
 - What treatment was administered?
 - What was the nature and seriousness of the injury?
 - Where did the incident occur?
 - When did the incident occur (date, time of day)?
 - Were there any witnesses?
2. Contractor supervisor immediately calls the project representative or other National Grid point of contact. All incidents shall be entered into the Incident Management System (IMS) as soon as possible by the National Grid project representative or National Grid designee. When dialing 1-866-322-5594, the caller will be prompted to select option 2 for anything other than an employee injury.
3. Contractor shall conduct an investigation within 24 hours of the incident that will identify contributing factors and root cause analysis relating to the incident and the corrective actions that will be taken to prevent future occurrence. This information will be documented in the ISN system.
4. Contractor vehicle accidents occurring during the performance of work will also be investigated and reported to National Grid.

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Other Reporting

National Grid may periodically request the following annualized data for all work activities limited to National Grid operations:

- Lost Time Incident (LTI) rate for workers
- Restricted Work rate
- OSHA Recordable Incident (ORI) rate

4.0 TECHNICAL SAFETY REQUIREMENTS

4.1 Personal Protective Equipment (PPE) Requirements – General

Applies to: All contractors (regardless of risk ranking)

1. The contractor and their employees, including subcontractors are expected to follow the same rules and protocols as National Grid personnel. Basic PPE attire at construction sites and other similar work zones include, at a minimum:
 - Hard hat
 - ASTM F2413 EH rated safety shoes
 - Safety glasses with side shields
 - Any contractor who is exposed to vehicular traffic shall wear ANSI 107 certified class 3 hi-vis vest or garment.
 - All contractors who are exposed to vehicular traffic and are exposed to energized electrical equipment or live gas are required to wear ANSI 107, class 3 hi-vis vest or garment, that also meets ASTM 1506 FR standard with a minimum Arc rating of HRC 1. All FR vests must be lime green/yellow. When FR clothing is required the FR vest shall be worn over appropriately rated FR clothing. Please reference the Gas PPE Matrix.
 - All contractors that are exposed to vehicular traffic, but will never be exposed to energized electrical equipment or live gas shall wear at a minimum ANSI certified class 3 vest or garment that is orange OR wear the FR vest in lime green/yellow.
 - ASTM 1506, HRC Category 1 FR vests must be in lime green or yellow. Any vest that does not meet the ASTM 1506, HRC 1 FR rating must be orange.

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Storm contractors that do not have a Contractor of Choice contract should follow their existing practices and rules. All other contractors shall refer to the US Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD) to determine the correct class of hi-vis clothing / vests.

2. The contractor shall ensure that their employees and subcontractors use protective safety toe footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards. In addition, during inclement weather conditions or adverse events, the addition of anti-slip footwear or outer foot wear may be appropriate.
3. Guidance for additional PPE is referenced in other sections of this document.

4.2 Flame Resistant Clothing Requirements

Applies to: All contractors; as needed

1. Flame Resistant (FR) clothing shall be worn when personnel work on energized equipment/lines or when distance and position will expose the worker to electric arc or flame hazards. FR clothing shall also be worn during live gas work as outlined in the gas PPE Matrix (Gas Policy SHE01001) and within LNG operations locations as required. FR clothing also includes arc-resistant rain gear. This additional ensemble may also be required as part of the job for contractor personnel. Contact a National Grid representative for a copy or to view the PPE matrix.
2. FR clothing shall be worn as the outermost layer of clothing and when workers measure voltages, test or ground electrical equipment/lines.
3. FR clothing shall be worn when work requires the use of rubber protective equipment or the use of insulated live line tools.
4. FR clothing shall be worn when workers control/operate electrical equipment over 50 volts at the device location or are within 10 feet of equipment which is being physically operated/ worked on by another worker.
5. Visitors are not required to wear FR clothing in substations or production plants unless they are engaged in electrical work. The National Grid project representative will be able to determine whether FR clothing will be required based on the specific contractor task. Note: Gas contractor FR requirements may differ slightly. Please refer to National Grid PPE Matrix for Gas operations within Gas Policy SHE01001 as needed.

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6. FR clothing shall meet a minimum arc rating of 8 cal/cm² (HRC 2) for energized electrical equipment unless otherwise specified based on increased potential exposure as indicated in the Arc Flash Tables in H-807 *Arc Flash Analysis and Mitigation* program.
7. Additional FR clothing protection is required when performing work on the distribution system in NY North and New England (legacy National Grid) stations. Contact a National Grid representative for a copy. (NG Employees: If the link does not work, copy and paste the URL into your internet browser) [Arc Flash Awareness and Mitigation \(sharepoint.com\)](#)
8. Contractors who may be involved with tasks requiring the implementation of this program shall be informed by National Grid. Contractors will be required to follow all aspects of OSHA and any other applicable regulation as it applies to the tasks they perform.

4.3 Rubber Gloves and Sleeves

1. Rubber glove use is required for work on all electrical apparatus at 50 Volts or greater. Rubber gloves shall be donned before the worker leaves the ground and shall be worn until the worker returns to the ground (commonly referred to as “ground to ground”, “cradle to cradle”)
2. Class 0 gloves are required for exposures up to 1000 Volts.
3. Class 2 gloves are required for voltages between 1000-15,000 Volts.
4. Rubber sleeves must be worn where work is conducted within the MAD of primary electrical apparatus that is not tested, de-energized and grounded.
5. For voltages 23 kV and above, workers can use specialized equipment or work practices as long as these workers have been appropriately trained and qualified. National Grid may request training records from the contractor.
6. Rubber glove exceptions for specific jobs (other than those listed in this section) are permitted only with the dated, written approval of a Division Director.
7. It is the contractor’s responsibility to wear class 2 rubber gloves when grounding trucks or equipment due to a possible difference in potential.

Exceptions

No rubber gloves are required:

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- When working in a properly established equi-potential zone.
- When the operator remains at the same potential as the equipment by being off the ground and on the equipment.
- When a qualified worker performs transmission “hot stick” work on lines 69 kV or greater and no other energized wires are on the pole or structure below the worker.
- When work is performed on transmission structures carrying only energized conductors (115kV and above) and the Live Line Techniques are not being employed. While performing these activities, the worker shall utilize conductive clothing such as conductive gloves, boots, leg straps and/or any other applicable conductive clothing.
- When climbing a steel structure to perform structural reinforcements while maintaining MAD from energized conductors or apparatus.
- When climbing a steel structure to access an area that has been properly grounded.

4.4 Isolation of Energized Apparatus

1. Non-Reclosing Criteria and Live-Line Maintenance and Construction:

The appropriate interrupting devices (breakers, reclosers, circuit switches, etc.) will be placed on NON-RECLOSING in accordance with National Grid tagging procedures.

2. Tagging Out Lines or Apparatus

The National Grid Construction Supervisor or designee shall coordinate all switching and tagging in accordance with the most current EOP on Clearance and Control.

Upon receipt of Clearance, the project representative will present the Contractor's Person in Charge with the “Contractor Permission to Work Form” (Form NG0060), which states the specific apparatus that has been de-energized and that certain device(s) are tagged in the Protective Position and will remain so until the Contractor's Person in Charge informs the construction supervisor or designee of the completion of the work utilizing

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the “Contractor Completion of Work” section of the “Contractor Permission to Work” form.

The original transferred copy needs to be returned after the completion of work section is filled out & signed. In some cases the tailboard is outside & is susceptible to elements & damage; a copy shall be utilized in the field instead of the original.

No work will be performed until the “Contractor Permission to Work Form” is received from the construction supervisor stating that the equipment has been de-energized and a clearance to work has been given. The Contractors Permission to Work Form and a written grounding plan shall be attached to the crews Job Briefing and be kept at the work location.

After the “clearance” is received from the National Grid Construction Supervisor, the various substation conductor bus and equipment to be worked will be tested and “Grounds” installed. Grounds shall be rated for the fault current of the line/equipment being grounded. (Note: Rubber Gloves and FR clothing are required when installing and removing grounds). The contractors “Person in Charge” (Construction Supervisor/General Foreman) shall be responsible for determining the location and number of grounds.

Vehicles and equipment may utilize a single 4/0 cu for grounding inside the substation. Employees working on de-energized lines and equipment shall always work between grounds.

Prior to the application of any personal protective grounds, the circuit to be worked on must be tested for the presence of voltage using an approved potential detector. The worker must verify the detector is in operating order prior to and after testing for voltage. MAD must be maintained during the testing, and appropriate PPE shall be worn. Testing for voltage shall be done at the point where the grounding devices are to be attached. All phases of the circuit to be worked on shall be tested at each location that grounds are installed.

When an Air Gap is required to create a work zone, the component (a tap) shall be removed in whole from the system unless removal of the component is impracticable or creates an additional hazard based on National Grid management in charge of the job. If the component (a tap) is deemed impracticable to be removed in whole it shall be disconnected from one end, isolated from all other conductors and properly secured to ensure accidental energization will not create a hazard. When National Grid switches out lines or apparatus, any grounds that may be installed shall only

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be considered a visual reference, and shall not be considered a means to protect the Contractor's employees. The Contractor is responsible to install their personal grounds, in accordance with all OSHA, Federal, State and local safety procedures. National Grid may provide guidance on the minimum size of the grounds to be used based on circuit available fault current. Refer to *Electric Operating Procedure D002*, for applicable grounding size. Ground rods shall be fully driven into the earth away from the workers and work area. T-Bar ground rods are not to be used on National Grid property.

The National Grid Construction Supervisor shall review the contractor's plan for the quantity and locations of grounds, ensuring that the work the contractor is performing is between grounds, covering all potential sources. All three phases shall be grounded. (In stations, from each phase to the station ground grid). Grounds shall be placed as close to the work area as reasonably possible, between the work area and all potential sources of inadvertent energization. A copy of the grounding plan shall be kept with the job safety brief.

It is the contractor's responsibility to account for all their grounds. The contractor shall provide, maintain, and enforce a ground tracking program suitable to National Grid. In the instance of a zone expanding/collapsing, remaining grounds shall be listed on the Contractor Permission to Work Form and verbally communicated to the construction supervisor.

3. Grounding Mobile Equipment

When mobile equipment requires grounding, it shall be solidly grounded by means of appropriate sized copper cable while using rubber gloves. The cable shall be fastened to a securely attached clean metallic portion of the equipment, or shall be fastened to a grounding stud provided for the purpose at one end and an adequate ground at the other end.

Non insulated booms such as digger derricks that have the possibility of encroaching the MAD shall be grounded and barricaded. The ground is to trip the circuit and the barricade is to protect anyone who may become in contact with the truck during this energization.

4. Minimum Approach Distance (MAD)

Refer to OSHA 29 CFR 1910.269 for more information and details regarding qualified and unqualified workers.

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4.5 Appointment of a Safety Observer

A safety observer shall be required if an employee (operator) determines that it is difficult to accurately determine the distance between the equipment (minimum approach distance) and energized parts. The Safety Observer shall never be a substitute for minimum approach distance (MAD), personal protective equipment (PPE), insulate/isolate techniques or work area identification as a form of employee protection.

The person in charge of the work (contractor or National Grid), shall appoint a qualified employee or employees to perform the task of a safety observer. The person in charge shall:

1. Ensure a documented job brief is completed and includes the name of the safety observer, additional subjects such as the location of gas lines, energized equipment, in or adjacent to the work area and the limits of any de-energized work area
2. Discuss the scope of work and communication techniques used to warn or notify the equipment operator of hazardous conditions.
3. Communicate any changes to work and job completion to the safety observer
4. Select another safety observer if there is a need for the existing observer to have break in service.

The safety observer is a qualified employee who has been appointed by the person in charge based on the hazard assessment and the job brief. The safety observer shall:

1. Observe the worker performing the task/activity until all hazards have been eliminated or the task/activity has been completed
2. Have shown proficiency in the task/activity being observed and have a full understanding of the job and the hazards associated with the task/activity.
3. Remain continuously focused on the task/activity being performed and not perform or assist any other job activities while observing the worker performing the task/activity
4. Notify the person in charge if there is a need to have a break in service. Work must stop until a new observer is appointed or the safety observer returns.

A safety observer shall also be required when a critical lift is being performed. A critical lift plan shall be required during the following circumstances:

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1. An object is lifted over energized apparatuses or assets where a failure of the lifting equipment or rigging could result in a significant safety hazard or cause significant disruption in service to National Grid customers.
2. The crane or other lifting apparatus is anticipated to be operated above 80% of its rated capacity for the specific load chart for the lift.
3. A man basket (pinned or suspended) is to be utilized. All fall protection rules shall be followed when in a man basket.
4. Two cranes will be used in concert to lift a single object
5. Internal substation construction involving all power transformers, control houses, capacitor banks and transmission breakers.
6. Lifts in LNG or Gas plants where a hazard assessment or job brief identifies a significant risk.
7. The lifted load will be less than twice the minimum approach distance (MAD) of the nearest energized part. Until a qualified electrical worker confirms the MAD, loads and equipment shall maintain a 20 foot distance. Once nominal voltage is established, the MAD will be according to OSHA tables.
8. The lifted load is hoisted over buildings or the general public.

4.6 Work Zone Traffic Control

1. If work activity is on or near a road, the contractor and their subcontractors shall comply with all applicable parts of the most current US Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), state, local Work Zone Traffic Control requirements and the National Grid Work Zone Traffic Control Manual. Please contact your National Grid representative for a copy of the manual found in the Safety Homepage on the Grid:home.
2. If pedestrian traffic is disrupted, pedestrians should be provided with a path that is reasonably safe, convenient and accessible. Pedestrians should not be led into conflicts with work site vehicles, equipment or operations.
3. If working in areas covered by state permits issued to National Grid, contractors shall comply with the provisions (work practices and notifications) of the permit language. These permits must be available on the job site upon request.

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4.7 Qualified Gas Worker

Applies to gas projects/activities

1. Gas contractor employees will be operator qualified as required and defined according to the Code of Federal Regulations, Transportation, 49, Subpart 192.801 through 192.809.
2. Until these qualified employees have demonstrated proficiency in the work practices involved, they are considered employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times. According to the definition of a “qualified employee”, the employee also must have demonstrated an ability to perform work safely at his or her level of training.
3. National Grid requires contractors with gas qualified employees to provide documentation on how they qualify their workers.
4. Additionally any qualifications’ of contractor personnel shall be in full accordance with the Company’s Operator Qualification written plan, (OQ Plan) Refer to the most current list of covered tasks in accordance with National Grids’ Operator Qualification Program and the Northeast Gas Association, (NGA).

4.8 Qualified Electrical Worker

Applies to electrical projects/activities

1. According to 1910.269(a)(2)(ii), a qualified electrical employee must be trained and competent in the following prior to starting work:
 - The skills and techniques necessary to distinguish exposed live parts of electrical equipment
 - The skills and techniques necessary to determine the nominal voltage of exposed live parts
 - The MAD specified in 1910.269 corresponding to the voltages to which the qualified employee will be exposed
 - The proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

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2. Until these qualified employees have demonstrated proficiency in the work practices involved, they are considered employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times. According to the definition of a “qualified employee”, the employee also must have demonstrated an ability to perform work safely at his or her level of training.
3. National Grid requires contractors with electrically qualified employees to provide documentation on how they qualify their workers.

4.9 Qualifying Non-Electrical Worker

Applies to: All qualifying non-electrical contractors working near energized lines and equipment; as needed

1. The contractor shall provide orientation for non-electrical workers entering and working within restricted areas such as a substation and those working near energized lines and equipment.
2. The information provided to these workers must meet the requirements of paragraph 1910.269(a)(2)(ii). However, the orientation and training may not be as comprehensive as the qualified electrical worker would be.

They must know:

- What is safe and not safe to touch in the specific areas they will be entering;
 - The maximum voltage of the area;
 - The MAD for the maximum voltage within the area;
 - Proper use of personal protective equipment and in the work practices necessary for performing their specific work assignments within the area.
3. Until these workers have demonstrated proficiency in the work practices involved, they are considered to be employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times.

4.10 Asbestos, Lead and other Hazardous Materials

1. Asbestos and lead materials associated with electrical and gas equipment includes, but is not limited to: cement-type cable covering, cable wrap, wire

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coatings, coal tar pipe wrap, and transite panels and conduits. Asbestos and lead materials may also be present in building materials including but not limited to: paint, mastics, caulking, insulation and roofing materials.

2. Where asbestos and other hazardous material is present and likely to be disturbed, the National Grid project representative and contractor shall coordinate how the asbestos, lead or other hazardous materials will be managed and shall consult National Grid's Safety & Environmental department as appropriate.
3. Removal of this material must be done by individuals specifically trained and qualified to handle asbestos and lead. Refer to National Grid Safety Procedures, F-615, F-617 and F-619 for guidance on asbestos and lead handling and removals. For more information, contact a National Grid representative for a copy of these procedures.

Note: Contractors who will encounter asbestos or lead as part of their work shall reference in their safety plan how they will address this hazard.

4.11 Lift Plans for Work Near Energized Electrical Equipment

1. All work involving hoists, cranes or other lifting equipment **within 10' of energized electrical equipment** must have a detailed lift plan/procedure.
2. As a minimum Lift Plans shall include the following:
 - a. Designated Operator and Signal person
 - b. Detailed travel and flight path that ensures the boom and material being raised is controlled 100% of the time and will maintain the appropriate clearance
 - c. Designated cover up and isolation to ensure employee and equipment safety in the event of an unplanned action or failure
 - d. Emergency action plan with detailed instructions to respond to unplanned/uncontrolled event during the lift or positioning of the lifting equipment.
 - e. Documented load weight and equipment lifting limits

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- f. Rigging equipment and methods that will be used during the lifting. Sign off/approval from the management official responsible for the work

4.12 Fall Protection

1. Fall protection or fall restriction devices shall be used when working at heights over 4 feet. When using portable straight and extension ladders, three points of contact shall be maintained. If 3 points of contact cannot be maintained a work positioning belt is required.

Step ladders shall be set up on level and stable surfaces, fully open with braces locked. Work positioning belts are not required for properly set up step ladders.
2. All fall protection shall be inspected before use each day to determine if equipment is in good working condition. Defective equipment shall not be used and shall be removed from service.
3. A worker may enter or exit an aerial lift (at heights above four (4) feet) provided that fall protection such as guardrails or a fall arrest system is used while the worker moves between the lift and the working surface. Before any such transfer is made, the employee shall be properly tied-off to an adequate support, the pole or structure prior to and in the direction of the transfer.

Exceptions to fall protection shall be in accordance with Federal & State requirements.

4.13 Herbicide Application

1. Vegetation spraying shall be conducted unescorted only by contractor employees who have been designated as a Qualified Electrical Worker, where applicable.
2. The spray applicator shall have ID cards issued by Security with background checks available from the contractor.
3. National Grid management shall require a schedule of the spraying in their areas.
4. Once spraying begins, the contractor must contact local management on a daily basis to inform them of progress or changes to the schedule.

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5. The contractor shall post all stations with dated signs indicating when the station was sprayed. These signs should not inhibit access to the station.
6. The contractor shall ensure that any stored materials and equipment do not get covered with "overspray". Overspray represents a substantial safety hazard and cannot be allowed.
7. When applying herbicides, contractor employees shall wear appropriate PPE in accordance with product labels.

5.0 UNDERGROUND OPERATIONS WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to underground operations work.

5.1 PPE Requirements

All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

5.2 Enclosed Space Assessment, Ventilation, Entry and Rescue

Refer to the National Grid EOP-UG006 *Underground Inspection and Maintenance* and National Grid Safety Procedure I-902 *Enclosed Space Procedure* for more information regarding enclosed space requirements.

1. Contractors are required to follow all procedures in this document in regards to enclosed spaces (manholes, sidewalk vaults, etc.), including assessment, ventilation, entry and rescue.
2. Each enclosed space shall be tested prior to removing manhole lids and entry. Atmospheric testing shall be continuous for the duration of the entry using a calibrated, industry approved atmospheric tester.
3. When performing hot lead work or when indicated by atmospheric monitoring, engineering controls such as forced mechanical ventilation shall be used when working in National Grid manholes at all times.
4. All contractors who are qualified electrical workers will treat these spaces as "enclosed spaces" and follow non-entry rescue provisions.
5. In some situations a boom is allowed for retraction from an enclosed space. Refer to Safety Procedure I-902 for more information.

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6. Steel cable or wire rope for non-entry rescue is prohibited.

5.3 Equipment Safety Inspection

1. Inspect underground facilities (manholes, vaults, hand holes, splice boxes, junction boxes, pad mount transformers, switchgear and submersible equipment, etc.) each time a crew performs work at one of these facilities. All separable components in these facilities shall be inspected by infrared instrumentation. A National Grid representative can provide details from the National Grid EOP-UG001 *Infrared – Non-Contact Thermometer Inspection Requirement for Underground Equipment* for more information.
2. The infrared (IR) thermometer or camera shall, at a minimum, have a range of -25°F to 1400°F with a plus or minus 1% accuracy. For more details and current operating procedures, contact a National Grid representative regarding EOP UG001.
3. The format for data collected shall follow the National Grid EOP UG006 *Underground Inspection and Maintenance* requirements. Please contact a National Grid representative for more information.
4. “Touch Potential” testing of metal street lighting poles is required as a part of any maintenance work. For more information, a National Grid representative can provide a copy of the National Grid EOP G016 *Elevated Equipment Voltage Testing* and National Grid Work Methods Bulletin #04-26 *Touch Potential Testing of Metal Street Lighting Poles*.
5. Touch Potential testing results shall be recorded on the job safety brief and the manhole inspection form which shall be given to the National Grid Construction Supervisor or designee.
6. All contractors working for National Grid shall use materials and equipment in accordance with the manufacturing guidelines. It is the contractors’ responsibility to understand the manufacturers’ limits and prescribed use of their tools and equipment before each use.
7. Workers shall test and verify that the underground cable is de-energized and guillotine the cable if needed from outside the hole. Rubber gloves shall be worn at all times while performing this task.

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6.0 OVERHEAD LINE WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to overhead line work.

6.1 PPE Requirements

All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0. In addition, contractors will follow ground-to-ground and cradle-to-cradle use of rubber gloves while performing work on energized overhead lines. Any foreign wire, including those on a pole or structure constitutes an energized source and requires the use of rubber gloves (ex: Cable TV, telephone, fire alarm wire, etc.).

6.2 Fall Protection

All contractors who climb structures such as wood poles or transmission towers shall utilize enhanced fall protection equipment (fall arrest devices) and techniques (ex: *Buckingham Buck-Squeeze*, *Miller StopFall* or *Jelco Pole Choker*). When working on wooden and steel structures, a full body harness and lanyard shall provide 100% fall protection at all times (100% tie off, Shepperd's Hook, etc.). Climbers shall never be allowed to drop or slide down a pole or structure more than two feet.

Exceptions to fall protection shall be in accordance with Federal & State requirements.

6.3 Pole/Structure Inspection

Contractor shall ascertain the structural integrity of the pole or other structure prior to installation, removal, repair or modification of the equipment on the structure.

1. Prior to climbing any pole, an inspection and test of the condition of any pole being climbed shall be performed. The weight of the employee, the equipment being installed and other working stresses (such as the removal or re-tensioning of conductors) can lead to the failure of a defective pole or one that is not designed to handle the additional stresses.
2. If the pole is found to be unsafe to climb or to work from, it must be secured so that it does not fail while an employee is on it. The pole can be secured by a line truck boom, by ropes or guys, or by lashing a new pole alongside it. [29 CFR 1910.269(q)] If measures cannot secure the pole, the contractor must cease operations and notify the National Grid Construction Supervisor or designee

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6.4 Electrical Work Methods

1. Jumpers of any type shall not be used to keep transformers, risers or transformer banks energized for the purpose of changing potted porcelain cutouts. A National Grid representative can provide information to the National Grid Electric Operation Procedure (EOP) D001 *Cutouts – Open Type* for more information.
2. Potted porcelain cutouts must be changed out when work is being completed on a pole even if this is not planned in the scope of the work provided.
3. Properly rated and inspected slings, chains or tongs shall be utilized to move poles and equipment. Winch lines must not be wrapped around poles or looped around transformer ears to lift without a sling or chain.

6.5 Transmission Overhead Lines

1. For work on transmission circuits, red tape shall be placed around any energized pole, pole structure, or tower adjacent to the de-energized line.
2. When one circuit of a double circuit pole or tower line is de-energized for work, a red or orange flag shall be placed on the energized side of the pole or tower nine feet below the lowest energized conductor. In addition, a red or orange flag shall be placed on the lower cage on the side toward the energized circuit at each arm level as employees work on them or pass them.
3. All contractors using ATV's, UTV's or RTV's for transmission or forestry work, are required to follow all local OHRV requirements for PPE and driving safety. Training shall include classroom and in-field instruction as well as a formal driving assessment on an annual basis for each type of vehicle planned for use: i.e. UTV specific training for UTV's and ATV specific training for ATV use. All contractor employees must be fully trained and qualified before use. Proof of individual operator training certifications for each operator shall be available at all times. US DOT rated helmets and safety glasses/goggles are required for any vehicle that does not have a seatbelt and a roll cage. In equipment with a roll cage and seatbelt, operators can utilize a hard hat and chin strap.
4. At the end of each day, unless other arrangements have been made for an extended outage, grounds will be removed and the National Grid project

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representative will be notified that all personnel are “clear” of the conductor bus work and equipment.

5. Wherever transmission line workers “touch” wires, a personal ground shall be installed at the work area to establish an equipotential zone, unless workers are engaged in live-line barehand work (29 CFR 1926.964)

7.0 SUBSTATIONS

In addition to the other requirements referenced in this document, this section covers requirements that are specific to substations work.

For additional information, a National Grid representative can provide a copy of the National Grid Substation Maintenance Procedure SMP 499.01.2 *Protective Grounding Procedure* under the Substation Work Methods Grid:home page for specifics regarding substation grounding practices.

Grounding plans for substation, major distribution and transmission projects will be submitted to the National Grid construction supervisor a minimum of 1 week prior to construction for review. This plan will show the steps, work area limits and ground cable size and amount. Once reviewed with the National Grid and prior to starting the job, the plan will be reviewed by the contractors with all employees and subcontractors on the project.

The use of an “Equipotential” step/platform or a conductive mat is required for access and egress from the following:

- a. Crane or any other equipment, including aerial lift equipment, that is connected to the substation ground grid and/or bonded to transmission line conductors when working outside of the station fence
- b. In the rights-of-way
- c. In areas inside the substation where there is no ground grid present.

When work is performed inside the substation and there is a ground grid available, the “Equipotential” step/platform or conductive mat is not necessary.

All vehicles shall be grounded and barricaded per OSHA standards and the National Grid Electric Operating Procedure G026 *Mechanized Equipment Grounding*.

Proper clearances shall be maintained from adjacent energized substation bus, energized portions of substation equipment and other transmission lines at all times.

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Use of proper insulated tooling (shotguns and sticks) shall be utilized per NECA standard maintaining MAD.

7.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. Contractors who perform any ground breaking activities in a substation within a pre-marked area will require Dig Safe marks to be in place; otherwise, the job must be suspended and the National Grid construction supervisor or project representative shall be notified of the condition.
3. When using non-insulated man-lifts, and if provided by the manufacturer, a secure point of attachment for lifelines, or lanyards or deceleration devices shall be utilized, independent of the means to support or suspend the employee. Workers feet shall also always remain on the floor.

7.2 Notification of Control Authority When Entering a Substation

1. When a contractor enters and exits a National Grid substation, the contractor shall ensure that the System Control Center is notified. While work is being conducted, gates must be monitored at all times or the gates shall be locked. For more information, contact a National Grid representative regarding National Grid EOPG022 *Substation Security*.
2. Unescorted entry in substations can only be provided to contractors who provide assurance that their employees and subcontractors are electrically qualified as specified in 29 CFR 1910.269. Refer to Section 4.0 of this document
3. All National Grid specifically identified bulk power stations will require NERC-CIP training, certification and approval prior to entry to those sites.

7.3 Substation Work Area Identification (SWAI)

1. Contractors who will be working in substations shall follow the SWAI procedure. National Grid will provide a copy of this procedure if required by the project. For more information, contact a National Grid representative regarding National Grid SMP499.10.2 *Substation Work Area Identification Procedure*.

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2. Qualified contractors as referenced in section 4.8 of this document shall install their own work area identification. National Grid shall arrange work area identification for non-qualified workers as required.
3. Designated storage areas for items not being used will be posted in the yard and should be the only place these items are kept.

8.0 GAS OPERATIONS WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to Gas operations work. For more information, contact a National Grid representative regarding National Grid General Safety Requirements SHE1001 *Gas Policy* which can be found following this link:

<http://dc-gasweb1/MelSite/WMSafetyAll.asp> .

8.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. The contractor shall wear all appropriate PPE and Class 2 rubber gloves for personal protection when digging or probing within 2 feet of known electrical conductors and when the location of energized conductors is unknown.

8.2 Gas Operations

1. Any contractor who performs covered tasks shall be operator qualified (OQ) as defined in the DOT Title 49 CFR, Subpart N and all applicable state requirements pursuant to the state the contractor is working in. Additionally, any qualifications of contractor employees shall be in full accordance with the Company's Operator Qualification written plan, (OQ Plan) Refer to the most current list of covered tasks in accordance with National Grids' Operator Qualification Program and the Northeast Gas Association, (NGA).
 - a. The Operator Qualified status of contractor employees must be regularly updated and accessible through the ISN system. This listing must detail employees' current tasks they are qualified for, the next recertification date, associated documentation and a documented annual acknowledgement in ISN on their qualified workers as referenced in section 3.1 of this document.

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- b. Contractor personnel involved with covered tasks may require certification by National Grid and an orientation of the involved tasks and National Grid Company standards. National Grid reserves the right to validate contractor qualifications prior to performing Live Gas work.
- c. Atmospheres are to be tested with a properly calibrated Combustion Gas Indicator (CGI) or Gas Measurement Instrument (GMI) in accordance with National Grid excavation procedures as required.
- d. Each employee in an excavation shall be protected from cave-ins by an adequate protective system, such as sloping, benching or an appropriate shoring system. For more information, contact a National Grid representative regarding National Grid Safety Procedure M-1301 *Standards for Working in Excavations*.

9.0 FORESTRY AND VEGETATION MANAGEMENT

In addition to the other requirements referenced in this document, this section covers requirements that are specific to vegetation management work.

9.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. Flame Resistant Clothing is not required per the applicable OSHA Forestry standard. Forestry contractors must instead wear natural fiber clothing when working within 10 feet of energized equipment.
3. Forestry contractors must wear a properly adjusted full-body fall protection harness connected to an appropriate lanyard when working from an aerial lift. The lanyard must connect to an attachment anchored to either the boom or bucket mounting hardware. Attachment points anchored through only the fiberglass portion of the bucket are not acceptable.
4. Forestry contractors will be required to wear chaps while operating a chainsaw or when assisting and/or working in close proximity to a chainsaw that is being operated.
5. Saws shall not be left unattended with the engine running.

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6. When a contractor employee carries a saw, the engine shall be off and/or covered or the saw shall be carried with the blade to the rear and locked.
7. Tree crews will not be allowed to fly their buckets in between the primary and secondary cables if the MAD will be violated in process of doing so.

9.2 Equipment and Work Methods

1. Forestry contractors shall utilize fiberglass sticks and stick saws for work around energized equipment. Additionally, integrity tests shall be performed and documented annually. Test results and expirations shall be available on each vehicle as needed.
2. Forestry contractors shall perform and document dielectric testing of all aerial units annually. Test results and expirations shall be available on each vehicle as needed.
3. For lump sum or unit price mileage trimming projects, a single foreman may supervise up to four (4) bucket trucks on the same project. The minimum qualifications for the "lead" person on each of the other trucks shall be a Journeyman Tree Trimmer or equivalent (Qualified Line Clearance Tree Trimmer). At least one other employee on the truck shall be an OSHA defined, Qualified Line Clearance Tree Trimmer Trainee. For Upstate New York only, it is understood that a Qualified Line Clearance Tree Trimmer shall carry the title, wage and benefits as outlined in IBEW LU 1249's existing contract of a Journeyman Treeman and that a Qualified Line Clearance Tree Trimmer Trainee shall carry, at a minimum, the title, wage and benefits as outlined in IBEW LU 1249's existing contract of a Treeman Trainee, 2nd year.

9.3 Training

1. Forestry contractor management will be required to attend safety council meetings hosted by National Grid as required. The contractor shall ensure that all appropriate safety personnel for the National Grid territory are in attendance.
2. Forestry contractors shall implement and provide the required training and certification programs necessary to provide OSHA defined Qualified Line Clearance Tree Trimmers or Qualified Line Clearance Tree Trimmer Trainees. Qualifications shall be provided in the ISN system. Forestry

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contractors shall provide an update HASP by April 1st of each year for all work being conducted at National Grid.

3. All contractors using ATV's, UTV's and RTV's for transmission or Forestry work are required to follow all local OHRV requirements for PPE and Driving safety

10.0 LNG PRODUCTION, TRANSPORT AND HANDLING

In addition to the other requirements referenced in this document, this section covers requirements that are specific to LNG Production facilities.

All contractors working at LNG plants will sign in and out of plants daily in the contractors log book. All other gas supply facilities and subcontractors require authorization under the contractor management official. If required by the project, trained National Grid plant personnel shall initially, and as needed, review and re-issue as needed, a work permit process which shall describe the work being performed, valves with their locations and Lock-out/Tag-out numbers.

10.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0 and shall include FR outer clothing.
2. Cryogenic protective gloves/gauntlets and face shields are required when making connections to load / unload LNG. National Grid retains the right to enhance PPE requirements as conditions warrant. The use of additional PPE shall be based on the task performed and the PPE matrix for work in production plants.

10.2 Training

1. Contractors who transport LNG/propane at National Grid facilities are required to be certified in first aid/CPR and are required to complete frost-bite awareness training. Documentation of training records shall be maintained in the ISN system.
2. National Grid expects contractors working at LNG plants to meet the requirements of 49 CFR 193 Subpart H for health, training or experience and/or any applicable National Grid procedures that supersede the above requirements. Contractors shall provide documentation on their qualified workers, as referenced in section 3.1 of this document.

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3. All Contractor personnel performing work in LNG plants must meet the requirements of the National Fire Protection Association (NFPA), part 59.

11.0 ELECTRIC GENERATION

In addition to the other requirements referenced in this document, this section covers requirements that are specific to Electric Generation.

11.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0
2. Hearing protection is required when working anywhere inside a generation plant and/or outside the plant where noise may be excessive. Acoustic barriers shall be maintained by the contractor as needed.
3. Safety shoes with a minimum height of six-inches are required in Generation plants.
4. Contractors working in generation plants are required to wear 8-Cal clothing protection. For additional guidance, a National Grid representative can provide reference to Electricity Distribution Operations Grid:home webpage under Electric Generation's Policies and Procedures EGO-028 *Personal Protective Clothing* & EGO-029 *Personal Protective Equipment*.

11.2 Training

1. Required training may include; PCB's, asbestos, mercury, confined space awareness and excavation competent person requirements. HAZCOM is required by contractors working in generation plants as applicable.
2. Contractors who work at a National Grid Generation Station shall attend an orientation regarding plant safety and as required, US Coast Guard Maritime Security (MARSEC) policies.
3. Equipment training is required per federal, state and local regulations and National Grid procedures. Operators of any powered industrial vehicle must be qualified and documentation shall be documented.

11.3 Equipment & Excavations

1. All excavations shall be performed in accordance with EGO-0005 *Procedure for Excavation in National Grid Generation Facilities* and National

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Grid Safety Procedure M-1301 *Standards for Working in Excavations*. For additional information, contact a National Grid representative for copies.

2. Gasoline and diesel powered fork trucks shall NOT be used inside the plant or other enclosed facility. Only propane/electric fork trucks are permitted except where additional hazards may exist.
3. All wood products necessary for the work must be made of flame retardant material.

11.4 Equipment Isolation

For isolation of hazardous energy sources while working in Generation plants, please contact a National Grid representative regarding EGO-0010, *Control of Hazardous Energy Sources-Work Permit System*.

12.0 CIVIL CONSTRUCTION

In addition to the other requirements referenced in this document, this section covers requirements that are specific to civil construction work.

12.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.
2. Rubber gloves shall be worn while carrying out work in and around energized or identified direct buried lines, live duct banks, transformer enclosures, manholes, switch gear and other electrical apparatus when performing civil investigations, installations or repairs.

12.2 Enclosed Space Assessment and Ventilation

Contact a National Grid representative regarding the National Grid EOP-UG006 *Underground Inspection and Maintenance* and National Grid Safety Procedure I-902 *Enclosed Space Procedure* for more information regarding enclosed space requirements.

1. Contractors are required to follow all procedures in this document in regards to enclosed spaces (manholes, sidewalk vaults, etc.), including assessment, ventilation, entry and rescue.
2. Each enclosed space shall be tested prior to removing manhole lids and entry. Atmospheric testing shall be continuous for the duration of the entry using a calibrated, industry approved atmospheric tester.

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3. When performing hot work or when indicated by atmospheric monitoring, engineering controls such as forced mechanical ventilation shall be used when working in National Grid manholes at all times.
7. All contractors who are qualified electrical workers will treat these spaces as “enclosed spaces” and follow non-entry rescue provisions.
8. In some situations a boom is allowed for retraction from an enclosed space. Refer to Safety Procedure I-902 for more information.
9. Steel cable or wire rope for non-entry rescue is prohibited.

12.3 Equipment Safety Inspection

All contractors shall comply with the applicable equipment safety inspection procedures referenced in Section 5.3

12.4 Excavation Requirements

All excavation work shall be performed under the control of a competent person. All soils in National Grid territories are to be considered class “C”, considered unstable and shall require all excavations be performed in accordance with OSHA 1926.651, EGO-0005 *Procedure for Excavation in National Grid Generation Facilities* and National Grid Safety Procedure M-1301, *Standards for Working in Excavations*. For more information, contact a National Grid representative for a copy.

Crews that are performing Excavations shall include an excavation log with their job brief that states the soil type, expected depth and length as well as final depth and length. All required steps need to prevent collapse will be documented on this form as well prior to entry.

Protective systems shall be used for certain manhole installations. These scenarios are covered below:

- The hazard assessment, competent person and/or National Grid supervisor deems it necessary
- If an excavation for a manhole in a roadway is completed and installation of manhole and backfill is not able to be done before the day is complete, a protective system will be required before road plating
- Installation of any manhole 3 way or greater in size/

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Where trench boxes are required to be built on site, the contractor shall submit a PE stamped plan and the location shall be designated on the excavation drawings.

All lifts (not limited to materials and equipment) shall be planned and rigged by a competent person. A lift plan shall be provided for all “critical lifts” and must be submitted by a qualified professional to the National Grid representative prior to the lift taking place.

12.5 Cable fault finding and replacements

For excavation work needed to support faulted cables and emergency cable locates, the use of Cable Avoidance Tooling (CAT) shall be used in addition to Dig Safe requirements as an added safeguard to further pin point unidentified buried cables.

For excavations within the tolerance zone, all hand digging in and around direct buried cables shall require basic PPE, non-metallic handled shovels, rubber gloves, FR clothing and EH rated work boots with Dielectric (DI) over shoes.

All excavation equipment shall be grounded in accordance with NG EOP G026. For additional information, contact a National Grid representative.

The use of GPR (Ground Penetrating Radar) shall also be required to verify the Dig Safe/811 locates after award of the project and prior to excavation. This shall include electric URD, UCD and Substation projects.

12.6 Technical Review

Where and when applicable, all trench and excavation work shall be reviewed and stamped by a civil PE in the state of record and will be executed under the supervision of a trenching and excavation competent person. All leading edges of trenches and excavations shall be appropriately demarcated, clearly posted and controlled to prevent unauthorized persons from entering and inadvertently falling into the excavation. All trenches and excavations shall be closed as soon as practical/possible. All excavations shall be fully controlled for the duration of the exposure by adequately substantial means to withstand the environment and conditions expected to be present.

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All pot holing/test holing and exploratory excavations shall utilize vacuum excavation whenever near known underground utilities or hazards, and when the potential for unknown hazards such as live electrical or gas conveyances exist. When using vacuum extraction in combination with air blowing/air knife tools, all persons in the immediate area shall be wearing safety glasses in addition to a full face shields.

13.0 CONSTRUCTION PROJECTS AT CONTAMINATED SITES

In addition to other requirements referenced in this document, all work on contaminated sites must be conducted per the requirements of 29 CFR 1910.120, including the worker qualification and training requirements of 1910.120(e).

14.0 AVIATION

1. Helicopter Crews of two or more shall perform a preflight documented job brief.
2. Helicopter work shall require the use of aviation helmets for both the pilot and passengers.
3. Helicopter pilots and passengers shall participate in the "Flying in the Wire and Obstruction Environment" training prior to flight.
4. Helicopter pilots shall meet the following minimum flight time experience:
 - a. 2000 hours as Pilot in Command or Second in command of a rotorcraft
 - b. 1000 hours in a turbine rotorcraft / helicopter
 - c. 100 hours in a helicopter of the make and model to be utilized at National Grid
 - d. 300 hours flight time in Wire Environments

For more information, contact a National Grid representative for a copy of EOP T012 *Helicopter Utilization & Notifications*.

15.0 TRANSPORTATION RISKS

Contractor shall define transportation related activities that can have potential process safety consequences. National Grid shall determine if additional risk assessment is needed and contractor shall participate in the assessment. Contractor shall modify their process to mitigate risk that is determined to be intolerable.

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APPENDIX A: NATIONAL GRID CONTRACTOR RISK MATRIX

National Grid Contractor Risk Matrix			
Category	Description of Work	Impact of Work	Examples to be included in this category (including, but not limited to)
<p>Medium / High Risk Exposure</p> <p>Tier I</p> <p><u>Inclusion in ISN Program is Required</u></p>	<p>Physical Work, activity, or service that is performed on National Grid property site or is performed off-site where Owner Client has responsibility and is liable for work performed.</p> <p>Includes, but is not limited to, any activity requiring confined space entry, elevated work, work on operating systems involving hazardous energy, work on contaminated sites, and most work requiring a general work permit, hot work permit, or confined space permit.</p>	<p>Work, activity, or service having:</p> <ul style="list-style-type: none"> • A potential for causing a catastrophic operational incident; • Access to operations; and/or • A direct role in site operations or maintenance, where failure could result in serious harm to employee or public well-being, company assets, or the environment <p>Also includes any Contractor personnel's job function which has no direct or very limited supervision for operational checks.</p>	<ul style="list-style-type: none"> • Maintenance, Construction and demolition contractors • Chemical cleaning, tank cleaning • Electricians and Instrumentation Technicians • Movers • Welding • Heavy equipment operations • Well drilling and testing • Environmental investigation, remediation, monitoring activities • Hazardous waste handling and/or transport • Excavation • Food service and handling • Equipment Inspection (e.g., X-ray & other NDT) • On-site sampling / gauging activities (not including escorted storm water sampling) • Common carriers transporting Owner Client-owned LNG or petroleum products • Landscaping services • Snow Removal • Janitorial services

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			<ul style="list-style-type: none"> • Vacuum truck affecting/involving process operations • Oil Spill Response Organizations (OSRO)
Low Risk Exposure Tier II <u>Inclusion in ISN Program is NOT Required</u>	Work that is office based such as: <ul style="list-style-type: none"> • Consultants that do not perform work or activities as described in the Medium/High Risk exposure category • Offsite services • On-site vendor pick-up/delivery and repair services • Work performed by public and private utilities • Personnel on-site with Visitor Status, when escorted 	Work, activity, or service having an indirect role and no, or limited, access to operations or maintenance where failure could result in serious harm to employee or public well-being, company assets, or the environment.	<ul style="list-style-type: none"> • Mail/package/part delivery or pick-up (e.g. UPS, Fed EX, vendor-specific) • Samples pick-up by laboratory/courier • Office machine servicing (copiers, printer, computer, etc.) • Laboratory apparatus servicing • Storm water Sampling Labs/Contractors (When Escorted by Owner Client personnel) • Deliver/supply services (vending machine, bottled water, laundry) • Municipal waste pick-up • General trash removal services • Off-site repair/fabrication shops (such as pump, safety valve, piping, vehicle) • Telephone, electric, local municipal utility services • Regulatory representatives • Technical representatives • Engineering services (when escorted by Owner) • Auditors
A SHE VP can require any contractor to be part of ISN when deemed as a potential risk to National Grid			

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FORWARD

National Grid's vision is to be a world-class safety organization, with zero injuries every day. A critical component of achieving this vision is the careful development, implementation and maintenance of safety procedures. This guidance document, COVID-19 Health and Safety Plan, describes pandemic response measures, taken by National Grid, to help prevent the spread of COVID-19.

Questions regarding this guidance should be referred to National Grid's Safety Department.

Record of Change

Revision	Date	Description
Initial	04/28/2020	Initial creation

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1.0 SCOPE OF HEALTH & SAFETY PLAN

National Grid has developed this Health & Safety Plan (HASP) to uniformly apply pandemic response measures to help prevent the spread of the COVID-19 virus. National Grid field personnel and crews have been provided this information and communications.

2.0 PROJECT PERSONNEL

2.1 Roles and Responsibilities

National Grid shall be responsible for the safety of all its employees and shall ensure COVID-19 pandemic measures are in place. Key National Grid personnel are as follows:

Incident Command Structure

The National Grid Incident Command Structure (ICS) has been activated within all Business Units of National Grid's US Operations to respond to the COVID-19 pandemic. Members of the ICS review and approve all operational decisions, with the Incident Commander ultimately responsible for these decisions. The Incident Commander relies upon subject matter experts within the ICS, including the Operations Officer, the Safety and Health Officer, to help set standards and guidance for protective measures to be used to limit the spread of the COVID-19 virus. These Officers, in turn, utilize the expertise of other members of the organization within Operations, Safety, and Health, to assess risks associated with the work being performed and provide guidance on the most effective measures to be used by employees to protect themselves, their coworkers, our customers, and members of the public.

Field Supervisor

The Field Supervisor shall have the responsibility for monitoring and enforcing National Grid COVID-19 pandemic measures and shall ensure that all employees have received and reviewed this Health & Safety plan.

- Serve as the appointed supervisor to oversee field personnel and ensure pandemic measures are being followed
- Ensure field personnel have the appropriate pandemic supplies
- Disseminate all new National Grid COVID-19 communications to all field employees
- Where non-compliance is observed, take prompt corrective action; and
- Have the authority to order a safety stop in the event of a serious safety issue.

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Crew Leader

The National Grid crew leader shall be in charge of the day-to-day details of the work to be performed. They shall ensure that work is performed in accordance with National Grid COVID-19 pandemic measures. They will:

- Walk the job site at the start of each day to ensure a safe work environment;
- Where non-compliance is observed, take prompt corrective action; and
- Have the authority to order a safety stop in the event of a serious safety issue.
- Perform the daily job safety briefing before commencing work, whenever a visitor arrives to the job site, and if there is a significant change in the work or when an extended break occurs. As part of the COVID-19 pandemic response, the COVID-19 job brief checklist (Appendix A) shall be used in addition to the applicable departmental job brief form.

Employees

National Grid employees are responsible for following all COVID-19 pandemic measures;

- Each employee is responsible for reporting to supervision any symptoms of COVID-19, of any direct contact with an individual confirmed to have COVID-19, or in contact with a person in quarantine.
- Each employee is obligated to call a safety stop when a hazardous condition is observed.
- All lone workers shall conduct a self-assessment utilizing the COVID-19 job brief checklist (Appendix A) and adhere to the guidance outlined in this plan.

National Grid Field Safety Representative

National Grid Field Safety Representatives conduct routine and random crew visits to National Grid job sites. The National Grid Field Safety Department shall act as a resource for National Grid field personnel to effectively implement this COVID-19 Health & Safety Plan and will be available on an as-needed basis for inquiries related to this HASP.

3.0 COVID-19 PANDEMIC RESPONSE MEASURES

3.1 COVID-19 Symptoms

COVID-19 Symptoms may include the following:

- Fever
- Cough

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- Shortness of Breath
- Chills
- Repeated shaking with chills
- Muscle Pain
- Headache
- Sore Throat
- New loss of taste or smell

3.2 Hygiene and Social Distancing

- Wash your hands often with soap and water for at least 20 seconds, especially after using the restroom, before eating, and after blowing your nose, coughing, or sneezing. Hand washing is the best way to prevent the spread of viruses.
- If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol. Always wash hands with soap and water if hands are visibly dirty.
- **Proper hand washing/sanitizing products will be provided to all employees**
- Maintain a minimum of 6' social distance from other employees on site while performing work and during routine breaks. When work tasks prevent this, ensure proper face coverings are continued to be worn and proper hygiene
- Avoid touching your eyes, nose, and mouth.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces using a disinfecting cleaning spray or wipe; if not available, use a soap and water solution.
- All cleaning product trash and potentially contaminated PPE will be stored in a trash bag and immediately disposed of at a National Grid facility at the end of each shift. Trash should not accumulate in any National Grid vehicle. Immediately wash hands upon disposing of trash bag.

3.3 COVID-19 PPE and Face Coverings

- Face coverings are a requirement for all National Grid employees. Face coverings must be worn by all employees:
 - When working in public places
 - When working in a customer's premises
 - When social distancing is not able to be maintained with a co-worker, customer or member of the public in a National Grid facility, barn/yard, work location or company vehicle.
- Non-Fire-Retardant/Arc Rated Face Covering– use when there is no potential for a gas ignition or electric arc flash. This can be National Grid supplied or a personal face covering. Fire Retardant Face Covering – must be used when there is potential for a gas ignition or electric arc flash.
- **Additional COVID-19 PPE guidance is provided in the attached Premise**

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Entry Guidelines

3.4 COVID-19 Virus Risk Assessment and Adopted Measures

National Grid's prescribed measures (work practices, PPE, hygiene) were selected based upon the risk assessments completed by subject matter experts and reported up through the ICS for approval. They are based upon the Centers for Disease Control & Prevention (CDC) and OSHA guidance, as well as input from Operations, Safety, and Health team members. They are believed to address all risks posed to our workforce, as well as to our customers and members of the public, when jobs are conducted in public places. These measures are reviewed on a continuous basis, for both effectiveness and to ensure the latest guidance is incorporated, with changes made, as necessary, after these reviews.

4.0 COVID-19 REPORTING PROCESS

4.1 COVID-19 Job Brief Checklist

In addition to the applicable departmental job brief form, all crew leaders shall utilize the COVID-19 job brief checklist to facilitate crew discussion regarding symptoms of COVID-19 and allow for discussion to help facilitate the reporting of a COVID-19 incident. All visitors to the job site will be required to have the job brief and COVID-19 checklist reviewed with them by the crew leader prior to entry on the job site.

Remember to maintain social distancing while conducting the job brief

4.2 COVID-19 Incident Reporting

To ensure the safety of all employees and the public, any employee shall immediately contact their Supervisor and National Grid Employee Services if one of the following conditions occur:

- Employee is exhibiting symptoms of COVID-19
- Employee has been in close contact of another individual with COVID-19
- Employee has been in close contact of another individual who is currently being quarantine for a suspected case of COVID-19

Close contact is defined as being within 6' of a sick/quarantined individual for more than 15 minutes.

Please refer to the COVID-19 Suspected/Confirmed Positive Process guidance document in Appendix A.

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Appendix A – National Grid COVID-19 Communications

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A Message from John Bruckner

National Grid US Coronavirus Incident Commander

Updated Guidance on Face Coverings

April 16, 2020



The state of New York and the state of Rhode Island recently issued executive orders requiring all essential employees who are working in public places to wear face coverings when distance from the public or co-workers cannot be maintained. As a result, we are updating our company policy to align safety standards for all employees.



We had previously communicated that wearing a face covering was voluntary based on CDC recommendations. We are now **requiring** National Grid employees to wear face coverings in the situations below. Please note that this applies to both **office** and **field-based** employees, and applies across **all jurisdictions**.

Face coverings must be worn:

- ✓ When working in public places
 - ✓ When working in a customer's premises
 - ✓ When social distancing is not able to be maintained with a co-worker, customer or member of the public in a National Grid facility, barn/yard, work location or company vehicle.
- This directive is effective at 8:00 pm this evening for all New York employees.
 - It is effective starting this Saturday for all Rhode Island and Massachusetts employees.
 - If you are working from home, our company guidance remains: If you can work from home, you should.

What qualifies as a face covering?

Employees may use either a company-issued or a personal face covering, depending on preference and availability. These include:

- Disposable masks, which need to be changed daily or if significantly dirty.
- Reusable FR Balaclavas, which need to be laundered daily, according to CDC cleaning guidance.
- Reusable FR neck warmers, which need to be laundered daily, according to CDC cleaning guidance.
 - Please note: Face pieces must be made from Flame Resistant (FR) material if they are worn when working in an energized zone or there is potential for a gas ignition.

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How to get a face covering:

Our procurement and warehouse teams are working directly with teams to ensure a steady supply of face coverings.

It is our intention to provide company-supplied face coverings widely, but in instances where one is not available or preferred, a personal covering may still be used.

Operations teams should work through their normal channels to order face coverings. We will be providing further guidance to office-based colleagues on where they can access face coverings.

CDC guidance on personal face coverings can be found here:

- <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html>
- <https://www.cdc.gov/coronavirus/2019-ncov/downloads/DIY-cloth-face-covering-instructions.pdf>

Face coverings should:

- Fit snugly but comfortably against the side of the face
- Be secured with ties or ear loops, if provided
- Include multiple layers of fabric
- Allow for breathing without restriction
- Be removed from behind head or ears to minimize hand contact with face
- Be laundered and machine dried if reusable

Cleaned, dried coverings can be kept in a clean plastic bag until needed for use

It is important to note that face coverings, whether company-issued or personal, are not a substitute for taking measures that are known to be effective in stopping the spread.

Handwashing, and maintaining a social distance of 6 feet apart from others remains the most critical guidance that we can follow.

Sincerely,

John Bruckner

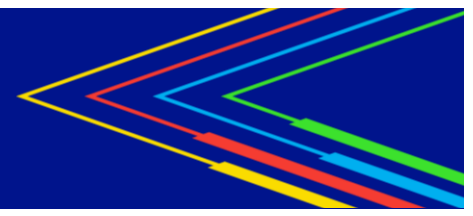
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COVID-19 Job Brief Checklist

Please Distribute

Revised 5/7/2020



During this trying time it is important that we maintain our same level of focus at work locations conducting hazard assessments and identifying risks prior to the start of each task. Prior to beginning work at every location, when conditions, job focus or crew members change, after each meal period and after any prolonged interruption to the work, a **Job Briefing** shall be held.

The work to be performed shall be discussed and assigned, and the safety aspects of the job shall be reviewed. The National Grid protocol to screen all individuals to determine who may have been exposed to COVID-19 outside of work **must be reviewed** at the start of the workday and Job Briefing.

(Employees working alone shall conduct a self-assessment to determine if they may have been exposed to COVID-19 outside of work or should their condition change during the workday)

The questions are:

- ☐ Are you feeling ill in any way? For instance, do you have any of the following symptoms: A fever? A cough? Shortness of breath? Chills? Repeated shaking with chills? Muscle pain? Headache? Sore throat? New loss of taste or smell?
- ☐ Have you had close contact with a symptomatic person (e.g., fever, cough, and/or shortness of breath, chills, repeated shaking with chills, muscle pain, headache, sore throat, new loss of taste or smell) within the last 14 days?
- ☐ Have you had close contact with a person who was tested with results pending or positive for coronavirus within the last 14 days?
- ☐ Have you recently been out of state for non-work related travel (within the last 14 days)?

Employees who answer “YES” to any of these questions must distance themselves from others, not enter the work area, and immediately contact their supervisor privately for further instruction.

The employee must also contact the National Grid Employee Services Hotline 1-888-483-2123.

Employees who answer “NO” to all of these questions proceed with work activities as planned.

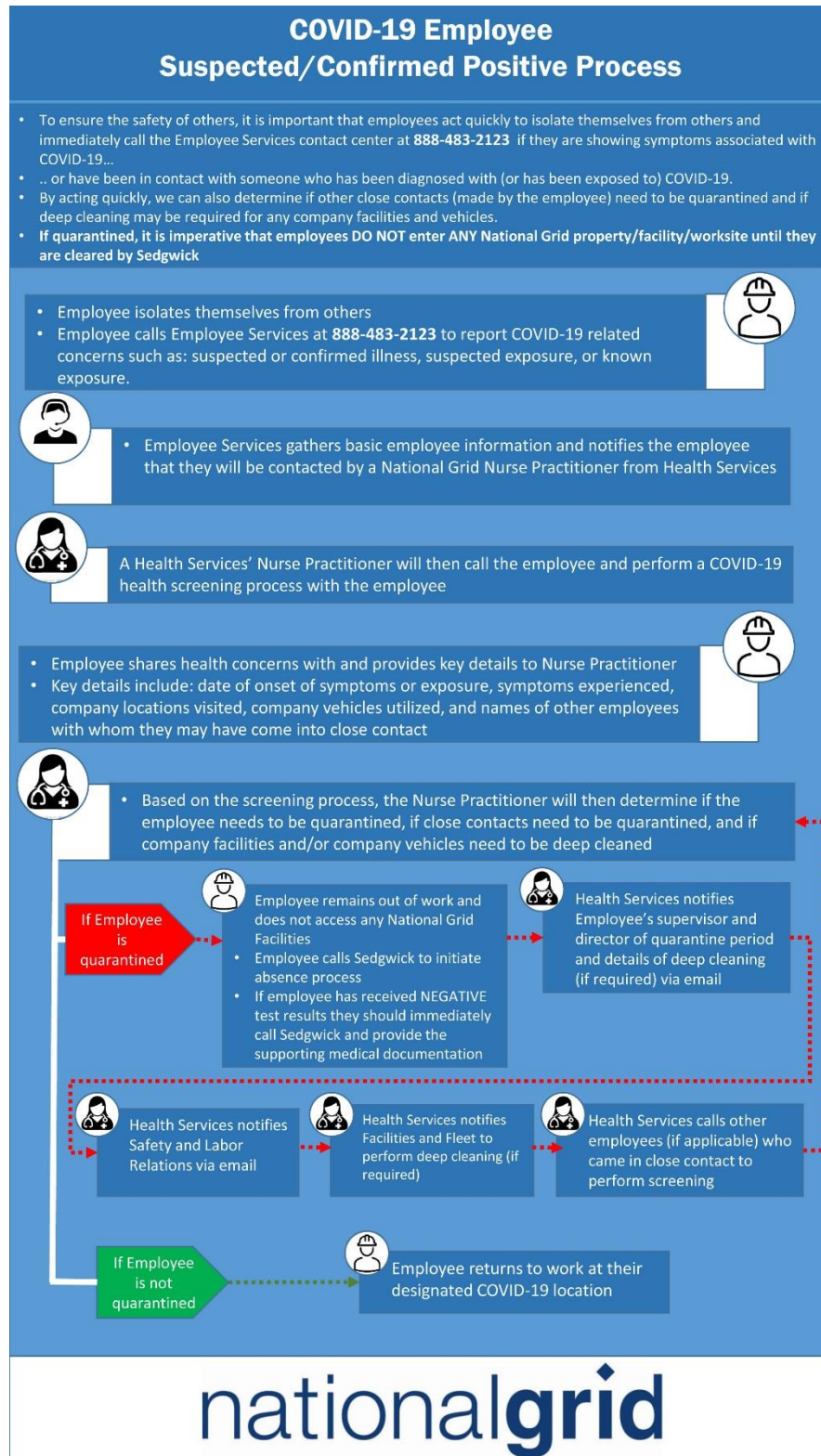
Please note on the Job Brief that you asked these COVID-19 Screening Questions.

To reduce multiple people handling the job brief during the COVID-19 pandemic crew leaders should handle all documentation and record who is present on site after they have reviewed the job brief with each employee or visitor.

REMINDER - Please be sure to follow CDC recommendations

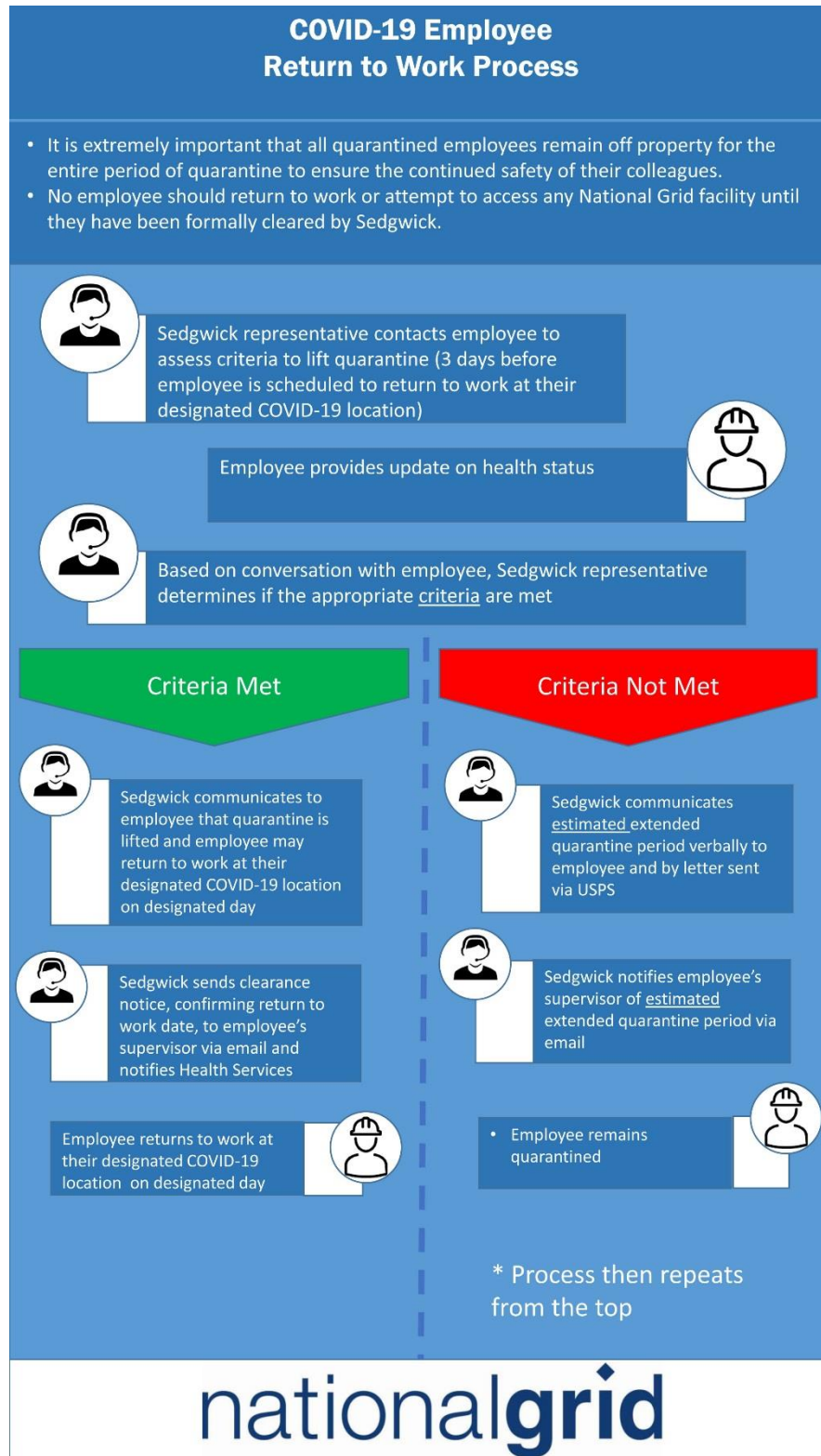
- Maintain a minimum 6' social distance from other people
- Employees must wear a face covering: when working in public places, when working in a customers premise, or when social distancing is not able to be maintained with a co-worker, customer, or member of the public in a National Grid facility, barn/yard, work location, or company vehicle.
- Avoid touching your eyes, nose, and mouth.
- Clean and disinfect frequently touched objects and surfaces using either a EPA registered disinfectant (Lysol, Clorox, etc.), soap and water, or a bleach and water mixture (1/3rd cup bleach per gallon of water)
- Use the fold of your arm to cover a sneeze or cough
- Wash your hands often with soap and water for at least 20 seconds, especially after going to the bathroom; before eating; and after blowing your nose, coughing, or sneezing.
 - If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol. Always wash hands with soap and water if hands are visibly dirty.

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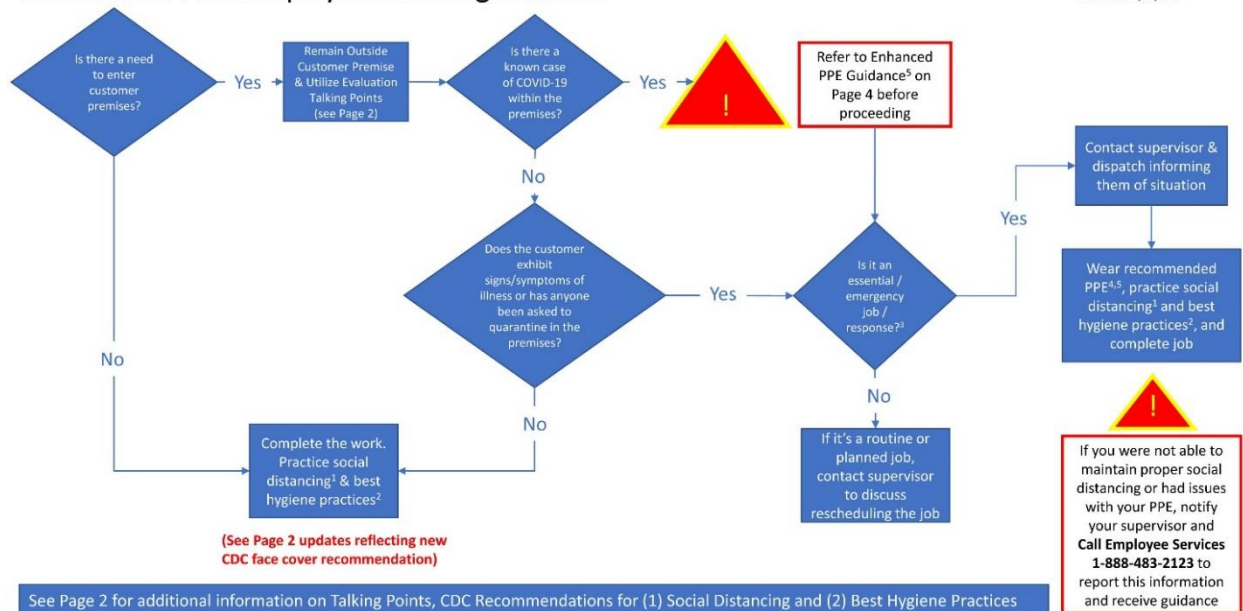


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Guidance for Field Employees Entering Premises

Issued 4/7/20



1

Issued 4/8/20

Talking Points - Engage Customer

Prior to entry, engage the customer and advise of social distancing practices. Here are some questions and statements.

- Does someone within the premises have a known case of COVID-19? Has someone within the premises tested positive for the COVID-19 virus? (IF ANSWER IS 'YES' TO EITHER OF THE ABOVE QUESTIONS, REFER TO ENHANCED PPE GUIDANCE ON PAGE 4)
- Do you mind if I follow the social distancing practice today?
- Is anyone currently sick inside the premises?
- If you are feeling sick, would you mind remaining in another room while I am working This is a best practice policy my company is recommending. Can you tell me where your equipment is located?
- I will do my job, keep you updated and tell you when I am done

(1) Social Distancing

- Maintain at least 6 feet distance between yourself and the customer at all times
- Where social distancing measures cannot be maintained, face cover can be worn to help limit the spread of the virus (see National Grid's Face Cover Guidance for details)

(2) Best Hygiene Practices

- Face covering can be worn in public settings where social distancing measures cannot be maintained (see National Grid's Face Cover Guidance for details)
- Use alcohol-based hand sanitizer (at least 60% alcohol), before and after each home visit; OR wash hands using soap and water for 20 seconds

2

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Issued 4/8/20

(3) Emergency Work at a Premises

On arrival, assess the premise/situation in its entirety and consider these questions.

- Is it a multi-unit building?
 - Is the unit where work is required affected?
- What work can be done without interaction/entry?
- Is entry through a side or back door possible to limit exposure?
- Can make safe actions be taken without interaction/entry?
 - Securing Outside Meter/Curb Valve
- Would a hardship be caused by isolating the service?

Note: These questions and considerations are meant to help guide in the decision making process. There may be instances where access to a premise cannot be avoided in order to address immediate public safety concerns. Please reference the Social Distancing and applicable PPE Guidance in all situations.

(4) Standard PPE Guidance for Entering a Premises (No Known COVID-19 cases are present)

- Avoid touching ANYTHING in customer premises other than company equipment and customer equipment related to the job
- Wear disposable latex or nitrile gloves to prevent touching contaminated surfaces
- Latex or nitrile gloves should be donned before entering the home
 - If work gloves are needed to perform the task, remove disposable latex or nitrile gloves and dispose of them. Don work gloves and perform task. Once task is complete remove work gloves and store them. Don a new pair of disposable latex or nitrile gloves to exit the home.
- Remove latex or nitrile gloves and dispose in way that won't create other opportunities for exposure
- Immediately wash / sanitize hands after removing latex or nitrile gloves
- All other PPE normally required for the work being performed should be used

3

Issued 4/8/20

(5) Enhanced PPE Guidance for Entering a Premise (Where a Known COVID-19 Case is Present)

The most effective way to protect the employees from contracting the virus is physical distance; if at all possible, the customer diagnosed with COVID-19 should be asked to move to a separate room before premises entry. When available and practicable, the following PPE items may be used at the premises with a known COVID-19 case present. These PPE items can be used in combination with our Social Distancing and Best Hygiene Practices to limit the spread of the virus.

- N-95 / KN-95 mask (see Page 5 for pictures of typical N-95 / KN-95 masks available)
- Reusable Face Shield
- Disposable Surgical Gloves (nitrile or latex)
- All other PPE required for doing the work (i.e. safety glasses, hard hat, etc.)
- If desired, FR-rated balaclava may be worn to provide additional protection while working

The following steps should be taken while conducting work in the premises:

- Prepare a paper or plastic bag for disposal of used PPE prior to entering the premises.
- Avoid touching ANYTHING in customer premises other than company equipment and customer equipment related to the job.
- Wear disposable latex or nitrile gloves to prevent touching contaminated surfaces.
- Any PPE should be donned before entering the home.
- If a mask is in use, avoid touching your face or adjusting the mask.
- If work gloves are needed to perform the task, remove disposable latex or nitrile gloves and dispose of them. Don work gloves and perform task. Once task is complete remove work gloves and store them. Don a new pair of disposable latex or nitrile gloves to exit the home.

Once work is completed in the home, follow these steps to safely remove the PPE items

- Remove face shield, taking care to avoid touching your face. Clean / disinfect and store properly.
- Remove mask from the back of the head first, taking care to avoid touching your face. Place used mask in a bag and dispose in normal trash.
- If balaclava has been worn, remove covering from back of head, similar to removal of mask.
- Remove latex or nitrile gloves (turn inside out while removing) and place in a bag. Dispose of bag in normal trash.
- Immediately wash / sanitize hands after removing latex or nitrile gloves, following Best Hygiene Practices.

4

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Typical N-95 / KN-95 masks



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Now, more than ever, with COVID-19, precautions to safeguard your vehicle when transferring the vehicle to another employee, or when taking your vehicle in for maintenance, is very important.

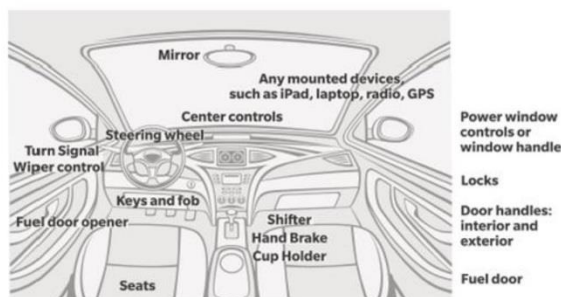
Here are some high-touch areas that should **never** be missed:

<ul style="list-style-type: none"> • Mirror • Center controls • Keys and fob • Wiper control • Climate control • Audio controls • Hand brake • Seats (driver/passenger)/Seatbelts • Fuel door opener • Windows • Headrests • Armrests 	<ul style="list-style-type: none"> • All mounted devices (<i>any and all electronic devices used - i.e. iPad, laptop, radio, GPS, phone chargers</i>) • Steering wheel • Headlight • All cabin lighting controls • Shifter • Cup holder • Door handle(<i>inside and out</i>)/Window control/locks • Air vent • Sun visors
---	--

Use disinfectant wipes, diluted bleach solution, or damp soapy water wipes when cleaning all hard surfaces throughout the vehicle.

To guide your efforts when cleaning the vehicle, think about where droplets would fall when you sneeze or cough (*for example: do you turn your head to the side?*) and remember to think about your own personal safety:

- Be sure to wash your hands for **20 seconds** after completing the cleaning process.
- If you take your vehicle home at night, be sure to lock it to prevent it from being compromised.
- Make sure you have a mask and gloves (when/where appropriate).



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Before you leave or enter the vehicle – here's a checklist to keep you safe and your team members safe as well:

Activity to Safeguard	
Keys / Fob	<input checked="" type="checkbox"/>
Door Handles (interior/exterior)	<input type="checkbox"/>
Steering Wheel, Shift Lever, Brake Lever, Wiper Stalk, Turn Signal Stalk	<input type="checkbox"/>
Air Vents, Console, Dashboard, Cup Holder	<input type="checkbox"/>
Exterior and Interior Fueling Latch, Cover, Cap	<input type="checkbox"/>
Seats, Seatbelts, Headrests	<input type="checkbox"/>
Mirrors, Windows, Window Controls	<input type="checkbox"/>
Interior Lights	<input type="checkbox"/>
Sun Visors	<input type="checkbox"/>
Passenger and Driver Door Armrests, Grab Handles, Seat Adjusters	<input type="checkbox"/>
All Electronic Devices used while in vehicle (iPads, Navigation Systems, Phone Chargers, Laptops, etc.)	<input type="checkbox"/>

Additional considerations for crew trucks:

Handles on bin doors	<input type="checkbox"/>
Equipment controls (bucket / digger)	<input type="checkbox"/>

** Please consider any other touch point identified by a crew member but not listed*

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March 18, 2020

Dear Business Partner,

National Grid US continues to be acutely aware of the ongoing Coronavirus situation. We have received many inquiries from -our suppliers regarding -our response to Coronavirus (COVID-19).

As the World Health Organization has declared COVID-19 a pandemic, National Grid has begun to implement its business continuity plans, and as conditions evolve, we are taking actions to mitigate exposure and reduce the impact of the coronavirus to our customers, communities, and employees.

We have a comprehensive US pandemic strategy plan in place to ensure business continuity. Our Pandemic Plan contains specific actions and activities for different stages of the event. Examples can include such measures as facility cleaning, PPE requirements, distancing policies, work from home directives, visitor policies, exposure tracking, and return to work protocols.

As we have a commitment to our customers for safe and reliable delivery of gas and electricity, we also have a commitment of providing a safe working environment to our employees. As your organization has been identified as one which provides key services as part of our operations, we would ask that you do the same and work with us in helping to limit the spread of the virus. Most importantly, please be sure that your employees stay home if sick.

In the event that one of your employees has a potential of, or an actual case of COVID-19 and has had close contact with our employees, it is imperative that your Field Supervisor reports the incident to National Grid immediately, so we are able to assess associated risks and provide direction to all parties affected. All cases should be called into our Employee Services department at (888) 483-2123 which is staffed Monday – Friday 7:00 AM – 5:00 PM.

As a reference, we've also provided guidance to our employees to avoid being exposed to the virus as guided by the CDC which we'd encourage your organization to leverage as appropriate:

- Stay home when you are sick
 - Employees who have symptoms of respiratory illness should stay home until they are free of fever ($<100.4^{\circ}$ F using an oral thermometer) or other symptoms for at least 24 hours, without use of fever/symptom reducing medicines (e.g. cough suppressants).
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Practice social distancing (keeping 6 feet from others) and avoid large groups and gatherings.
- Avoid close contact with people who are sick.
- When greeting people, do not engage in handshaking or any other physical contact.
- Avoid touching your eyes, nose, and mouth.
- Clean and disinfect frequently touched objects and surfaces using a regular household cleaning spray or wipe.
- Wash your hands often with soap and water for at least 20 seconds, especially after going to the bathroom; before eating; and after blowing your nose, coughing, or sneezing.
 - If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol. Always wash hands with soap and water if hands are visibly dirty.
- Follow CDC's recommendations for using a face mask.

- To prevent spread of the disease, face masks should be used by people with symptoms of COVID-19, healthcare workers, and those caring for someone in close setting.
- CDC does NOT recommend that healthy people wear a face mask to protect themselves.

We are also asking contractor employees who interact with customers in their homes to consider the following:

- Ask before you enter - Employees should ask if anyone in the house is feeling sick, is on quarantine, or if there is any chance that a customer may have been exposed to an individual with the coronavirus.
- Keep your distance - The best way to prevent illness is to avoid being exposed to this virus. The CDC advises the public to avoid close contact with people who are sick.
- Ill or quarantined customers should be asked to isolate themselves in a different room with the door closed while our employee is there.
- If they must open the front door, they must step back and maintain a minimum distance of 6 feet from our employee before moving to a separate room.
- If the customer has a respirator mask, they should be asked to use it.
- If you feel it would be unsafe to enter the home, we ask that you contact your supervisor to report the incident and to await further guidance.

We all have an obligation to protect each other and to not put any individual in a position where they become exposed or a conduit for the virus. Thank you for reviewing this communication and taking this requirement seriously.

Please provide a confirmation of receipt of this request, and that you have communicated this to your teams by COB, March 20th, 2020 to SupplyChainFAQ@nationalgrid.com.

Sincerely,

Simon Harnett
Vice President, U.S. Procurement
National Grid

Attachment **I**

Project Emergency Response Plan



Attachment I: Project Emergency Response Plan

Please complete the Project Emergency Response Plan, which can be found at the following location:

- https://myecosystem.aecom.com/ppf/forms/Forms/S3NA_010_FM2_A%20Short%20Visit%20ERP.dotm

Attachment J

Project Hazardous Materials Communication Plan



Attachment J: Project Hazardous Materials Communication Plan

Materials to be brought or encountered onsite will have a Safety Data Sheet (SDS) maintained in an accessible location for workers to review. Applicable SDSs are presented in **Attachment G**. Materials to be brought or encountered onsite will include:

- TBA
- TBA
- TBA

As part of the Site Safety Officer (SSO) daily activities, an inventory of hazardous materials will be prepared with the quantities expected to be on site. The inventory will be updated if any additional materials are brought on site and as frequently as necessary to reflect accurate quantities. This chemical inventory list will be readily available for review (usually kept with the SDSs).

Unless each container has appropriate labeling, all chemical containers will be labeled with the following information:

- Product name and identity of the hazardous chemical(s).
- Appropriate hazard warnings.
- Name and address of the chemical manufacturer, importer, or other responsible party.

Labels on incoming containers of hazardous materials will not be removed or defaced. Labels are also required when a hazardous substance is transferred from a primary container to a secondary container. Labels on secondary containers must indicate the product name or the names of the hazardous substances contained therein as well as related physical and health hazards and their associated target organs. Labels may incorporate words, pictures, symbols, or combinations thereof to ensure the appropriate information is provided to the end user.

Examples of acceptable labeling systems include the National Fire Protection Association Diamond, the Hazardous Materials Identification System, the Chemical Hazard Identification and Training system, or similar.

Employee requirements for reviewing SDSs for specific safety and health protection procedures are presented below.

- AHAs will incorporate information contained in the SDSs.
- SDS information will be followed in the use and disposal of material and selection of hazard control and emergency response measures.
- The SSO will obtain an SDS for each chemical before it is used. SDSs will generally be received by the person ordering the product. SDSs for products frequently used should be kept on file because additional copies may not be included in repeat shipments.
- The SSO will review each SDS when it is received to evaluate whether the information is complete and to determine whether existing protective measures are adequate.
- The SSO will maintain a collection of all applicable and relevant SDSs in an area that is accessible to all employees at all times. An electronic database is an acceptable method of maintaining the SDSs.
- The SSO will replace SDSs when updated sheets are received and will communicate any significant changes to those who work with the chemical.
- SDSs are required for all hazardous materials brought on site by project personnel.

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica



General household products to be used for their specific purpose, food, drugs, and cosmetics brought into the workplace for employee use and consumption are all exempt, as are supplies in the first-aid kit, such as isopropyl alcohol and antibacterial wipes.

Employees bringing hazardous materials on to a site or project must submit SDSs to the SSO. The SSO may restrict the use of certain hazardous materials on a site or project due to occupational health risk, hazardous physical properties of the material, or potential employee sensitivity to odor or irritating properties of the material.

Other personnel working in the same area shall be provided with the following information on chemicals used by or provided to AECOM personnel:

- Names of hazardous chemicals to which they may be exposed while on the jobsite.
- Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures, such as ventilation or isolation of the work. In some cases, as an administrative control measure, a task may be delayed to a time when a minimal number of employees are present in the area.
- Location of SDSs.

As discussed in Section 5.1 of the HASP, employees will be trained initially and periodically when use of hazardous or toxic agents is altered or modified to accommodate changing on-site work procedures. Training shall cover the following topics:

- Requirements and use of the hazard communications program on the project.
- The location of all hazardous or toxic agents at the project.
- Identification and recognition of hazardous or toxic agents on the project.
- Physical and health hazards of the hazardous or toxic agents pertinent to project activities.
- Protective measures employees can implement when working with project-specific hazardous or toxic agents.

Provide training to all employees who have the potential to be exposed to hazardous materials: a) at the time of the initial task assignment, b) whenever new chemicals are introduced into the workplace, and c) more frequently where required by site-specific conditions or client-specific requirements. This training will include the following:

- Applicable regulatory requirements.
- Location of the program, inventory, and SDS.
- Site-specific chemicals used and their hazards (chemical, physical, and health), including the general characteristics of the chemicals and signs and symptoms of exposure.
- How to detect the presence or release of chemicals including the location, types, and usage of any portable and fixed monitoring or detection equipment and their associated alarms, where applicable.
- Safe work practices ([S3AM-001-PR1](#)) and methods employees can take to protect themselves from chemical hazards (metals or explosives constituents in soil).
- How to read an SDS.
- Site- or project-specific information on hazard warnings and labels in use at the location, if applicable.
- Site-specific evacuation and rescue procedures in the event of chemical release, including the location of staging areas and personnel accounting procedures.

The following documentation will be maintained in the project file:

- Chemical inventory list;
- SDSs; and
- Training records.

Universal Health & Safety Plan

For use on all high-risk, industrial and HAZWOPER projects

National Grid Jamaica



Attachment **K**

AECOM SH&E Policy



Attachment K: AECOM SH&E Policy

Safety, Health & Environment

Purpose

This policy establishes the framework to safeguard AECOM's employees and stakeholders through effective management of risk and commitment to a Culture of Caring.

Commitment

In recognition of the right to a safe and healthy working environment, AECOM is committed to maintaining the physical, psychological, and social well-being, of our employees, stakeholders, and global communities through appropriate risk management strategies.

To advance our Safety, Health & Environment (SH&E) program, we are committed to:

- Our goal of Zero work-related injuries to AECOM employees and stakeholders, incident prevention and protection of the environment while executing our work.
- Providing a highly effective SH&E management system based on our Life-Preserving Principles that empowers employees and drives continuous review and improvement opportunities.
- Effectively managing critical SH&E risk throughout the project lifecycle, through identification and development of suitable actions using the hierarchy of controls.
- Appropriately meeting client requirements and properly incorporating all applicable SH&E legal requirements and local, state, provincial and national regulations.
- Fostering an exceptional safety culture based on communication, collaboration, and consultation, where our people and stakeholders embrace ownership for the well-being of themselves and others.
- Advancing our goals of pollution prevention, resource conservation and environmental sustainability as set out in the Sustainable Legacies strategy.
- Setting aggressive SH&E performance goals and Core Value Metrics; working with employees and business partners to meet targets and promote continuous improvement opportunities.
- Establishing AECOM as the global provider of choice through safe execution of professional services throughout the project lifecycle.

Participation

Individual ownership of our Safety for Life program is required through participation of all parties in our Culture of Caring.

To that end, we expect our leaders, managers, supervisors, employees, and subcontractors to:

- Commit to the well-being of themselves and of all other stakeholders both on and off the job.
- Demonstrate this commitment through compliance with applicable rules and properly identifying, managing and eliminating hazards and reducing risk in the workplace.
- Engage in planning and training to enable competency and the proper and appropriately maintained equipment, materials, and personal protective equipment required to work safely and respond as necessary to emergencies.
- Take action to stop work if the work cannot be executed safely or if conditions or behaviors on the work activity are unsafe or unhealthy.
- Immediately report SH&E incidents, near-misses, unsafe conditions, and at-risk behaviors; participate in investigations and review findings with appropriate stakeholders to enable implementation of corrective and preventative actions.

Accountability

We expect continuous improvement in our journey toward a "zero" incident culture, where everyone participates and is committed to SH&E excellence.

To that end our leaders, managers, supervisors, employees, and subcontractors will be held accountable to their commitment and participation through:

- Recognition and reward of those who positively contribute to excellent SH&E performance.
- Inspections, investigations and reporting to assess SH&E management system application; elevation of high potential findings to senior and executive leadership to enable appropriate action.
- Appropriate action such as coaching or disciplinary measures when expectations are not met.

Review and Communication

This Policy and associated SH&E management system will be reviewed annually and will be made available to all persons under the control of the company.

A handwritten signature in blue ink, appearing to read "Troy Rudd".

Troy Rudd
Chief Executive Officer

September 3, 2021

Date

Attachment **L**

Competent Person Designation



Attachment L: Competent Person Designation

Activity / Area of Competency	Name of Person (Affiliation) Note: Subcontractor may provide this person
<input type="checkbox"/> Asbestos	
<input type="checkbox"/> Assured Equipment Grounding Conductor	
<input type="checkbox"/> Blasting & Explosives	
<input type="checkbox"/> Concrete & Masonry Construction	
<input type="checkbox"/> Confined Spaces	
<input type="checkbox"/> Control of Hazardous Energy (Lockout-Tagout)	
<input type="checkbox"/> Crane Assembly / Disassembly	
<input type="checkbox"/> Cranes & Derricks	
<input type="checkbox"/> Demolition	
<input type="checkbox"/> Electrical Wiring Design & Protections	
<input type="checkbox"/> Elevated Work Platforms & Aerial Lifts	
<input type="checkbox"/> Fall Protection	
<input type="checkbox"/> Hearing Protection	
<input type="checkbox"/> Heavy Equipment	
<input type="checkbox"/> Ionizing Radiation	
<input type="checkbox"/> Lead	
<input type="checkbox"/> Material Hoists & Personnel Hoists	
<input type="checkbox"/> Respiratory Protection	
<input type="checkbox"/> Rigging Equipment	
<input type="checkbox"/> Scaffolds	
<input type="checkbox"/> Stairways & Ladders	
<input type="checkbox"/> Steel Erection	
<input type="checkbox"/> Trench & Excavations	
<input type="checkbox"/> Underground Construction	
<input type="checkbox"/> Welding & Cutting	



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

APPENDIX E – COMMUNITY AIR MONITORING PLAN



Environment

Prepared for:
National Grid
Brooklyn, New York

Submitted by:
AECOM
New York, New York
60144468
September 2022

Community Air Monitoring Plan

(Appendix E of the Interim Site Management Plan)

Former Jamaica Gas Light Company Manufactured Gas Plant Site
Jamaica, Queens, New York
NYSDEC Site No.: 241063
Order on Consent Index #: A2-0552-0606



Environment

Prepared for:
National Grid
Brooklyn, New York

Submitted by:
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New York, New York
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September 2022

Community Air Monitoring Plan

Former Jamaica Gas Light Company Manufactured Gas Plant Site
Jamaica, Queens, New York
NYSDEC Site No.: 241063
Order on Consent Index #:A2-0552-0606

Prepared by: Tina Liu [2018]

Revised by: Francine Phillips

Reviewed by: Robert Forstner

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1.0 Introduction

The Former Jamaica Gas Light Company MGP Site ("Site") is located in Jamaica, Queens County, New York. The Site is comprised of a single parcels located between 158th and former 159th Streets, South of Beaver Road.

This Community Air Monitoring Plan (CAMP) has been prepared by AECOM on behalf of National Grid to present the methods and procedures that will be used to evaluate air quality in the immediate vicinity of investigation activities and provide protection to potential off-site receptors.

The Site is comprised of a single, vacant parcel located between 158th and former 159th Streets, south of Beaver Road. A plant located at the Site manufactured gas from coal and oil from at least 1886 to the early 1900s. Based on Sanborn maps, the Site was operated by the Jamaica Gas Light Company from sometime prior to 1897 to sometime before 1911 and by the Brooklyn Union Gas Company (BUG), a predecessor company to National Grid, from sometime prior to 1911 until the early 1970s. BUG apparently used the Site for the storage of gas from the early 1900's until approximately 1938, after which the gas storage facilities were decommissioned and demolished. The property was subsequently used as offices by BUG until the early 1970s, when the Site appears as vacant property on Sanborn maps. Other than the presence of roll off containers and trash compactors currently stored on the Site, no other uses of the property were identified.

The current property owners are listed below.

Table 1-1 Property Owners and Addresses

Parcel	Owner	Parcel Address	Land Use
Block 10099 Lot 1	The Dormitory Authority of the State of New York	158-18 Beaver Road, Queens, NY 11433	Public Facilities and Institutions Vacant. Storage of garbage and roll off containers.

*Information according to the Jamaica Gas Light Company Former MGP Site, Site Number 241063, Records Search, GEI Consultants, April 6, 2007.

The objectives of this CAMP are to:

- Ensure that the airborne concentrations of constituents of concern (COC) are minimized to protect human health and the environment
- Provide an early warning system so that potential emissions can be controlled on Site at the source
- Measure and document the concentrations of airborne COC to confirm compliance with regulatory limits

The community air monitoring will be performed around the Site perimeter, and will measure the concentrations of organic vapors and dust during all ground-intrusive activities (excavation, utility work test pitting, soil boring, and well installation).

This CAMP is Attachment F of the ISMP and is directed primarily toward protection of on-site workers within the designated work zones.

2.0 Constituents of Concern and Action Levels

The constituents of concern are volatile and semi-volatile organic compounds (VOCs and SVOCs). The primary VOCs of concern are benzene, ethylbenzene, toluene, and xylene (BTEX compounds). VOCs are more volatile than SVOCs and are generally of greater concern when monitoring the air quality during MGP Site investigations.

Airborne dust is also a concern and must be monitored and controlled due to its ability to co-transport adsorbed constituents and because of its nuisance properties.

Odors, though not necessarily indicative of high constituent concentrations, could create a nuisance (especially when working within or in close proximity to existing buildings and building entrances) and will be monitored and controlled to the extent practicable.

State and federal regulatory agencies have provided action levels for many of these constituents. The action levels are the allowable airborne concentrations above which respiratory protection or other health and safety controls are required. For work at the former MGP Site, the following levels should not be exceeded for more than 15 consecutive minutes at the downwind perimeter of the Site:

- Benzene 1 part per million (ppm)
- Total VOCs 5 ppm
- Dust 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)

The action levels cited here are above (in addition to) the background ambient (upwind) concentration.

3.0 Air Monitoring Equipment and Methods

Air quality monitoring will be performed for total VOCs, benzene, and dust as outlined below.

Three monitoring locations will be used for air quality monitoring. Two perimeter locations will be established each day and an air monitoring technician will check the instrumentation at each of these locations frequently during the work. Typically there will be monitoring locations at one upwind Site perimeter location and one downwind perimeter location. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The third monitoring location will be within the work zone. Field personnel will be prepared to monitor multiple locations in the event that there is little wind or if the wind direction changes frequently.

The monitoring instruments will be calibrated at the start of each workday, and again during the day if the performance of an instrument is in question. CAMP monitoring logs must be submitted to the New York State Department of Environmental Conservation (NYSDEC) on a weekly basis, at a minimum, and NYSDEC and New York State Department of Health (NYSDOH) must be notified immediately (within 24 hours) of any CAMP action level exceedances and corrective measures taken.

3.1 Volatile Organic Compounds and Benzene Monitoring

3.1.1 Ambient Air Monitoring

VOC monitoring will be performed continuously using three field photoionization detectors (PIDs) (RAE Systems MiniRAE or equivalent). The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. The PIDs will be equipped with an audible alarm to indicate exceedance of the action level.

A 15-minute running average concentrations will be calculated, which can then be compared to the action levels. If real-time measurements of total VOCs indicate that the action level is exceeded, the benzene concentration will also be determined at that location using benzene-specific colorimetric tubes. The data will be downloaded at the end of each day, and monitoring records will be kept at the Site during the work in case there is an inquiry or complaint.

PID measurements will be made at one upwind and one downwind location around the work area. The locations of the instruments may be changed during the day to adapt to changing wind directions.

3.2 Particulate (Dust) Monitoring

Particulate (dust) monitoring will be performed during intrusive activity (drilling) at the Site. Two particulate monitors (TSI DustTrak or equivalent) will be used for continuous real-time dust monitoring with data logging. The monitoring instruments will be checked by a technician every 15 minutes, and the real-time measurements recorded. A 15-minute average concentration will be determined. The data will be downloaded at the end of each day, and monitoring records will be kept at the Site during the work in case there is an inquiry or complaint.

Measurements will be made at one upwind and one downwind location around the work area. The locations of the instruments may be changed during the day to adapt to changing wind directions. In

addition, fugitive dust migration will be visually assessed during all Site activities, and the observations recorded.

3.3 Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 part-per-million, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 micrograms per cubic meter, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 micrograms per cubic meter or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

3.4 Special Requirements for Indoor Work with Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under “Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures” except that in this instance “nearby/occupied structures” would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

4.0 Emission Control Plan

4.1 Ambient Air

Odor, vapor, and dust control will be required for this project due to the close proximity of commercial buildings and public roadways and sidewalks. Table 1 provides a response chart for the monitoring and control of vapor emissions. Table 2 provides a list of emergency contacts.

- If the ambient air concentration of total VOC levels at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm (or the benzene level exceeds 1 ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor levels readily decreases (per instantaneous readings) below 5 ppm (and the benzene level drops below 1 ppm) over background, work activities can resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm (or the benzene level persists over 1 ppm) over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions until the concentrations drop below the action levels, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

Site perimeter particulate concentrations will also be monitored continuously. In addition, dust migration will be visually assessed during all work activities.

- If the downwind particulate level is $100 \mu\text{g}/\text{m}^3$ greater than the background (upwind perimeter) level for a 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind particulate levels do not exceed $150 \mu\text{g}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind particulate levels are greater than $150 \mu\text{g}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind particulate concentration to within $150 \mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

Typical emission control measures may include:

- Apply water for dust suppression;
- Relocate operations, if applicable; and
- Reassess the existing control measures.

Figure 4-1 Vapor Emission Response Chart

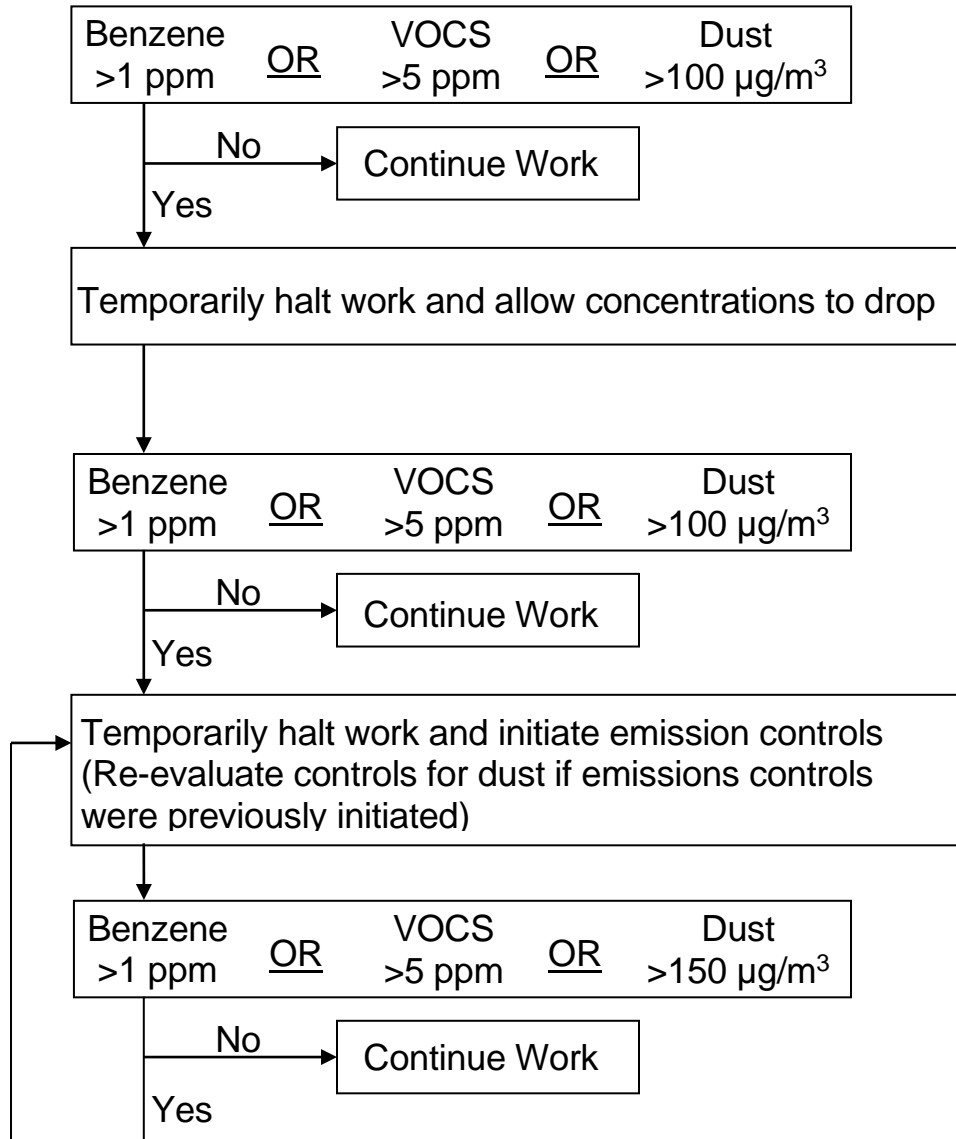


Table 4-1 Emergency Contacts and Telephone Numbers

Fire:	911
Police:	911
Ambulance:	911
AECOM Environment Contacts	Robert Forstner (917) 597-3866 cell
National Grid Contacts	Donald Campbell (718) 963-5453

5.0 Odor Control Procedures

This section outlines the procedures to be used to control odors that may be generated during ground intrusive activities. The intrusive activities at the Site may generate odors: excavation, test pitting, drilling, utility work, and subsurface soil borings/monitoring well installations. The remainder of this section is intended to provide Site managers, representatives of NYSDEC and NYSDOH, and the public with information summarizing typical odor control options, and to provide some guidance for their implementation. A description of potential sources of odors and methods to be used for odor control is presented in the following sections.

5.1 Potential Sources of Odors

Generally, the residuals encountered at former MGP Sites are well defined. They are related to residual coal tar-like materials and petroleum, and principally contain VOCs, polynuclear aromatic hydrocarbons (PAHs), and a number of inorganic constituents, including metal-complexed cyanide compounds, and metals. Constituents indicative of MGP-related residuals or petroleum products can produce odor emissions during investigation activities when they are unearthed in soil borings/well installations. When this occurs, VOCs and light-end SVOCs can volatilize into the ambient air. Some MGP-related residuals can cause distinctive odors that are similar to mothballs, roofing tar, or asphalt driveway sealer. However, the constituent concentrations generally associated with these odors are typically significantly less than levels that might pose a potential health risk. It is important to note that the CAMP will provide for continual monitoring of VOCs and dust during the fieldwork to monitor for any potential release of constituents which may pose a threat to health.

5.2 Odor Monitoring

The field investigation personnel will record observations of odors generated during the implementation of the subsurface work. When odors attributable to the uncovering of impacted media are generated in the work area during intrusive activities such as excavation or soil borings, observations will also be made at the down-wind limit of the Site, in order to assess the potential for off-site odors. The down-wind odor monitoring will be performed in conjunction with the Site Characterization and dust monitoring program described in this CAMP.

Upon detection of odors at the Site perimeter, Site controls, starting in the work area, will be implemented. The Site controls described in the following sections will be used to assist with odor mitigation to minimize, and to prevent where practicable, the off-site migration of odors. Due to the short distances between any work area at the Site and the property line or nearby potential receptors, Site controls will be implemented proactively when odors are detected in the breathing zone at any work area.

5.3 General Site Controls

Several general excavation or drilling procedure Site controls that will be implemented include:

- Every effort will be made to minimize the amount of time that impacted material is exposed to ambient air at the Site.

- For excavations, it may be possible to move some amount of soil around within the footprint of the excavation in order to minimize the amount of soil removal and subsequent stockpiling of impacted soil at the ground surface. The use of in-excavation stockpiling of excavated soil will be evaluated on a case-by-case basis, and will only be performed with the approval of the NYSDEC field representative, and will be completed only if it does not impede the collection of subsurface soils or the full delineation of the subsurface features being investigated.
- Drill cuttings from the soil borings will be containerized as soon as possible during completion of each soil boring.
- Loading of excavated debris or soil that has been found by the Site manager to be unsuitable material to return to excavation may generate odors. Every effort will be made to complete this work as quickly as possible and to keep these materials covered at all times.
- Meteorological conditions are also a factor in the generation and migration of odors. Some Site activities may be limited to times when specific meteorological conditions prevail, such as when winds are blowing away from a specific receptor.

5.4 Secondary Site Controls

If substantial odors still present an issue following implementation of the above procedures, secondary controls will be enacted. The field representative will work through the applicable list of secondary controls until the perimeter odor issues are resolved. The field representative will work closely with National Grid and NYSDEC during this task, if present. Final selection of controls will be dependent on field conditions encountered. Secondary controls include the following:

- For stockpiled impacted soil, temporary tarps or polyethylene covers will be used to control odors.
- The placement of portable barriers close to small active source areas (excavations) can elevate the discharge point of emissions to facilitate dispersion and minimize the effect on downwind receptors. The barriers can be constructed using materials such as plastic “Jersey barriers”, or fence poles and visual barrier fabric/plastic. The barriers are placed as temporary two or three-sided structures around active excavation or other intrusive areas, oriented such that the barriers are placed on the upwind and downwind sides of the source. If only one side of the source can be accessed, then the barrier should be placed on the downwind side.
- Two agents that can be sprayed over impacted soil have been determined to be effective in controlling emissions. They include odor suppressant solution (BioSolve™), and hydro-mulch. These agents may be used where tarps cannot be effectively deployed over the source material, or where tarps are ineffective in controlling odors:
 - BioSolve™ can provide immediate, localized control of odor emissions. Information regarding the preparation and use of BioSolve™ is provided in Attachment A.
 - Hydromulch - Although it is unlikely that it will be necessary, a modified hydromulch slurry may be used to cover inactive sources for extended periods of time (up to several days). The hydromulch, typically cellulose fibers (HydroSealR) is modified by mixing a tackifier (glue) with the mulch and water to form a slurry. It is applied using a standard hydroseed applicator to a thickness of ¼ inch. The material forms a sticky, cohesive, and somewhat flexible cover. Reapplication may be necessary if the applied layer becomes desiccated or begins to crack.

5.5 Record Keeping and Communication

Similar to readings recorded during the monitoring specified in the CAMP, all odor monitoring results will be recorded in the field log book or other air monitoring forms, and be available for review by the agencies upon request.

The field representative, in consultation with National Grid, will also provide information on odor monitoring and odor management to residents of the neighborhood should they inquire. In the event that odors persist after these efforts, work will be temporarily discontinued until a mutually agreeable solution with National Grid, NYSDEC, and NYSDOH staff can be worked out which allows the work to be completed while minimizing the off-site transport of nuisance odors.

The agencies are to be notified immediately (within 24 hours) of any nuisance odors or complaints.

6.0 Documentation and Reporting

Data generated during perimeter air monitoring will be recorded in field logs and summarized daily in spreadsheets. The electronic measurements from the PIDs and dust meters will be downloaded each day, reviewed, and archived. Exceedances of the action levels, if any, and the actions to be taken to mitigate the situations, will be discussed immediately with the on-site representatives. CAMP monitoring logs will be submitted to the NYSDEC on a weekly basis, at a minimum, and NYSDEC and NYSDOH must be notified immediately (within 24 hours) of any CAMP action level exceedances and corrective measures taken. The agencies are to be notified immediately (within 24 hours) of any nuisance odors or complaints. Summaries of all air monitoring data will be provided to NYSDEC and NYSDOH in electronic format, as requested.

Attachment A

Vapor Suppression Information



VAPOR SUPPRESSION / ODOR CONTROL

BioSolve® offers a relatively simple and cost effective method of suppressing Odors and VOC release from soils, during excavation, loading, stockpiling, etc. The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% BSW solution (1 part **BioSolve®** concentrate to 33 parts water) will be adequate to keep vapor emissions within acceptable limits and control fugitive odor problems on contact. Although, some sites may only require a 2% solution, up to a 6% solution may be recommended on sites with elevated levels or particularly difficult/ mixed stream contaminants are present.

The **BioSolve®** solution should be applied evenly to the soil surface in sufficient quantity to saturate the surface area. As a general rule, use 1-3 litres of **BioSolve®** solution to 1 square metre of surface area. (1 gallon of **BioSolve®** per solution will cover approximately 4-sq. yd. of soil surface area) **BioSolve®** is a water-based surfactant that will apply like water.

BioSolve®, in its concentrated form, is a viscous liquid material that must be diluted with water. A fluorescent red tracing dye is present in the formula allowing **BioSolve®** to be detected during application. Once diluted, **BioSolve®** can be applied with virtually any equipment that can spray water. **BioSolve®** will not harm equipment or clog pipes. For large sites, applicators such as water truck, portable agricultural sprayers, foam inductors & pressure sprayers can be used. For smaller jobs, garden sprayers, water extinguishers or a garden hose with a fertiliser attachment on the nozzle can be used effectively. This characteristic makes **BioSolve®** very adaptable and much most convenient to use in almost any situation. **BioSolve®** is equally effective when used with all types of water (soft, hard, salt or potable).

On stockpiled soil or other soil that will be left undisturbed, a single application of **BioSolve®** to the exposed surfaces may last up to 10 to 14 days or more (depending on environmental conditions). **BioSolve®**, when applied, will form a "cap" of clean soil. If the soil is not disturbed, via weather, movement, etc. this "cap" will remain functional. During excavation, loading or other movement of the soil, it may be required to spray an additional amount of **BioSolve®** to the freshly exposed surface area to keep emissions at an acceptable level.

In case of an extremely high level of emissions, or if the soil is heavily contaminated, it may be necessary to increase the strength of the **BioSolve®** solution or apply more solution per square metre to reduce emissions adequately. It is important that the site be monitored regularly and that the **BioSolve®** solution be reapplied if and when necessary to insure that VOC emissions and odors remain under control.

BioSolve® is packaged and readily available in 55 gallon (208 liter) drums, 5 gallon (19 liter) pails and in 4X1 gallon (3.8 liter X 4) cases. Contact The Westford Chemical Corporation® Toll Free @ 1-800-225-3909, via e-mail at info@biosolve.com or your Local BioSolve distributor for pricing.

BioSolve® should only be used in accordance with all regulatory rules and regulations.

This material is made available or use by professionals or persons having technical skill to be used at the own discretion and risk. These protocols are guidelines only and may need to be modified to site specific conditions. Nothing included herein is a warrantee or to be taken as a license to use **BioSolve** without the proper permits, approvals, etc. of the appropriate regulatory agencies, nor are the protocols provided as instructions for any specific application of **BioSolve**.



SOIL VAPOR SUPPRESSION UTILIZING BIOSOLVE

BioSolve is being utilized by numerous environmental consultants, response contractors, and fire departments to suppress VOC's & LEL's as well as problem odors. BioSolve encapsulates the source of the vapor rather than temporarily blanketing it like a foam or other physical barrier. Vapor reduction is so fast and effective that BioSolve is used to comply with the tough emission standards regulated by each State.

BioSolve offers a relatively simple and cost effective method of suppressing VOC vapor release from soils during excavation, loading, stockpiling... The following guidelines will apply to the most common situations encountered on site.

In most cases a 3% solution of BioSolve will be adequate to keep vapor emissions within acceptable limits. Dilute BioSolve concentrate with water at a ratio of 1 part BioSolve to 33 parts water to make a 3% solution.

The BioSolve solution should be applied evenly to the soil surface in sufficient quantity to dampen the surface well, (as a general rule, 1 gallon of BioSolve solution will cover approximately 4 sq. yd. of soil surface area). BioSolve is not a foam, it is a surfactant based product that will apply like water. The solution may be applied with a hand sprayer, high pressure power sprayer, water truck, etc., whichever method best suits the site and/or conditions.

NOTE: In the case of extremely high emission levels and/or very porous soil it may be necessary to increase the strength of the BioSolve solution (6%) or apply more per sq. yd. to reduce emissions adequately. On stockpiled soil or other soil that will be undisturbed, a single application of BioSolve to the exposed surfaces may last 10-14 days or more. During excavation, loading, or other movement of soil it may be necessary or required to spray each freshly exposed surface to keep emissions below acceptable

levels. It is important that the site be monitored regularly and the BioSolve solution be reapplied if/when necessary to insure that vapor emissions remain at or below acceptable standards.

MATERIAL SAFETY DATA SHEET

THE WESTFORD CHEMICAL CORPORATION®

P.O. Box 798

Westford, Massachusetts 01886 USA

Ref. No.: 2001

Date: 1/1/2002

Phone: (978) 392-0689

Phone: (508) 878-5895

Emergency Phone-24 Hours: 1-800-225-3909

Fax: (978) 692-3487

Web Site: <http://www.BioSolve.com>

E-Mail: info@BioSolve.com

SECTION I - IDENTITY

Name: **BioSolve®**
CAS #: 138757-63-8
Formula: Proprietary
Chemical Family: Water Based, Biodegradable, Wetting Agents & Surfactants
HMIS Code: Health 1, Fire 0, Reactivity 0
HMIS Key: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant

SECTION II - HAZARDOUS INGREDIENTS

Massachusetts Right to Know Law or 29 C.F.R. (Code of Federal Regulations) 1910.1000 require listing of hazardous ingredients.

This product does not contain any hazardous ingredients as defined by CERCLA, Massachusetts Right to Know Law and California's Prop. 65.

SECTION III - PHYSICAL - CHEMICAL CHARACTERISTICS

Boiling Point	: 265°F	Specific Gravity	: 1.00 +/- .01
Melting Point	: 32°F	Vapor Pressure mm/Hg	: Not Applicable
Surface Tension- 6% Solution	: 29.1 Dyne/cm at 25°C	Vapor Density Air = 1	: Not Applicable
Reactivity with Water	: No	Viscosity - Concentrate	: 490 Centipoise
Evaporation Rate	: >1 as compared to Water	Viscosity - 6% Solution	: 15 Centipoise
Appearance	: Clear Liquid unless Dyed	Solubility in Water	: Complete
Odor	: Pleasant Fragrance	pH	: 9.1 +/- .3
Pounds per Gallon	: 8.38		

SECTION IV - FIRE AND EXPLOSION DATA

Special Fire Fighting Procedures	: None	Flammable Limit	: None
Unusual Fire and Explosion Hazards	: None	Auto Ignite Temperature	: None
Solvent for Clean-Up	: Water	Fire Extinguisher Media	: Not Applicable
Flash Point	: None		

SECTION V - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in Handling and Storage: Use good normal hygiene.

Precautions to be taken in case of Spill or Leak -

Small spills, in an undiluted form, contain. Soak up with absorbent materials.

Large spills, in an undiluted form, dike and contain. Remove with vacuum truck or pump to storage/salvage vessel. Soak up residue with absorbent materials.

Waste Disposal Procedures -

Dispose in an approved disposal area or in a manner which complies with all local, state, and federal regulations.

SECTION VI - HEALTH HAZARDS

Threshold Limit Values: Not applicable

Signs and Symptoms of Over Exposure-

Acute : Moderate eye irritation. Skin: Causes redness, edema, drying of skin.

Chronic: Pre-existing skin and eye disorders may be aggravated by contact with this product.

Medical Conditions Generally Aggravated by Exposure: Unknown

Carcinogen: No

Emergency First Aid Procedures -

Eyes: Flush thoroughly with water for 15 minutes. Get medical attention.

Skin: Remove contaminated clothing. Wash exposed areas with soap and water.

Wash clothing before reuse. Get medical attention if irritation develops.

Ingestion: Get medical attention.

Inhalation: None considered necessary.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection	: Not necessary	Local Exhaust Required	: No
Ventilation	: Normal	Protective Clothing	: Gloves, safety glasses
Required			Wash clothing before reuse.

SECTION VIII - PHYSICAL HAZARDS

Stability	: Stable	Incompatible Substances	: None Known
Polymerization	: No	Hazardous Decomposition Products	: None Known

SECTION IX - TRANSPORT & STORAGE

DOT Class	: Not Regulated/Non Hazardous		
Freeze Temperature	: 28°F	Storage	: 35°F-120°F
Freeze Harm	: None (thaw & stir)	Shelf Life	: Unlimited Unopened

SECTION X - REGULATORY INFORMATION

The Information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application, which is not described on the Product label or in this Material Safety Data Sheet, is the sole responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazardous Communication Regulation and Massachusetts Right to Know Law.



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

APPENDIX F – SITE MANAGEMENT FORMS



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

NATIONAL GRID
FORMER JAMAICA GAS LIGHT COMPANY MANUFACTURED GAS PLANT SITE
QUEENS, NEW YORK
SITE NO. 241063

SITE-WIDE INSPECTION FORM

Site Addresses: _____

Date and Time of Inspection: _____

Inspector (Name, Title, and Affiliation): _____

Weather Conditions: _____

Describe repairs, maintenance, or corrective actions implemented since previous inspection:

ATTACH PHOTOGRAPHS OF AREAS OR ITEMS INSTALLED, REPAIRED, OR REPLACED

General Site Conditions:

	Acceptable	Unacceptable
Pavement and Sidewalk		
Building and/or Foundation Cover		
Vegetative Cover (if applicable)		



Former Jamaica Gas Light Company Manufactured Gas Plant Site
Interim Site Management Plan

Site Cover System:

Any signs/evidence of ground-intrusive activities (e.g., excavating, trenching, etc.), soil disturbance regardless of quantity/extent, erosion, settlement, or if applicable, bare or sparsely-vegetated areas?

☐ No ☐ Yes If yes, please describe:

ATTACH PHOTOGRAPHS OF AREAS OF DISTURBANCE

Any signs/evidence of use of the Site in a manner inconsistent with the previous Site uses?

☐ No ☐ Yes If yes, please describe:

ATTACH PHOTOGRAPHS OF AREAS OF NON-COMPLIANCE

Describe any repairs, maintenance, or corrective actions required to correct observed deficiencies:

ATTACH PHOTOGRAPHS OF AREAS OF DEFICIENT AREAS OR ITEMS OBSERVED DURING THE INSPECTION

Inspector’s Signature:

Date:
