SOIL SAMPLING & WELL INSTALLATION WORK PLAN

FEBRUARY 2019

UNKNOWN SPILL

BUSHWICK AND METROPOLITAN AVENUE

BROOKLYN, NEW YORK

NYSDEC SPILL# 1811154

Prepared For:

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

New York State - Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233

Prepared By:

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Environmental Assessment & Remediations
225 Atlantic Avenue
Patchogue, NY 11772

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1.0 INTRODUCTION

This document represents the work plan to determine the source of unknown petroleum product entering the L-Train Subway tunnel via collection of subsurface soil and installation of monitoring wells near the address listed on New York State Department of Environmental Conservation (NYSDEC) Spill# 1811154 (Bushwick and Metropolitan Avenue, Brooklyn). The area of investigation is located at the intersection of Bushwick Avenue and Metropolitan Avenue in Bushwick, Brooklyn. The work plan has been prepared in association with NYSDEC Spill #1811154. A site location map is included as Figure 1 and a site map is included as Figure 2.

As directed by the NYSDEC, the first phase of the work plan will include:

- Soil sample collection at approximately 14 predetermined temporary soil boring (SB) locations.
- Following soil sample collection, groundwater monitoring wells (MWs) will be installed, developed and sampled.

All Environmental Assessment & Remediations (EAR) personnel to be engaged on this project have completed the 40-hour OSHA HAZWOPER training and are current with the annual 8-hour refresher courses. All EAR field personnel receive training in basic First Aid and CPR. Onsite health & safety measures will be implemented according to both the site Health & Safety Plan (HASP) and EAR's corporate HASP. The site HASP has been included as Appendix A.

2.0 SOIL & GROUNDWATER INVESTIGATION PLAN

As requested by the NYSDEC, EAR has developed a work plan to collect soil samples and install single cased monitoring wells via hollow stem auger (HSA) drilling methods at 14 predetermined locations.

2.1 DRILLING PREPARATION

Following NYSDEC approval of the proposed work plan, a subcontractor will be retained to locate and mark any subsurface utilities or structures using both conductive and non-conductive methodologies. Water and sewer maps will be obtained from the New York City Department of Environmental Protection. New York City Department of Transportation permits to conduct work in the right of way will be secured. NY811 will be notified of the work several days in advance of the drilling activities so that utilities can be located and marked. EAR shall meet onsite with utility locating contractor and drilling crew to review the proposed boring locations, validate markouts and determine alternate proposed boring locations, as necessary. The NYSDEC will coordinate with the Metropolitan Transportation Authority (MTA). A site map of the proposed drilling locations is provided as Figure 2.

2.2 GENERAL PROCEDURE OF DRILLING ACTIVITIES

The work area is typically delineated with traffic cones/barrels; the drill rigs/crew/equipment within the work area are visible to public. Temporary fencing with privacy shields can be utilized to minimize such visibility. The mast of the drill rigs can extend vertically to approximately 30 feet height.

None of the drilling locations are proposed in the street so lane closings are not anticipated at this time. All final drilling locations will be determined based upon utility mark outs and clearance requirements; if road closures are necessary, traffic control measures will be implemented.

All drilling borehole locations will be pre-cleared to 8-feet bg via soft dig or air knife excavation. During drilling activities, community air monitoring and work zone air monitoring will be conducted as outlined in the Community Air Monitoring Plan (CAMP), included as Appendix B and EAR's HASP (Appendix A).

2.2.1 OVERSIGHT

The on-site activities (drilling) will be overseen by an EAR geologist; responsibilities include ensuring adherence to the work plan specifications and classifying soils as per NYSDEC Division of Environmental Remediation (DER)-10 Section 3.5.1(c) and field screening soil samples. Communications between geologist and project manager will be conducted as necessary; field notes and photodocumentation will be submitted daily.

2.2.2 EQUIPMENT DECONTAMINATION

Down-hole tooling shall be decontaminated between each sample collected. Decontamination will consist of mechanical dirt removal, followed by a Liquinox™/water wash and potable water rinse.

2.2.3 WASTE DISPOSAL

Drill cuttings, rinse water and purged liquids will be containerized in USDOT approved 55-gallon drums and properly labeled. Waste handling/disposal procedures are detailed in Section 4.0.

2.3 SOIL SAMPLING

A total of 14 temporary boring locations have been proposed to investigate the subsurface conditions associated with NYSDEC Spill# 1811154. Continuous subsurface soil samples (split spoon samples) will be collected via HSA drilling methods or direct push. Upon collection, surface soil samples will be logged for lithology. The terminating depth of each sample boring will be determined in the field such that the impact to soil is vertically delineated (via olfactory field observations; staining, odor or elevated Photo-Ionization Detector (PID)) or if clay is encountered. Temporary boring locations will be identified using a predetermined, sequential naming convention beginning with soil boring (SB)-01.

Soil cores will be composited for every 2-feet of advancement. Surface and soil core samples will be screened for volatile organic compounds (VOCs) with a PID by an on-site geologist. Zones of visual or olfactory identified impacted sediment may be isolated and screened separately. Prior to each use, the PID will be calibrated using a 100 ppm isobutylene standard and ambient air.

Submittal of soil samples for laboratory analysis will be determined as needed and as directed by the NYSDEC. Soil samples will be collected in laboratory-provided soil jars and placed in a cooler with ice to maintain a temperature of 4-degrees Celsius. Soil samples will be submitted to an NYSDEC standby contracted laboratory (TestAmerica, Inc. (TA)) for analysis of Target Compound List (TCL) for VOCs via EPA Method 8260, TCL for SVOCs via EPA Method 8270, Total Petroleum Hydrocarbons (TPH)-Gasoline Range Organics (GRO) and TPH-Diesel Range Organics (DRO). Samples will be submitted for a 10-day turnaround time with Analytical Services Protocol (ASP) Category B deliverables requested.

Following receipt and review of all ASP Category B deliverable packages, EAR will submit the electronic copies of the analytical results (reports and Electronic Data Deliverables (EDD)) from Test America to a qualified subcontractor for review and preparation of a data usability summary reports (DUSR) as well as EDD validation.

2.4 MONITORING WELL CONSTRUCTION

As directed by the NYSDEC, a single-cased monitoring well will be installed at the 14 temporary boring locations. Wells will be constructed of a 10-foot length of 4-inch diameter, schedule 40 PVC casing and a 20-foot length of 4-inch diameter, schedule 40 PVC, 0.010 inch slot screen.

Filter sand pack will be installed around the screened zone from the end of the boring to approximately 1-foot above the well screen. A 1-foot bentonite seal will be installed above the well screen. The borehole will be grouted to approximately 3-foot bg. A 1-foot bentonite seal will be installed above the grout. The well will be finished at grade with an 12-inch diameter, steel, bolt-down manhole set into a saw cut 2-foot by 2-foot concrete pad. A four-inch locking well cap will be installed at the top the sampling point. Monitoring wells will be identified using a predetermined, sequential naming convention beginning with monitoring well (MW)-1. A proposed monitoring well construction schematic is provided as Figure 3.

2.5 WELL DEVELOPMENT

Following the completion of the well installation, EAR will develop each monitoring well by surge blocking and purging with a stainless steel Monsoon pump. Purged water will be monitored in the field for turbidity using a handheld nephelometer (Hach 2100Q or equivalent) and continue until turbidity stabilizes at or below 50 NTU's for three consecutive readings.

2.6 SURVEY

Following surface restoration, an EAR survey team will obtain distance (location) and elevation of all newly installed MWs, and any other applicable site features and structures. Well casing elevations will possess an accuracy to 0.01-foot. The location coordinates will be obtained from the appropriate georeferenced orthoimagery (i.e. NAD 83, State Plane, NY). The well locations will be plotted and labeled on a scaled, georeferenced site map. Location data derived from the survey activities will be incorporated into EQuIS format location EDD and submitted to NYENVDATA along with the correspondence laboratory EDD packages.

3.0 GROUNDWATER SAMPLING OF MONITORING WELLS

Following well installation and development, groundwater samples will be collected from the 14 proposed MWs. Prior to sample collection, depth-to-water and total well depths shall be gauged to the nearest 0.01 foot using an electronic interface probe and recorded. Groundwater will be purged/sampled utilizing peristaltic and/or submersible pumps and HDPE tubing. A new length of HDPE tubing shall be utilized at each well. All non-dedicated sampling tools shall be decontaminated between each sample location using a Liquinox/water wash following by distilled water rinse.

Each monitoring well will be purged of at least one standing well volume then screened for pH, temperature, and conductivity using a handheld water quality meter (YSI 556 or equivalent) until stabilization is reached. Dissolved oxygen concentrations, and oxidation reduction potential will be recorded as well. Once stabilization of the above water quality parameters has been achieved, samples will be collected in appropriate laboratory-provided sample containers and placed in a cooler with ice to maintain a temperature of 4-degrees Celsius.

A total of 14 groundwater samples and two blind duplicate will be submitted to an NYSDEC standby contracted laboratory (Test America, Inc.) for analysis of VOCs via EPA Method 8260, SVOCs via EPA Method 8270 and TPH-GRO and TPH-DRO via EPA Method 8015D. Samples will be submitted for a 10-day turnaround time with ASP Category B deliverables requested. A proposed sampling plan, which details locations to be sampled and QA/QC sampling requirements, is provided as Table 1. Following receipt and review of all ASP Category B deliverable packages, EAR will submit the electronic copies of the analytical results (reports and EDD's) from Test America to a qualified subcontractor for review and preparation of a DUSR and EDD validation.

Rinse water, purge water and IDW will be containerized in USDOT approved 55-gallon drums and properly labeled. Waste handling/disposal procedures are detailed in Section 4.0.

4.0 WASTE TRANSPORTATION & DISPOSAL

Transportation for wastes identified for disposal will be arranged with a NYSDEC Region 2 Response Contractor (Island Pump & Tank (IPT), East Northport, NY). A copy of IPT's NYSDEC Part 364 Waste Transporter permit is provided as Appendix C.

A composite soil sample and one groundwater sample will be collected at the onset of the each sampling phase for analysis of a waste characterization profile. Soil and groundwater samples will be submitted to an NYSDEC standby contracted laboratory (Test America, Inc.) for 10-day turnaround of flashpoint by EPA Method 1010A and benzene by TCLP analysis.

Drums will be temporarily stored at the site and picked up upon receipt of the laboratory waste characterization profile. The drum staging area will be sited at 2 Bushwick Avenue that is currently secured with plywood surrounding the property boundary. At the time of pickup, IPT shall provide a manifest that provides the following information:

- Contact information
- Vehicle license number
- Destination
- Description & quantity of materials

All drum pickups will be via a closed box-truck or similar closed/covered vehicle. All drums will be sealed and secured. Drums will be loaded onto transport vehicles using either a lift-gate or winch operated lift.

The designated disposal facility shall hold valid permits applicable to the handling, storage, and disposal/treatment of wastes. Disposal facility permits shall be submitted to NYSDEC upon selection of designated disposal facility.

5.0 INVESTIGATION REPORT

A summary report of all site related actives will be prepared following the completion of the work outlined in this plan. The report will include:

- Written details of the field activities
- Boring logs, well construction logs, development logs and purge logs
- Tabulated analytical results with a comparison to applicable standards, criteria and guidance values
- A site figure generated from survey data
- Chemical concentrations posted on site maps
- DUSRs and validated EDD packages
- Validated EDD's will be submitted by EAR to NYSDEC database administration for import

TABLES

TABLE 1 – PROPOSED GROUNDWATER SAMPLING PLAN

Table 1

Unknown Spill
Bushwick and Metropolitan Avene
Brooklyn, NY
NYSDEC Spill# 1811154

Proposed Groundwater Sampling Plan

Sample Location	Total Well Depth (feet bg)	Diameter (inch)	Field Screening Stabilization Purge	TCL VOCs by EPA Method 8260C			TCL SVOCs by EPA Method 8270D			TPH GRO & DRO by EPA Method 8015D			Equipment Blanks*
				3 - 40mL VOAs w/HCl			2 - 250 mL unpreserved Amber Glass			4 - 250 mL unpreserved Amber Glass			
				S	Blind Dup	MS/ MSD	S	Blind Dup	MS/ MSD	S	Blind Dup	MS/ MSD	
MW-1	30	4	x	x			x			x			x
MW-2	30	4	x	x			x			x			
MW-3	30	4	x	x	x	x	x	x	x	x	x	x	
MW-4	30	4	x	x			x			x			
MW-5	30	4	x	x			x			x			
MW-6	30	4	x	x			x			x			
MW-7	30	4	x	x			x			x			
MW-8	30	4	x	x	x		x	x		x	x		
MW-9	30	4	x	x			x			x			
MW-10	30	4	x	x			x			x			
MW-11	30	4	x	x			x			x			
MW-12	30	4	x	x			x			x			
MW-13	30	4	x	x			x			x			
MW-14	30	4	x	x			x			x			
totals:			14	14	2	1	14	2	1	14	2	1	1

Notes:

Lab analysis will be conducted by Test America.

TCL - Target Compound List

Dup - Duplicate (duplicate samples will be collected at a rate of 1:10)

S - Sample

Sample containers provided by the laboratory.

1 field blank at a rate of 1:20 will be submitted to Test America for all methods.

1 trip blank (prepared by the laboratory) per cooler will be submitted for EPA Method 8260C analysis for TCL of VOCs.

*2 equipment blanks at a rate of 1:20 will be submitted to Test America for EPA Method PFC Modified Method 537; 1 rinsate from the WLM and 1 the HDPE tubing & foot valve assembly using lab provided/certified DI water.

Field Screening will include DO, ORP, pH, Temperature and Specific Conductivity.

FIGURES

FIGURE 1 – SITE LOCATION MAP

FIGURE-2 – SITE MAP WITH PROPOSED SOIL BORING/MONTIORNING WELL LOCATIONS

FIGURE-3 – PROPOSED MONITORING WELL CONSTRUCTION

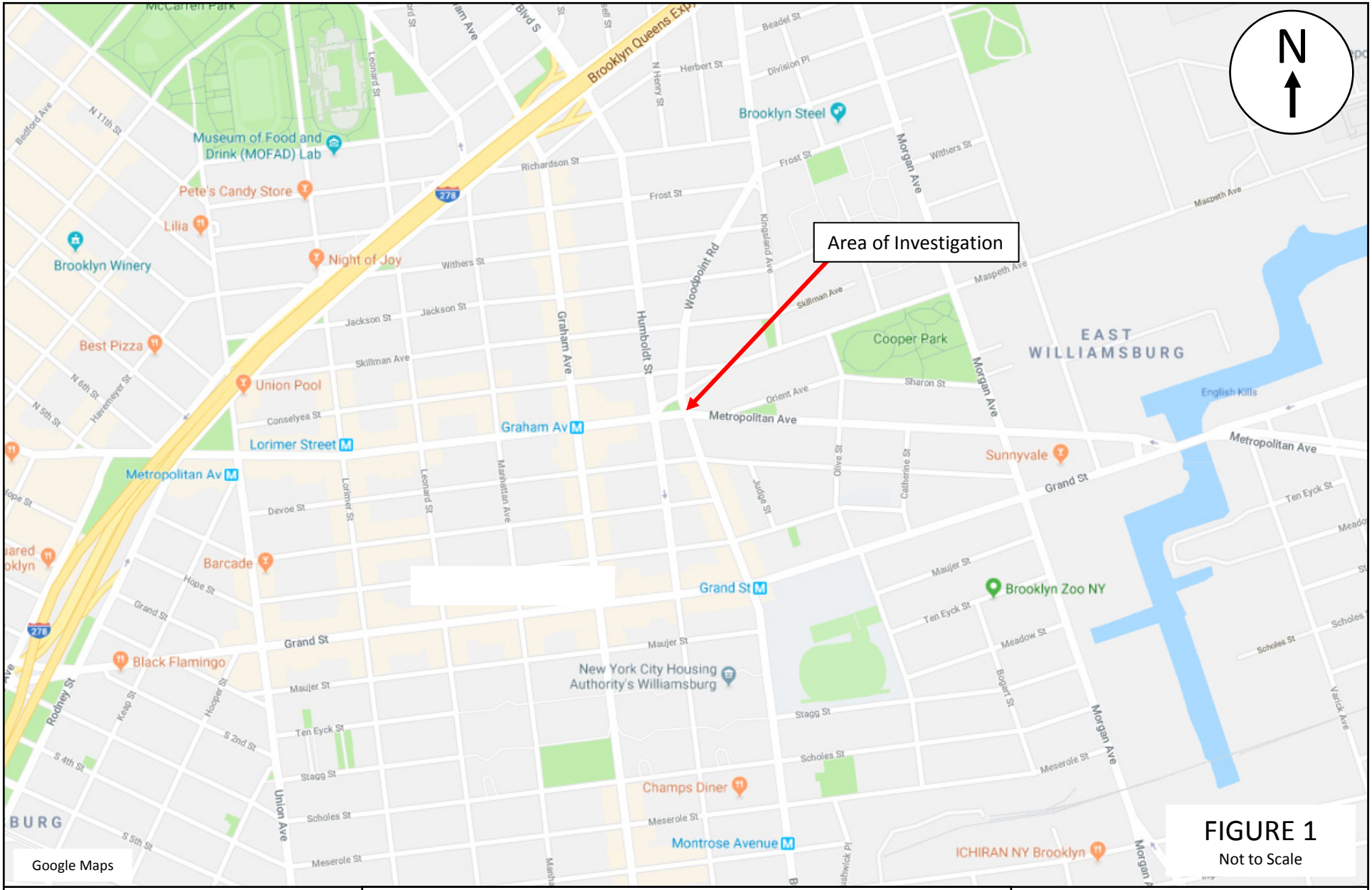


FIGURE 1
Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

SITE LOCATION MAP

Unknown Spill
Bushwick & Metropolitan Avenue
Brooklyn, New York
NYSDEC Spill# 1811154

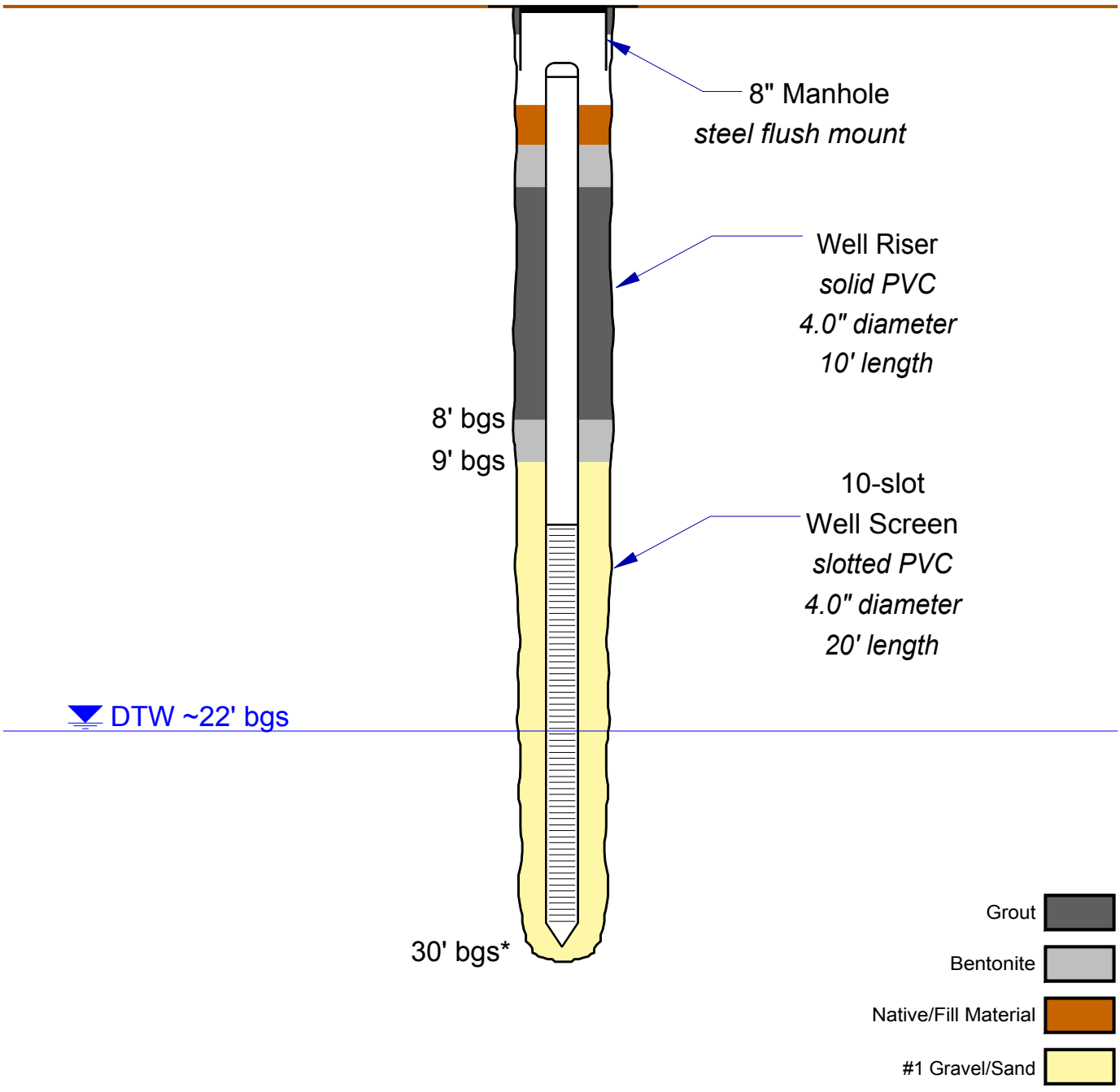
FIGURE 2
Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

SITE MAP
Proposed Soil Boring/Monitoring Well Locations

Unknown Spill
Bushwick & Metropolitan Avenue
Brooklyn, New York
NYSDEC Spill# 1811154

Single Cased Well



*The total length of screen section will be determined in the field based on the vertical profile of the soil boring defined during investigative activities and upon NYSDEC approval.

NOT TO SCALE

FIGURE 3

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS	Proposed Well Design	Unknown Spill Bushwick & Metropolitan Ave Brooklyn, New York NYSDEC Spill #1811154

APPENDIX A - SITE HEALTH & SAFETY PLAN

HEALTH & SAFETY PLAN

UNKNOWN SPILL

BUSHWICK AND METROPOLITAN AVENUE

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1.0 INTRODUCTION

This document represents the Health & Safety Plan (HASP) for the well installation and sampling activities at the intersection of Bushwick Avenue and Metropolitan Avenue in Bushwick, Brooklyn, under New York State Department of Environmental Conservation (NYSDEC) Spill# 1811154. It provides site specific procedures supplemental to Environmental Assessment & Remediations' (EAR) corporate HASP.

The area of investigation includes properties and the right-of-way at the intersection of Bushwick Avenue and Metropolitan Avenue, Brooklyn. A site location map is provided as Figure 1. A site plan is provided as Figure 2. The area is mixed commercial and residential properties. Environmental investigations have identified petroleum contaminants as the primary contaminants of concern.

The scope of work at this site during subsurface investigation activities will include:

- Soil sample collection from temporary soil boring locations.
- Installation of groundwater monitoring wells and collection of groundwater samples.
- Containerization, management, and coordination of transportation & disposal of investigation derived wastes.

2.0 HEALTH & SAFETY ORGANIZATION

2.1 HEALTH & SAFETY OFFICER

The Health & Safety Officer (HSO) is responsible for EAR's compliance with all applicable federal, state, and local regulations pertaining to health & safety, development of EAR's health & safety policies, and periodic review of field activities to document adherence to health & safety protocol.

The HSO will also be responsible for implementing the medical program, initiating periodic safety meetings, and ensuring site personnel are properly trained (see section on *Special Education & Training*). The HSO maintains a knowledge of EAR's ongoing projects and works with the field foreman and supervisor to review project specific protocol and make necessary adjustments as site conditions change.

Health & Safety Officer:
John Hofmann (Contract Manager / Health & Safety Officer)
Work: (**631) 447-6400 ext. 113**
Home: **(631) 475-7206**
Cell: **(516) 924-1382**

2.2 SUPERVISOR/PROJECT MANAGER

The supervisor/project manager will be responsible for overseeing all site operations and assuring that all work is performed in a safe and timely manner. She/he will coordinate all activities with the client and make any necessary decisions based upon input from the HSO and client.

2.3 FIELD FOREMAN

It will be the responsibility of the field foreman to inspect the work area, corroborate with the project manager and HSO, and determine personnel protection levels before beginning work. The field foreman will also ensure that all EAR personnel in the work area are using all necessary personal protective equipment.

The field foreman and/or project manager will designate personnel who will monitor changing conditions in the work area such that protective measures can be adjusted accordingly. Conditions that should be monitored include, but are not limited to changes in weather, equipment conditions, and atmospheric conditions (contaminant and/or oxygen levels, etc.).

2.4 OTHER PERSONNEL

All onsite field staff are signatories to this Health & Safety Plan and are expected to conduct their activities in a manner consistent with the plan. All personnel are encouraged to identify potentially hazardous conditions and promptly notify a field foreman of any such conditions.

2.5 CERTIFIED SAFETY PROFESSIONAL

EAR has retained the services of a certified safety professional to provide guidance in the development of health & safety protocol, as well as final review and approval of corporate and project-specific health & safety protocol.

Certified Safety Professional:
Jack Walsh, CSP; CHST
Cell: **(631) 774-7625**

3.0 SPECIAL EDUCATION & TRAINING

In order to help our employees perform their duties in a safe and efficient manner, EAR has developed a safety-training program. All field employees are trained to work safely with hazardous materials upon commencement of employment. Annual refresher courses and periodic training meetings supplement this training.

All field personnel engaged on this project will have the following training at a minimum:

- OSHA 40-Hour HAZWOPER Training (29 CFR/OSHA 1910.120)
- OSHA 8-Hour HAZWOPER Annual Refresher (29 CFR/OSHA 1910.120)
- First Aid (American Health Association or National Safety Council)
- CPR / AED (American Health Association or National Safety Council)
- Respirator fit testing & training
- Hands-on training in the maintenance, inspection, donning/doffing, usage, and limitations of the different types of personnel protective equipment which could be required in HAZWOPER operations.

3.1 TAILGATE SAFETY MEETINGS

Prior to beginning any new jobsite activities, the HSO and/or designated field foreman will conduct an onsite tailgate safety meeting with all field personnel to review task hazards and safety procedures. A Job Safety Checklist and PPE Hazard Assessment Form (see Appendix A) will be completed and the applicable Job Hazard Analysis will be reviewed for each tailgate safety meeting and submitted to the project manager and HSO for review. Additional tailgate safety meetings will be held as jobsite conditions or proposed work plan activities change.

4.0 MEDICAL PROGRAM

All project personnel will have adequate protection from exposures through engineering and administrative controls, appropriate personal protective equipment and project site control as described in this HASP. The medical program outlined here will be used to evaluate and monitor potential exposure to toxic and harmful substances above permissible levels, resulting in acute and/or chronic illness.

Basic medical contents of this project include:

- Medical Surveillance – All employees receive an OSHA compliant medical examination upon employment. The content and subsequent follow-up exam frequency shall be at the discretion of the professional health care provider (PHCP) selected by EAR. The PHCP examination shall include:
    - Non-DOT Physical Examination
    - Blood Work CBC, Chem, Lead
    - Chest X-Ray

  Field employees engaged on this project are required to have annual physical examinations.
- Pulmonary Function Test (PFT) – The ability to don a respirator shall be determined by the PHCP. This examination shall be provided to all field personnel engaged on this project who will be or may be entering hazardous or transitional work zones. Follow-up exams would be at the discretion of the PHCP. **Note:** Employees who have been medically cleared to wear respiratory protection within the past (calendar) year, will not need to re-take the test for this project.
- Emergency Response – Emergency contacts, including the address and phone number to the local hospital are listed in Section 19.0. All company personnel are trained in CPR and first-aid response. Based upon the situation, the field foreman, or his/her designee, will notify the office of an incident and activate the emergency contact services so that professional assistance would be summoned immediately. It will be the responsibility of on-site company personnel to simply assist the injured by stabilizing and providing warmth until professional responders arrive. Additional information can be found in Sections 18.0 and 19.0.

5.0 HAZARD ASSESSMENT

EAR recognizes that engineering, work practice and administrative controls are the primary means of reducing employee exposure to occupational hazards. This section identifies the hazards associated with the proposed scope of work and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate exposure to hazards.

5.1 CHEMICAL HAZARDS

The primary routes of exposure to chemical hazards to onsite workers are through inhalation, ingestion and skin contact/adsorption. Safety Data Sheets (SDS) for known and suspected chemicals that may be encountered are included in Appendix B.

5.1.1 SITE SPECIFIC CHEMICALS

Based upon laboratory analysis of product sample collected on February 7, 2019 the following site contaminants have been identified:

Contaminants of Concern				
Diesel Fuel				
No.2 Fuel Oil				

5.1.2 WORK TASK RELATED CHEMICALS

During proposed work activities, workers may encounter some or all of the chemicals noted below. Precautions and safe work practices should be utilized while handling these chemicals.

Alconox	Bentonite	Portland Cement-Type I
Gasoline	Diesel	Liquinox
Methanol	Hydrochloric Acid <10%	Nitric Acid

5.2 RESPIRABLE DUST & VAPORS

The activities to be conducted under the limited scope of work for this project are not anticipated to generate significant dusts or vapors. Personnel need to be mindful, however, of avoiding inhalation of vapors from acid preservatives in sample containers, vapors that may accumulate in monitoring wells and crystalline silica dust during well installation, saw cutting or other related activities. Personnel should position themselves upwind of potential

sources and avoid skin contact during sampling process. PPE requirements for inhalation hazards may be re-evaluated and adjusted based on actual site conditions.

During soil borings, well installation, soil vapor sampling and soil and groundwater sampling activities, air monitoring shall be conducted periodically within the work zone using a photo-ionization detector (PID). Air monitoring is to be conducted by the field geologist during drilling activities, and by the field foreman during groundwater sampling at monitoring wells.

5.2.1 ACTION LEVELS

If PID readings in the work zone are >5 ppm (sustained for >5 minutes) work shall be temporarily discontinued and potential causes evaluated. If levels persist and cannot be mitigated, the HSO will be notified and an upgrade to Level C PPE will be implemented.

Dust may be generated during ground intrusive activities. If visible observation detects elevated levels of dust, a program of wetting will be employed.

5.3 PHYSICAL HAZARDS

The following physical hazards have been identified associated with the work to be performed and the site conditions:

- Drilling hazards
- Overhead/underground utilities
- Cold/Heat Stress
- Impact Injury
- Vehicular Traffic
- Drum & Container Handling/Heavy Loads
- Electrocution
- Insect Stings/Bites, Irritating Vegetation, Sunburn

5.4 JOB HAZARD ANALYSIS

A Job Hazard Analysis (JHA) is a technique/form for identifying job hazards before they are encountered. The JHA outlines the steps/actions associated with each job task and establishes proper procedures and safety requirements for each step.

JHA's shall be completed for all field tasks prior to their execution and reviewed in the field during tailgate safety meetings.

Project JHA's are included as Appendix C.

6.0 ENGINEERING CONTROLS, ADMINISTRATIVE CONTROLS, & WORK PRACTICE CONTROLS

EAR recognizes that engineering, work practice and administrative controls are the primary means of reducing employee exposure to occupational hazards.

Engineering controls minimize employee exposure by either reducing or removing the hazard at the source or isolating the worker from the hazard. Engineering controls could include eliminating toxic chemicals and substituting with non-toxic chemicals, enclosing work processes or restricting work operations, and the installation of general and local ventilation systems.

Work practice controls alter the manner in which a task is performed. Some fundamental work practice controls include: (a) changing existing work practices to follow procedures that minimize exposures while operating production and control equipment; (b) inspecting and maintaining process and control equipment on a regular basis: (c) implementing good housekeeping procedures: (d) providing good supervision, and (e) mandating that eating, drinking, smoking, chewing tobacco or gum, and applying cosmetics in regulated areas be prohibited.

Administrative controls include controlling employee exposure to potentially harmful levels by scheduling production and tasks in ways that minimize exposure.

When effective work practices or engineering controls are not feasible or while such controls are being instituted, appropriate personal protective equipment (PPE) will be used.

6.1 ENGINEERING CONTROLS – PROJECT SPECIFIC

Monitoring and detection equipment will be calibrated, clean, and inspected prior to daily use, where applicable. Air monitoring for VOC's will be conducted at wellheads during groundwater sampling activities and at boreholes during drilling activities.

Drilling equipment will be inspected daily by the equipment operator. Good, operable equipment that is well maintained will minimize noise and exposure to machinery and moving parts.

Prior to any ground intrusive activities, markouts will be arranged and reviewed/validated.

6.2 WORK PRACTICE CONTROLS – PROJECT SPECIFIC

Field personnel shall delineate the areas designated for drilling and sample collection and allow only essential (sampling/drilling) personnel into the area. Site activities will include good supervision and control with daily / periodic inspections; good housekeeping and work zone control; daily safety briefings on project specifics; daily equipment/ tool inspections, and holding trained employees to their responsibilities. No eating, drinking, or smoking will be permitted onsite.

Only authorized personnel shall be permitted to operate drilling equipment. All non-essential personnel are to keep clear of areas surrounding drilling systems when in use. Communication with all personnel will be maintained. "Show Me Your Hands" protocol will be observed.

6.3 PROJECT SITE CONTROL

The purpose of project site control is to minimize potential contamination of workers, protect the public from the sites hazards, and prevent vandalism. Several site control procedures are to be implemented to reduce worker and public exposure to potential chemical, physical, biologic and safety hazards, including:

- Site map(s) (for lengthy or large-scope projects)
- Adequately preparing for site activities
- Delineating and restricting access to work area
- Utilizing the buddy system
- Establishing and enforcing decontamination procedures
- Establishing communication networks
- Enforcing safe work practices

Site communication will be established by internal communication among the project personnel on site and external communication between on-site and off-site personnel involved in the project.

Internal communication will be established to…

- Alert team members to emergencies
- Communicate safety information during work
- Communicate work / project changes
- Maintain site control

The external communication system utilized by EAR project personnel is necessary to…

- Coordinate emergency response if needed
- Communicate with off-site project / management personnel

Note: Project personnel will be equipped with cell phones.

Decontamination Procedures – The process of removing or neutralizing contaminants that have accumulated on personnel and equipment is critical to health and safety at project sites where the potential for contamination exists. Decontamination procedures are detailed in Section 8.0.

Emergency Response & Emergency Coordination – EAR believes that proper planning and response are vital elements of the HASP that will help minimize employee exposure and injury.

Emergencies happen quickly and unexpectedly and require immediate response. Any hazard on site can precipitate an emergency; therefore the following procedure(s) will be implemented and reviewed periodically to ensure effectiveness. Prior to project start-up, the HSO and project manager will ensure the following:

- Site communication system are in good working order and easily accessible
- Emergency response phone numbers are operable and accessible
- Emergency evacuation routes have been explained and identified
- Medical first-aid material is on site
- Project fire extinguishers are accessible, charged and operable
- HASP is available and reviewed

Emergency Response procedures are detailed in Section 18.0.

7.0 PERSONAL PROTECTIVE EQUIPMENT

The HSO and field foreman will determine the Personal Protective Equipment (PPE) required in the work area. This decision will be based upon the nature of the contaminants known, or expected to be encountered on site, and the type of work to be performed. If site conditions or the type of work change, the required PPE may have to be altered to meet changing conditions. **It is anticipated that entirety of the work will be performed in Level D PPE.**

Head Protection – Hard hats shall be issued and worn during the project whenever overhead equipment is in use, or whenever there is a potential for an employee's head being struck by an object. Hard hats will also be worn where the project location is in proximity to either public vehicular traffic (high visibility), or live electric exist (voltage rated). Use of ANSI approved Type I Class G helmets will be utilized as necessary.

Eye and Face Protection – Impact resistant goggles, chemical resistant splash goggles, and safety glasses will be available and utilized at the discretion of the HSO and field foreman.

Foot Protection – Industrial foot protection will be worn by all personnel entering the worksite regardless of their assigned activity. Steel-toed boots will be utilized and worn by personnel requiring their use at the discretion of the Safety Officer. Overboots (disposable or otherwise) with skid-resistant soles will be worn in wet areas (ie. retention ponds, swales, drainage ditches, culverts).

Hand Protection – Canvas / leather work gloves will be issued and available for every employee assigned to a project. Nitrile gloves will be worn by personnel handling site soils, conducting environmental quality sampling (as applicable), and for medical response situations.

Respiratory Protection **–** It is not anticipated that respiratory protection will be required to complete the scope of work for this project. Actual site conditions may warrant an upgrade in PPE pending evaulation by the Safety Officer. Therefore, all onsite personnel working at boreholes/wellheads should be ready to don Level C respiratory protection (P100 & organic vapor filtration) in the event a PPE upgrade is required.

Note: EAR has a written Respiratory Protection Program in compliance with 1910.134 and is available upon request. All company personnel required to don respiratory protection shall be medically cleared and fit-tested prior to use.

Body Protection **–** TYVEK suits will be available for use at the discretion of the field personnel, or if the Safety Officer deems necessary based on actual or changing site conditions. Simple white TYVEK suits will be available for soil excavation / sampling / drilling related tasks. Yellow TYVEK[1] suits will be available and worn with chemical splash, gases, or vapor penetration concerns.

Note: Should the need arise; The Company will fully comply with 1910.120 *Hazardous Waste Operations and Emergency Response* (HAZWOPER). Depending upon the hazard evaluation of the services to be provided at the site, the following levels of PPE will be employed:

Level A – To be selected when the greatest level of skin, respiratory, and eye protection is required.

1. Pressure-demand, full face-piece self-contained breathing apparatus (SCBA), or pressure demand supplied air respirator with escape SCBA (NIOSH approved).
2. Totally encapsulating chemical-protective suit.
3. Coveralls*
4. Long underwear*
5. Gloves, outer, chemical-resistant

[1] If chemical resistant suits are required, personnel shall receive supplementary training on work methods, fluid intake, and heat exhaustion monitoring. The use of chemical resistant suits is not currently anticipated at this site.

6. Gloves, inner, chemical-resistant
7. Boots, chemical-resistant steel toe and shank
8. Hard hat (under suit)*
9. Disposable protective suit, gloves and boots (depending on suit construction, may be worn over totally-encapsulating suit).
10. Two-way radios (worn inside encapsulating suit)

Level B – The highest level of respiratory protection is necessary but a lesser level of skin protection is required.

1. Pressure-demand, full face-piece self-contained breathing apparatus (SCBA) or pressure-demand supplied air respirator with escape SCBA (NIOSH approved).
2. Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls)
3. Coveralls
4. Gloves, outer, chemical resistant
5. Gloves, inner, chemical resistant
6. Boots, outer, chemical resistant steel toe and shank
7. Boot-covers, outer, chemical resistant (disposable)*
8. Hard hat
9. Two-way radios
10. Face shield*

Level C – The concentration(s) and types(s) of airborne substances is known and the criteria for using air purifying respirators are met.

1. Full-face or half-mask, air purifying, canister-equipped respirators (NIOSH approved)
2. Tyvek suit or chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls) depending on the hazards present
3. Coveralls
4. Gloves, outer, chemical resistant
5. Gloves, inner, chemical resistant
6. Boots (outer), chemical resistant steel toe and shank*
7. Boot-covers, outer, chemical resistant (disposable)
8. Hard hat
9. Escape mask*
10. Two-way radios (worn under outside protective clothing)
11. Face shield*

Level D –A work uniform, affording minimal protection: used for nuisance contamination only.

1. Disposable Tyvek suit*
2. Gloves
3. Boots / shoes, steel toe and shank
4. Boots, outer, chemical-resistant (disposable)
5. Safety glasses or chemical splash goggles*
6. Hard hat
7. Face shield*

*Optional, as applicable

8.0 DECONTAMINATION

8.1 PERSONNEL DECONTAMINATION

The first step in decontamination is prevention. Personnel shall wear disposable PPE as appropriate and practice work habits that minimize contact with contaminated or potentially contaminated media.
If using non-disposable overboots, a portable boot wash station shall be utilized to remove gross contamination prior to removal. The boot wash station shall be situated at a designated access/egress point to be determined (based on location of daily activities) and described during the daily tailgate safety meetings. The station/components shall consist of a suitably sized bucket or container, potable water, 3-5 gallon bucket with potable water and anionic detergent, and scrub brush. Procedure is as follows:

1. Using brush and bucket with a water and detergent mix, remove gross contamination, over a bucket.
2. Rinse clean with potable water

Rinsate shall be transferred to 55-gallon drums for characterization and offsite disposal. Disposable PPE (gloves, disposable overboots) shall be double bagged and disposed of as non-regulated wastes.

8.2 EQUIPMENT DECONTAMINATION

Non-dedicated sampling equipment (Monsoon pumps, water level meters, foot valves, steel sampling spoons) is to be decontaminated between each sample location. The equipment decontamination station/components shall consist of a suitably sized bucket or container, potable water, 3-5 gallon bucket with potable water and anionic detergent, and scrub brush. Procedure is as follows:

1. Using brush and bucket with a water and detergent mix, remove gross contamination, over a bucket.
2. Rinse clean with potable water

Rinsate shall be transferred to 55-gallon drums for characterization and offsite disposal.

Down-hole drilling equipment is to be decontaminated between each borehole. The equipment decontamination station/components shall consist of a suitably sized decontamination pad, potable water, anionic detergent, and scrub brush and/or high pressure washer. Procedure is as follows:

1. Over decon pad, remove gross contamination using scrub brush and/or high-pressure rinse with water and detergent mix.
2. Rinse clean with potable water.

Rinsate shall be transferred to 55-gallon drums for characterization and offsite disposal.

9.0 FIRST AID KITS, EYEWASH, AND FIRE EXTINGUISHERS

First aid kits and fire extinguishers are available and accessible on all project field vehicles. All fire extinguishers shall be (minimum) 12-lb, UL-approved, Class ABC dry extinguishers.

Eyewash shall be located in all project field vehicles.

9.1 EQUIPMENT INSPECTIONS

First aid kits, eyewash, and fire extinguishers are to be inspected on a monthly basis by personnel designated by the HSO. During inspections, first aid & eyewash kits will be examined for any missing components as well as for materials that may have reached expiration dates. Fire extinguishers will be inspected for dents, rusting, to ensure pin and hamper are intact, and that pressure is at the recommended level.

10.0 SANITATION

Eating and drinking are prohibited in the work zone. Personnel are to follow decontamination procedures and remove PPE and disposable outerwear before entering vehicles, using the restroom, or eating and drinking. Personnel are to wash hands prior to eating, drinking, or using the restroom.

10.2 HOUSEHOLD TRASH

Household trash is to be placed in contractor quality garbage bags and transported offsite daily for disposal via municipal waste streams.

11.0 HEAT & COLD STRESS

11.1 WORKING IN COLD RELATED STRESS ENVIRONMENTS

Hypothermia results when the body loses heat faster than it can produce it. When this situation first occurs, blood vessels in the skin constrict in an attempt to conserve vital internal heat. Hands and feet are affected first. If the body were to continue to lose heat, involuntary shivers would begin which is the body's way of attempting to produce heat, and is the first real warning sign of hypothermia.

An individual generates body heat from food and muscular activity, and loses heat through convection, conduction, radiating, and sweating, in an attempt to maintain a constant (regulated) body temperature. General physical activity acts to increase metabolic heat, with clothing providing the proper insulation to minimize heat loss. When clothing becomes wet (i.e. contact with water in trenches, hydrant flushes, or sweat during intense physical work like continuous shoveling) its cold-insulating property will be compromised.

The four environmental conditions that cause cold-related stress to the body are low temperatures, high / cool winds, dampness, and cold water. A wind-chill effect is created when high/ cool winds blow away the warm air between your body and layers of clothes to the outside air.

11.1.1 PROTECTIVE MEASURES

Protective clothing is perhaps the most important step in fighting the elements. A relatively small temperature drop in the body core (about 2 degrees F) produces shivering. Therefore, EAR will recommend its employees do the following:

- Wear an outer layer to break the wind;
- Wear a middle layer of down or wool to absorb sweat and retain insulation when wet
- Wear an inner layer of cotton or synthetic weave to allow ventilation

Personnel will pay special attention to protecting feet, hands, face, and head. Up to 40% of body heat can be lost when the head is exposed. Footgear will be insulated to protect against cold and dampness. Our field personnel, who will be required to maintain long periods of time in the cold, will keep a change of dry clothes available should their work garments become wet. The project decontamination trailer will provide a climate-controlled environment for decontamination and changing.

11.2 WORKING IN HEAT RELATED STRESS ENVIRONMENTS

The combination of heat, humidity and physical labor can lead to fatalities, or produce other heat-related occupational inures and/or illnesses serious enough to result in lost work time. The purpose of this program is to provide basic guidelines for EAR employees required to perform work tasks in adverse heat-related conditions and to ensure that the potential for harm is minimized, if not eliminated.

References
OSHA Trade News Release "Protecting Workers in Hot Summer Weather"
U.S. Dept. of Health & Human Services "Working in Hot Environments"
OSHA Technical Manual; Section 3 "Heat Stress"
Roger L. Brauer Safety & Health for Engineers

11.2.1 TERMS & CONCEPTS

Conduction – is the transfer of heat between materials that contact each other. Heat passes from the warmer material to the cooler material. For example, a worker's skin can transfer heat to a contacting surface if that surface is cooler, and vice versa. Conduction is of little significance in air environments. However, in an underwater environment it is the dominant mode of heat transfer.

Convection – is the transfer of heat in a moving fluid. Air flowing past the body can cool the body if the air temperature is cool. On the other hand, air that exceeds 95 °F can increase the heat load on the body. If the skin temperature is higher than the surrounding air, heat will be removed from the body. If the air temperature is higher than skin temperature, heat will be added to the body, adding to the burden of metabolic heat that must be removed through radiation or evaporation to maintain a constant body temperature.

Air speed affects the rate of heat transfer by convection. Whether heat is being added or removed, a fourfold increase in air speed will about double the rate of heat transfer. Having a fan blow air over the body when the air temperature is higher than skin temperature actually adds heat to the body by convection.

Evaporation – Humans have the capability to sweat as a means for cooling the body. Sweat glands in the skin secrete sweat, which is primarily water containing some dissolved salts. Sweat increases as the thermal regulation system in the body requires increased cooling to remove heat. Cooling occurs from the phase change of liquid to vapor when water evaporates from the skin. The maximum amount of cooling that can be achieved through sweating is a function of air speed and the ability of the surrounding air to accept additional moisture.

In hot, humid conditions the vapor pressures in air and at the skin surface are nearly the same. Cooling through evaporation of sweat is then limited by the environment. In hot, dry environments the difference in vapor pressures is large and the evaporation is rapid. In those circumstances where evaporation occurs rapidly, the actual cooling of the body may be limited by the maximum rate at which sweat is produced.

Humidity – absolute humidity is the weight of water vapor per unit volume. Relative humidity is the ratio of the actual partial vapor pressure of the water vapor in a space to the saturation pressure of pure water at the same temperature.

Metabolism – is a by-product of the body's activity. It is known as the rate at which heat is produced in the body which is determined by the activity being performed by the body. Cells in the body burn oxygen and nutrients in performing their functions and heat is produced in the chemical process of combustion. Cells produce more heat with increased activity and the total amount of heat produced by the body is determined by the activity of the body. Typical values of oxygen consumption for various activities are listed in Table 1.

Radiation – is the transfer of heat energy through space. A worker whose body temperature is greater than the temperature of the surrounding surfaces radiates heat to these surfaces. Hot surfaces and infrared light sources radiate heat and can increase the body's heat load.

11.2.1.1 Metabolic Costs (Oxygen Consumption for Selected Activities)

Activity	Cost (kcal/hour)
General	
Light work	Up to 200
Moderate work	200-350
Heavy work	350-500
Resting	
Sleeping	70-75
Sitting quietly	80-100
Standing relaxed	110
Work	
Drafting	115
Driving a car	
Light traffic	80
Heavy traffic	190
Carpentry	230
Welding	180
Shoveling	410
Sweeping floors	235
Sawing wood by hand	480
Recreation	
Volleyball	210
Tennis	425
Swimming	400-550
Dancing, moderately	250
Basketball	515

11.2.2 ADVERSE HEALTH EFFECTS FROM EXPOSURE TO HEAT

Fainting – A worker who is not accustomed to hot environments and who stands erect and immobile in the heat may faint. With enlarged blood vessels in the skin and in the lower part of the body due to the body's attempts to control internal temperature, blood may pool there rather than return to the heart to be pumped to the brain. Upon lying down, the worker should soon recover. By moving around, and thereby preventing blood from pooling, the patient can prevent further fainting.

Heat Cramps – Heat cramps are painful spasms of the muscles that occur among those who sweat profusely in heat, drink large quantities of water, but do not adequately replace the body's salt loss. The drinking of large quantities of water tends to dilute the body's fluids, while the body continues to lose salt. Shortly thereafter, the low salt level in the muscles causes painful cramps. The affected muscles may be part of the arms, legs or abdomen, but tired muscles (those used in performing the work) are usually the ones most susceptible to cramps. Cramps may occur during or after work hours and may be relieved by taking salted liquids by mouth.

Heat Exhaustion – Heat exhaustion includes several clinical disorders having symptoms which may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes

with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated.

Heat Rash –Heat rash, also known as prickly heat, is likely to occur in hot, humid environments where sweat is not easily removed from the surface of the skin by evaporation and the skin remains wet most of the time. The sweat ducts become plugged, and a skin rash soon appears. When the rash is extensive or when it is complicated by infection, prickly heat can become very uncomfortable and may reduce a worker's performance.

Heat Stroke – Heat stroke is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate. The body's only effective means of removing excess heat is compromised with little warning to the victim that a crisis stage has been reached.

A heat stroke victim's skin is hot, usually dry, red or spotted. Body temperature is usually 105°F or higher, and the victim is mentally confused, delirious, perhaps in convulsions, or unconscious. Unless the victim receives quick and appropriate treatment, death can occur.

Transient Heat Fatigue –This refers to the temporary state of discomfort and mental or psychological strain arising from prolonged heat exposure. Workers unaccustomed to the heat are particularly susceptible and can suffer, to varying degrees, a decline in task performance, coordination, alertness, and vigilance. The severity of transient heat fatigue will be lessened by a period of gradual adjustment to the hot environment (heat acclimatization).

The human body has a remarkable complex and delicate mechanism whose purpose is to hold body temperature within extremely narrow limits despite a wide range of external air conditions. The human body has remarkable powers of adaptation. As soon as skin temperature rises or falls above or below an optimum, the body sets out to correct matters. Sweat is secreted in a hot environment and blood is redistributed between the skin and deeper tissues in a cold environment. In this way a two-sided mechanism controls the body temperature by a) regulation of internal heat production (chemical regulation) and b) regulation of heat loss through automatic variation in skin circulation and the operation of sweat glands (physical regulation).

Problems of heat stress are more common than those presented by a very cold environment. The blood carries heat from deep within the body to the skin where heat can be dissipated by convection, radiation, or evaporation. Warming Occurs when a hot environment places an additional load on the cardiovascular system of an individual and the transfer of heat from the body is not adequate. Excessive warming of the body can lead to heat cramps, heat exhaustion and sometimes heat stroke. The rate at which metabolic heat is produced in the body must be balanced by the rate at which heat is lost to the environment.

One of the best ways to reduce heat stress on workers is to minimize heat in the workplace. However, the work environment for our project employees is obviously difficult to control being exposed to the weather elements year round. Although humans are, to a large extent, capable of adjusting to the heat, it normally takes about 5-7 days, during which time the body will undergo a series of changes that will make continued exposure to heat more endurable.

On the first day of work in a hot environment (heat & humidity), the body temperature, pulse rate and general discomfort will be higher. With each succeeding daily exposure, all of these responses will gradually decrease, while the sweat rate will increase. When the body becomes acclimated to the heat, the worker will find it possible to perform work with less strain and distress.

Gradual exposure to heat gives the body time to become accustomed to higher environmental temperatures. Heat disorders in general are more likely to occur among workers who have not been given time to adjust to working in the heat or among workers who have been away from hot environments and who have gotten accustomed to lower temperatures. Hot weather conditions of the summer are likely to affect the worker who is not acclimatized to heat.

11.2.3 OPERATIONAL WORK PRACTICES, ADMINISTRATIVE CONTROLS & SAFETY GUIDELINES

Whenever the anticipated heat indices reach a "targeted level" of 90°F and 90% humidity, the following measures will be activated:

- Rotation of the job task whenever possible by on-site personnel (regardless of title)
- Should job task rotation not be possible, a five minute break should follow every 15 minutes of activity (specific activities addressed: shoveling, equipment operators)
- A steady methodical work pace adjusted to the elements, avoiding short bursts of activity
- Maintain minimal skin exposure to the sun: wear T-shirts to absorb the sweat (the body actually stays cooler with a light shirt as opposed to no shirt at all), and do not stand in the sun whenever it can be avoided.

As mentioned earlier, the secretion of sweat is the body's process of regulating / maintaining the body's core temperature. A worker may produce as much as two to three gallons of sweat over the course of a day and needs to have that replaced. Fluid intervals should be at regular intervals (as opposed to a gallon at lunch) and the fluid does not need to be cold. Potable water supplied in the vehicle coolers should be dispensed throughout the day. However, water intake alone does not address the body's need for salt loss, which can lead to muscle cramping. When the heat indices reaches the "targeted level" of 90°F and 90% humidity, EAR will dispense electrolyte fluids to workers / crews involved with the activities identified above, at the start of the day. The distribution program will be managed by the Site Manager in coordination with each project site location. The electrolyte fluid should be taken after lunch, at the start of the second half of the work day.

Smart, practical, common sense approaches to working in heat stress environments, along with proper guidance from supervision, will complement the guidelines identified in this program to ensure that EAR employees avoid preventable illness and unnecessary injuries while performing assigned job tasks.

12.0 HAZARD COMMUNICATION & CHEMICAL USAGE

Purpose - To ensure that the hazards associated with all chemicals utilized by EAR employees are first evaluated, and that information is then passed on to the employee using them through:

a) Company provided training
b) Safety Data Sheet (SDS) information
c) Chemical product container labeling information
d) Issuance of PPE

Procedure – EAR shall require each and every chemical manufacturer that supplies our company with a chemical product, to accompany that product with its SDS and hazardous information label on the original container.

Based on the information contained in the SDS, along with the intended use of the product, EAR shall provide employee training about potential hazards and what protective measures they and EAR shall use to minimize the potential for exposure and risk to injury or illness.

Responsibilities – Project Manager shall list all chemicals to be used at a project site. The SDS's for those products will be on site and accessible for site employees involved with the project. The Project Manager shall also ensure that each and every chemical product container has the required information on its label. Should a chemical need to be transferred to another container, the Hazardous Material Information System label shall be utilized with appropriate numerical codes for Health, Flammability and Reactivity.

Should any chemical products be utilized for a project, the safe handling information received by the employees shall be adhered to. It will be their responsibility to apply information received from the Project Manager, the SDS and the container label to properly protect themselves through the use of controls and assigned PPE.

A copy of the written Hazard Communication Program is available upon request.

References – "Occupational Safety & Health Administration Code of Federal Regulations Part 1910.1200"

13.0 HANDLING AND LABELING OF DRUMS AND CONTAINERS

- Prior to handling a drum or container, The Company shall assure that the drums or containers used for the project meet the required OSHA, EPA (40 CFR Parts 264-265 and 300) and DOT regulations (49 CFR Parts 171-178), and are properly inspected and labeled prior to use.
- Damaged drums or containers will be emptied of their contents and properly discarded, or placed in an over pack drum to prevent leakage of waste.
- Should the drums be utilized for contaminated soil or soil/sludge liquids, EAR shall have available salvage drums, absorbent materials, and general clean-up tools.
- To the extent feasible, the moving of drums / containers will be kept to a minimum. Should the movement or opening of drums be deemed necessary by project circumstances then employees shall utilize extreme caution during the processes of venting, tipping, crushing, emptying (liquid transfer), or transporting (hand truck or forklift with attachment). All drums and/or containers utilized by The Company shall be promptly closed/sealed and labeled immediately upon being filled.
- Field foreman and HSO shall determine appropriate PPE for all employees handling or working around site drums and containers.
- Prior to the drums being shipped off-site from the project to a licensed disposal facility, all containers shall be properly labeled and packaged with accompanying waste manifests.

14.0 FIRE PROTECTION & PREVENTION

EAR complies with all applicable laws, regulations, codes, and good practices pertaining to fire prevention. This Fire Prevention Plan serves to reduce the risk of fires as follows:

14.1 GOOD HOUSEKEEPING / GENERAL

To limit the risk of fires, employees shall take the following precautions:

- Minimize the storage of combustible materials.
- Make sure that exit routes and walkways are kept free of obstructions.
- Dispose of combustible waste in covered, airtight, metal containers.
- Use and store flammable materials in well-ventilated areas away from ignition sources.
- Use only nonflammable cleaning products.
- Keep incompatible (i.e., chemically reactive) substances away from each other.
- Keep equipment in good working order (i.e., inspect electrical wiring and appliances regularly and keep motors and machine tools free of dust and grease.
- Ensure that heating units are safeguarded.
- Repair and clean up flammable liquid leaks immediately.
- Keep work areas free of dust, lint, sawdust, scraps, and similar material.
- Do not rely on extension cords if wiring improvements are needed, and take care not to overload circuits with multiple pieces of equipment.
- Turn off electrical equipment when not in use.

14.2 MAINTENANCE

Field personnel will ensure that equipment is maintained according to manufacturers' specifications. EAR will also comply with requirements of the National Fire Protection Association (NFPA) codes for specific equipment. Only properly trained individuals shall perform maintenance work.

The following equipment is subject to the inspection and maintenance on an as used basis, but no less than a frequency of once per quarter:

- Portable fire extinguishers
- All power tools

14.3 TYPES OF HAZARDS

The following sections address the major workplace fire hazards at EAR facilities and the procedures for controlling the hazards.

14.3.1 ELECTRICAL FIRE HAZARDS

Electrical system failures and the misuse of electrical equipment are leading causes of workplace fires. Fires can result from loose ground connections, wiring with frayed insulation, or overloaded fuses, circuits, motors, or outlets.

To prevent electrical fires, employees shall:

- Make sure that worn wires are replaced.
- Use only appropriately rated fuses.
- Never use extension cords as substitutes for wiring improvements.
- Use only approved extension cords [i.e., those with the Underwriters Laboratory (UL) or Factory Mutual (FM) label].
- Check wiring in hazardous locations where the risk of fire is especially high.
- Check electrical equipment to ensure that it is either properly grounded or double insulated.
- Ensure adequate spacing while performing maintenance.

14.3.2 FLAMMABLE AND COMBUSTIBLE MATERIALS

Certain types of substances can ignite at relatively low temperatures or pose a risk of catastrophic explosion if ignited. Such substances obviously require special care and handling.

1. Class A combustibles.

These include common combustible materials (wood, paper, cloth, rubber, and plastics) that can act as fuel and are found in non-specialized areas such as offices.

To handle Class A combustibles safely:

a. Dispose of waste daily.
b. Keep work areas clean and free of fuel paths that could allow a fire to spread.
c. Do not order excessive amounts of combustibles.
d. Make frequent inspections to anticipate fires before they start.

Water, multi-purpose dry chemical (ABC), and halon 1211 are approved fire extinguishing agents for Class A combustibles.

2. Class B combustibles.

These include flammable and combustible liquids (oils, greases, tars, oil-based paints, and lacquers), flammable gases, and flammable aerosols.

To handle Class B combustibles safely:

a. Use only approved pumps, taking suction from the top, to dispense liquids from tanks, drums, barrels, or similar containers (or use approved self-closing valves or faucets).

b. Do not dispense Class B flammable liquids into containers unless the nozzle and container are electrically interconnected by contact or by a bonding wire. Either the tank or container must be grounded.

c. Store, handle, and use Class B combustibles only in approved locations where vapors are prevented from reaching ignition sources such as heating or electric equipment, open flames, or mechanical or electric sparks.

d. Do not use a flammable liquid as a cleaning agent inside the system equipment container.

e. Do not use, handle, or store Class B combustibles near exits, stairs, or any other areas normally used as exits.

f. Do not cut, grind, or use unsafe electrical appliances or equipment near Class B combustibles.

g. Know the location of and how to use the nearest portable fire extinguisher rated for Class B fire.

Water should not be used to extinguish Class B fires caused by flammable liquids. Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, exclude the air around the burning liquid. The following fire-extinguishing agents are approved for Class B combustibles: carbon dioxide, multi-purpose dry chemical (ABC), halon 1301, and halon 1211. (**NOTE:** Halon has been determined to be an ozone-depleting substance and is no longer being manufactured. Existing systems using halon can be kept in place.)

14.3.3 SMOKING

Smoking is prohibited at the job site.

15.0 ELECTRICAL HAZARDS

Electrical accidents are generally caused by a combination of three possible factors: unsafe equipment and / or insulation, workplace made unsafe by the environment, and unsafe work practices. There are various ways of protecting people from the hazards caused by electricity. These include: insulation, guarding, grounding, mechanical devices and safe work practices.

Insulation - One way to safeguard individuals from electrically energized wires and parts is through insulation. An insulator is any material with high resistance to electric current. Insulators such as glass, mica, rubber, and plastic, are put on conductors to prevent shock, fires, and short circuits. Before employees of EAR prepare to work with electric equipment, they will check the insulation before making a connection to a power source to be sure there are no exposed wires. The insulation of flexible cords, such as extension cords, is particularly vulnerable to damage.

Guarding – Live parts of electric equipment operating at 50 volts or more must be guarded against accidental contact. Guarding of live parts may be accomplished by:

- Location in a room, vault or similar enclosure accessible only to qualified persons
- Use of permanent, substantial partitions or screens to exclude unqualified persons
- Location on a suitable balcony, gallery, or platform elevated and arranged to exclude unqualified persons, or
- Elevation of 8 feet or more above the floor.

Entrances to rooms and other guarded locations containing exposed live parts must be marked with conspicuous warning signs forbidding unqualified persons to enter.

Indoor electric installations that are over 600 volts and that are open to unqualified persons must be made with metal-enclosed equipment or enclosed in a vault or area controlled by a lock. In addition, equipment must be marked with appropriate caution signs.

EAR does not anticipate employee exposure to any live parts of electric equipment during field project(s).

Grounding – Grounding is another method of protecting employees from electric shock, however, it is normally a secondary protective measure. The term “ground” refers to a conductive body that has a conductive connection, whether intentional or accidental, by which an electric current or equipment is connected to earth or ground plane.

By “grounding” a tool or electrical system, a low-resistance path to the earth is intentionally created. When properly done, this path offers sufficiently low resistance and has sufficient current carrying capacity to prevent the build-up of voltages that may result in a personal hazard. It will, however, substantially reduce the possibility of injuries and death, especially when used in combination with the other safety measures.

There are two kinds of grounds required by “Design Safety Standards for Electrical Systems”. One of these is called the “service or system ground”. In this instance, one wire – called the “neutral conductor” or “grounded conductor” – is grounded. In an ordinary low voltage circuit, the white (or gray) wire is grounded at the generator or transformer and again at the service entrance of the building. This type of ground is primarily designed to protect machines, tools, and insulation against damage.

To offer enhanced protection to the workers themselves, a second type of ground called the “equipment ground”, must be furnished by providing another path from the tool or machine through which the current can flow to the ground. This additional ground safeguards the electric equipment operator in the event that a malfunction causes

the metal frame of the tool to become accidentally energized. The resulting surge of current will then activate the circuit protection devices and open the circuit.

Circuit Protection Devices – Circuit protection devices are designed to automatically limit or shut off the flow of electricity in the event of a ground-fault, overload, or short circuit in the wiring system. Fuses, circuit breakers, and ground-fault circuit interrupters are three well-known examples of such devices.

Fuses or circuit breakers are over-current devices that are placed in circuits to monitor the amount of current that the circuit will carry. They automatically open or break the circuit when the amount of current flow becomes excessive and therefore unsafe. Fuses are designed to melt when too much current flows through them. Circuit breakers, on the other hand, are designed to trip open the circuit by electro-mechanical means.

Fuses and circuit breakers are intended primarily for the protection of conductors and equipment. They prevent overheating of wires and components that might otherwise create hazards for operators. They also open the circuit under certain hazardous ground-fault conditions.

Whenever company personnel utilize customer supplied power for tools or equipment, they will ensure that circuit protections devices are in place and functioning.

The ground-fault circuit interrupter or GFCI is designed to shut off electric power with in as little as 1/40 of a second. It works by comparing the amount of current going to an electric device against the amount of current returning from the device along the circuit conductors. The GFCI is used in high risk areas such as wet locations and construction sites. A GFCI is to be employed when feasible with the use of electric cords and/or power tools.

Safe Work Practices – Employees of EAR working with electrical equipment are required to use safe work practices. These include: de-energizing electric equipment before inspecting or making repairs; only using power tools that are in good condition and are insulated; using good judgment when working near energized lines; and using appropriate protective equipment.

Accidental or unexpected sudden starting of electrical equipment can cause severe injury or death. Before any inspections or repairs are made, the current will be turned off at the switch box (energy isolating device) and the switch padlocked in the off position. At the same time, the switch or controls of the machine or other equipment being locked out of service will be securely tagged to show which equipment or circuits are being worked on.

Note: As per CFR 1910.147 *Control of Hazardous Energy*, all electrical work performed by EAR personnel will be in accordance with noted regulations. Only properly trained EAR personnel will perform repair or maintenance on electrical equipment or machinery, should the need arise.

To maximize his or her own safety, employees of EAR will be equipped with tools right for the job, or task at hand. They will be inspected prior to use, and discarded should a defect be discovered. Tools and equipment will be maintained daily. Inadequate maintenance can cause equipment to deteriorate, resulting in an unsafe condition.

Perhaps the single most successful defense against electrical accidents is the continuous exercising of good judgment or common sense. All employees of any project will be thoroughly familiar with the safe work procedures identified for their specific tasks.

16.0 HEARING PROTECTION

Hearing protection will be utilized at all locations where equipment such as jackhammers, sawcutters, blowers, pumps, and other equipment generating loud noises (above 85 dB) are operated.

A copy of EAR's Hearing Conservation Program is available upon request.

17.0 DRUG & ALCOHOL TESTING / DRUG FREE WORKPLACE

EAR believes in a drug-free workplace. Under the *Omnibus Transportation Employee Testing Act of 1991,* the *Drug-Free Workplace Act of 1988* and in accordance with the regulatory requirements of 49 CFR Parts 40 and 382 (August 2008), we are committed to ensuring that employees of EAR are performing their job functions free from the influence of any illegal substances for the health and well-being of themselves, their fellow employees, and for the general public. This commitment will minimize, if not eliminate, the potential for workplace accidents and injuries due to the diminished capacities of employees who would otherwise act irresponsibly.

The Drug-Free Workplace Act specifically requires EAR to notify each employee that, as a condition of employment, they must:

- Comply with the Company's Drug-Free Workplace Policy.
- Notify The Company of any conviction for a drug-related offense committed in the workplace within three (3) days of such conviction.
- Any employee who violates this company policy shall be subject to disciplinary action including termination of employment.

17.1 PROHIBITIONS

EAR's Drug-Free Workplace prohibits employees from engaging in any of the following activities:

- Use, possession, manufacture, distribution, dispensation or sale of illegal drugs on Company premises or Company business, in Company supplied vehicles, at job sites or during working hours.
- Unauthorized use or possession, or any manufacture, distribution, dispensation or sale of a controlled substance on company premises or job sites or while on Company business or while in Company supplied vehicles.
- Storing in a locker, desk, automobile or other repository on Company premises or job sites any controlled substances whose use is unauthorized.
- Being under the influence of a controlled substance on Company premises or while on Company business, job sites, or while in Company supplied vehicles.
- Any possession, use, manufacture, distribution, dispensation or sale of illegal drugs off Company premises that adversely affects the individual's work performance, their own or the safety of others at work, or the Company's regard or reputation in the community.
- Failure to adhere to the requirements of any drug treatment or counseling program in which the employee is enrolled.
- Failure to notify the Company of any conviction under criminal drug statutes for a workplace offense within three (3) days of the conviction;
- Refusal to abide by the Company's Drug-Free Workplace policy.
- Unauthorized use of prescribed medicine. An employee undergoing prescribed medical treatment with a drug, which may alter their physical or mental ability, must report this treatment to the Company's President. The President should determine whether a temporary change in the employee's job assignment is warranted during the period of treatment.

17.2 DRUG AND ALCOHOL TESTING

Under the *Omnibus Transportation Employee Testing Act of 1991,* EAR has a drug and alcohol testing program for all employees required to operate a commercial motor vehicle having a gross vehicle weight rating (GVWR) of 26,001 or more pounds over the course of their workday. Testing will be carried out under the following conditions:

- Pre-employment
- Random
- Reasonable Suspicion (including an outside conviction)
- Post-Accident

Employees who hold a commercial driver's license (CDL) and who operate a commercial motor vehicle of 26,001 or more pounds, will be subject to random drug testing during the course of their employment with the company. In accordance with the new regulatory requirements, 50% of the workforce will be subject to drug testing and 10% subject to alcohol testing, annually. Post-accident testing will be conducted if the motor vehicle accident involves the following:

The accident occurs in a vehicle that requires a CDL to operate

and

The accident involved a citation to our CDL driver that involved:

- A vehicle being towed away
- A party involved was injured and required immediate attention
- A fatality occurred

17.3 DISCIPLINARY ACTIONS

A violation of the Company's Drug-Free Workplace Policy may result in disciplinary action, up to and including termination of employment, at the company's sole discretion.

In addition to any disciplinary action, the Company may, in its sole discretion, refer the employee to a treatment and counseling program for drug abuse. Employees referred to such a program by the Company must immediately cease any drug use, may be subject to periodic unannounced testing for a period of twenty-four (24) month, and must comply with all other conditions of the treatment and counseling program.

The Company shall determine whether an employee if referred for drug treatment and counseling should be temporarily reassigned to another position for safety reasons. The Company should promptly terminate any employee who tests positive for drugs while undergoing treatment and counseling for drug abuse.

17.4 DRUG AWARENESS PROGRAM

In an effort to assist employees and their families in understanding and avoiding the perils of drug abuse, EAR has developed this comprehensive Drug Awareness Program. EAR will use this program in an educational effort to prevent and eliminate drug abuse that may affect the workplace.

The Drug Awareness Program should inform employees about:

- Dangers of drug abuse in the workplace.
- The Company's Drug-Free Workplace Policy.
- Availability of treatment and counseling for employees who voluntarily seek such assistance.

- Disciplinary actions for violations of the Company's Drug-Free Workplace Policy.

Employees of the EAR are our most valuable resource and, for that reason, their health and safety is our number one concern. Any drug use, which imperils the health and well-being of our employees or threatens Company business will not be tolerated.

The use of illegal drugs and abuse of other controlled substances on or off duty is inconsistent with the law-abiding behavior expected of citizens. Employees who use illegal drugs or abuse other controlled substances on or off duty tend to be less productive, less reliable, and prone to greater absenteeism. This, in turn, can result in increased costs, delays and risks to the Company's business.

Drug use in the workplace puts the health and safety of the abuser and all other workers around them at increased risk. Employees have the right to work in a drug-free environment. In addition, drug abuse inflicts a terrible toll on the nation's productive resources and the health and well-being of American workers.

Early recognition and treatment of drug abuse is important for successful rehabilitation. Whenever feasible, the Company will assist employees in overcoming drug abuse by providing information on treatment opportunities and programs. However, the decision to seek diagnosis and accept treatment for drug abuse is primarily the individual employee's responsibility.

Employees with drug abuse problems should request assistance from management. The Company should treat all such requests confidentially and should refer the employee to the appropriate treatment and counseling services. Employees who voluntarily request the Company's assistance in dealing with a drug abuse problem may do so without jeopardizing their continued employment, provided they strictly adhere to the terms of their treatment and counseling program.

At a minimum, these terms include the immediate cessation of any use of drugs, and participation, where required by a program, in periodic unannounced testing for a twenty-four (24) month period following enrollment in the program.

Voluntary requests for assistance from employees should not, however, prevent disciplinary action for violation of the Company's Drug Free Workplace Policy.

EAR has a "zero tolerance" level program. The Company is committed to maintaining a safe workplace free from the influence of drugs. All employees are hereby notified that the Company should comply with the requirements of the Drug-Free Workplace Act of 1988, and all applicable regulations issued there under, as well as, when applicable, any more stringent rules created by other federal agencies.

EAR's Drug Awareness Program does not create an employment contract between the employer and employee. Furthermore, the Company has the sole right to modify the policy and program at any time.

18.0 EMERGENCY PROCEDURES

In the event of an emergency, all work will cease and equipment will be shut down. The onsite foreman and onsite supervisor/project manager will be equipped with an operating mobile phone at all times, and will contact 911 immediately in the event of an emergency etc.

The EAR office will be notified immediately in the event of an emergency/accident. In full compliance with the OSHA requirements for recording and reporting injuries and illnesses, EAR shall utilize the Accident/Incident Report (attached as Appendix E), which shall serve as Form 301. Within two working days of any reportable accident, EAR will prepare and submit an Accident/Incident Report to NYSDEC.

18.1 INJURY OR MEDICAL EMERGENCY

In the event of injury or medical emergency the following procedures will be implemented:

- The local Emergency Medical Response Team (EMRT) and police will be notified of the situation via the 911 system.

- Personnel will render first aid within the limits of their training. One person will remain with the injured party at all times unless required to call the EMRT.

- After the EMRT arrives they will be notified of all pertinent site information, including nature of contaminants known or suspected to be on site and all information relating to the nature of the injury.

- The health and safety officer, the project manager, and the office of EAR will be notified as soon as possible.

- Employee interviews, at the appropriate time, to determine cause factor(s); both the injured party and witnesses shall be interviewed utilizing the attached form to determine preventability. Should faulty equipment or tools be a cause factor in the incident, then the foreman shall take immediate action by removing this equipment or tools from service (either for repairs or to be discarded). Should the unsafe action of an individual or individuals be the cause, then the supervisor has the authority to either discipline or arrange for retraining.

First aid kits, eyewash, and fire extinguishers are available in all EAR vehicles.

The emergency procedures for chemical exposure will be as follows:

- Skin Contact - Flush with copious amounts of soap and potable water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be flushed thoroughly with water in the event of chemical contact.

- Inhalation - Move victim to fresh air, if necessary decontaminate and transport to hospital.

- Ingestion - Decontaminate and transport to hospital.

- Puncture Wound or Laceration - Decontaminate and transport to hospital. Health and safety officer will supply medical data sheet to medical personnel as requested. First aid kits are located in all company vehicles.

19.0 EMERGENCY PHONE NUMBERS

19.1 GENERAL

- Fire Department: **911**
- Police Department: **911**
- Ambulance: **911**
- Poison Control Center: **(212) 340-4494**
- Chemtrec: **800-424-9300**
- New York City and Long Island One Call System: **1-800-272-4480 (or 811)**

19.2 ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

24-Hour Contact: ***1-888-EAR-6789 (option-2 for emergency)***

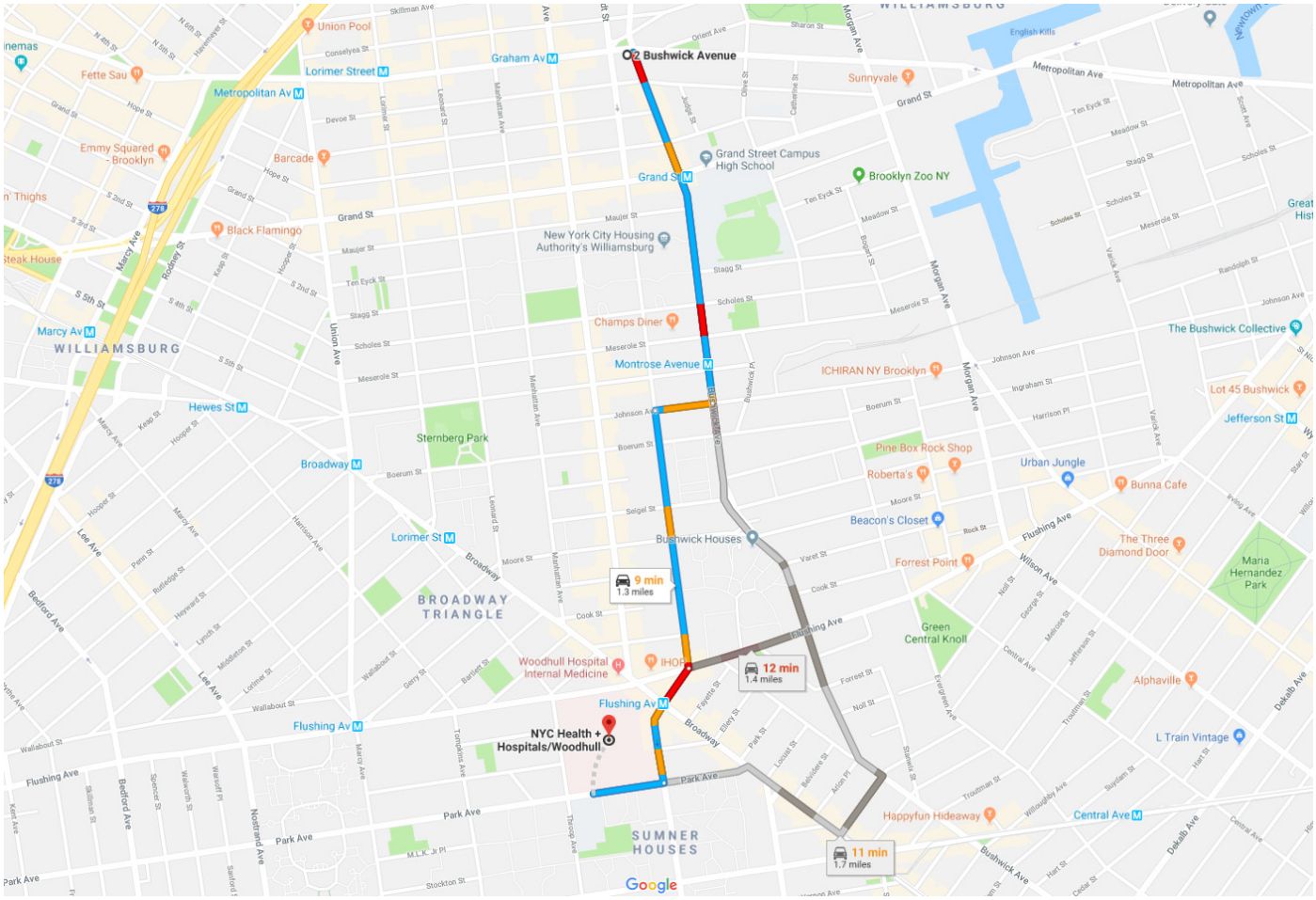
- David Vigliotta (Owner, President) (24 hour on-call for emergencies via above number)
  Work: **(631) 447-6400x120**
  Home: **no land based line available**
  Cell: **(632) 872-2824**
- John Hofmann (Health & Safety Officer) (24 hour on-call for emergencies via above number)
  Work: **(631) 447-6400 x113**
  Home: **(631) 475-7206**
  Cell: **(516) 924-1382**
- Jaime Allen (Project Manager)
  Work: **(631) 447-6400 x153**
  Home: **no land-based line available**
  Cell: **(631) 504-2278**
- John Lohan or Joy Sauer (Geologist/Foreman/Onsite Project Coordinator)
  Work: **(631) 447-6400 x180**
  Home: **no land-based line available**
  John Lohan Cell: **(631) 921-2055**
  Joy Sauer Cell: (516) 983-6549

19.3 NYSDEC REPRESENTATIVE

- Andre Obligado (Project Manager)
  Work: (718) 482-6412

20.0 HOSPITAL INFORMATION

The nearest hospital to the Site is the Flushing Hospital and Medical Center at 4500 Parsons Blvd, Flushing, NY. The phone number for the hospital is (718) 963-8000. A map and directions to the hospital from the site are provided below.



Head south on Bushwick Ave toward Devoe St

Pass by Grand Seafood & Fish Market (on the right in 0.2 mi)

0.6 mi

Turn right onto Johnson Ave

469 ft

Turn left at the 1st cross street onto Humboldt St

0.4 mi

Continue straight onto Sumner Pl

0.2 mi

Turn right onto Park Ave

0.1 mi

NYC Health + Hospitals/Woodhull
760 Broadway, Brooklyn, NY 11206

FIGURES

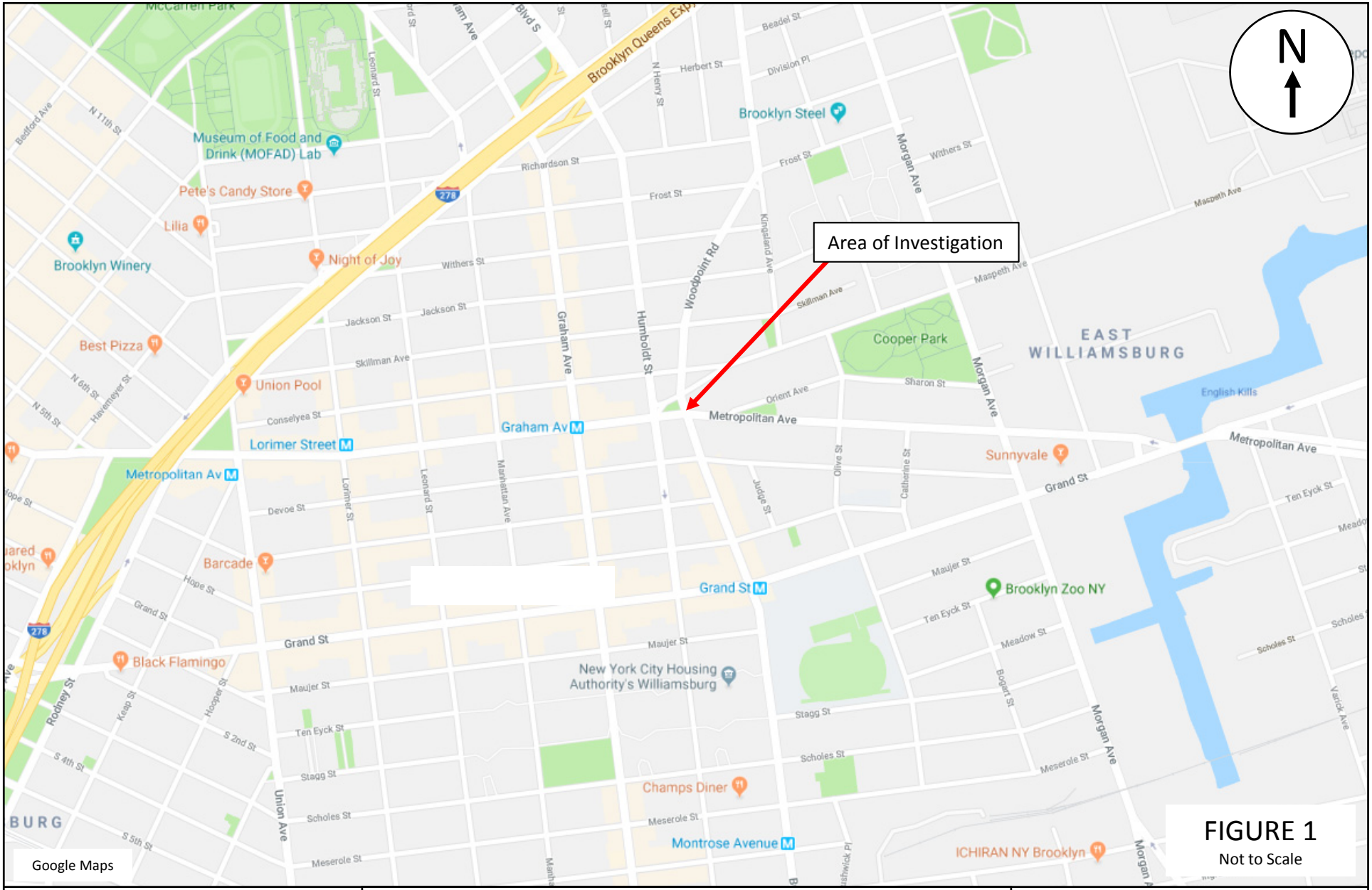


FIGURE 1
Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

SITE LOCATION MAP

Unknown Spill
Bushwick & Metropolitan Avenue
Brooklyn, New York
NYSDEC Spill# 1811154

FIGURE 2
Not to Scale

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

SITE MAP
Proposed Soil Boring/Monitoring Well Locations

Unknown Spill
Bushwick & Metropolitan Avenue
Brooklyn, New York
NYSDEC Spill# 1811154

APPENDIX A: JOB SAFETY CHECKLIST AND PPE HAZARD ASSESSMENT FORMS

Job Safety Checklist

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Date: _____ Site ID/Project Location: _____

EAR Representative: _____

The following procedures must be discussed as part of the Job Site Safety meeting with "Yes" signifying the workers are fully aware of the procedure and responsibilities and will communicate the procedures to everyone involved in the work (fellow employees, subcontractors, vendors, etc.) and ensure compliance. Work will not be allowed to progress in any area marked "N/A" or "No".

Procedure	Yes	No	N/A	Comments
Key Contact List				
Safety Requirements				
Emergency Procedures				
Area Restrictions				
On Truck Safety Equipment				
Personal Protective Equipment				
Health & Safety Plan				
Job Site Safety Meeting				
Emergency Posting				
First Aid Equipment				
Flashlights				
Lighting the Work Area				
Housekeeping (29 CFR 1926.25)				
Compressed Gas Cylinders				
Scaffolds				
Accident Investigations				
Barrier Protection				
Blocking Driveways				
Color Code Product ID System				
Confined Space Entry				
Crane, Rigging & Hoisting Safety				
DOT Regulations - Contractors				
Electrical Safety				
Emergency Shut Off Valve Operation				

Job Safety Checklist

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Date: _____ Site ID/Project Location: _____

EAR Representative: _____

The following procedures must be discussed as part of the Job Site Safety meeting with "Yes" signifying the workers are fully aware of the procedure and responsibilities and will communicate the procedures to everyone involved in the work (fellow employees, subcontractors, vendors, etc.) and ensure compliance. Work will not be allowed to progress in any area marked "N/A" or "No".

Procedure	Yes	No	N/A	Comments
Excavations				
Flexible Connector Removal				
Filter Changing				
Fire Protection				
Forklift Safety				
Hazardous Waste Manifests				
Ladder Safety				
Lifting & Carrying				
Lockout/Tagout				
Hazard Communication/MSDS				
Safety Meetings				
Safety Procedures for Interior Renovations				
Security - Contractor				
Spill Reporting & Response				
Tank Removal				
Contractor Safety Performance Selection Criteria & Enforcement Actions				
Bucket Truck (Aerial Lift) Safety				
Dispenser Transportation and Disposal				

PPE Hazard Assessment Form

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Job Task: _____

Date: _____ Site ID/Project Location: _____

Assessed By: _____ Job Title: _____

Potential Hazards: (Check all that apply to either existing conditions or are a result of site operations)

( ) Rotating Machinery	( ) Projectiles	( ) Confined Space
( ) Heat Stress	( ) Physical Exertion	( ) Biological
( ) Cold Stress	( ) Noise (>90dBA)	( ) Electrical (Utilities)
( ) Heavy Equipment	( ) Vehicle Traffic	( ) Chemical Exposure
( ) Intrusive Activity	( ) Fire/Explosion	( ) Other: Slips, Trips & Falls
( ) Trench/Excavation Collapse	( ) Uneven Terrain	( ) Flammable Materials
( ) Other: _____	( ) Contact with Contaminated Soil or Water	

_____

_____

_____

_____

Control or Protective Measures: (check all that apply)

( ) Tailgate Meetings	( ) PPE	( ) Safe Work Practices
( ) Employee or Operator Training	( ) Site control	( ) Decontamination
( ) Engineering Controls:	( ) Other: _____	

Install caution tape/barriers around operation.

Establish sufficient work space and minimize access.

Initial Level of PPE for Assigned Tasks

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

PPE has been assigned for this work task per the potential for exposure. PPE requirements are outlined below. PPE ma be upgraded or downgraded depending on monitoring data, site conditions, or as determined by qualified personnel.

Respirator: ( ) Not Required

( ) SCBA, Airline ( ) Fullface APR Resp. ( ) 1/2 Face APR Resp.

( ) N95 Dust Mask ( ) OV/AG/HEPA Cart. ( ) Other Cartridge: _____

Protective Clothing:

( ) Safety Vest ( ) Tyvek ( ) Poly Coated Tyvek

( ) Saranex ( ) Splash Suit ( ) Encapsulating Suit

( ) Other: _____ ( ) Standard Field Clothing

Gloves: ( ) Not Required

( ) Nitrile ( ) Neoprene ( ) PVC - Use with Petroleum Products

( ) Vinyl ( ) Leather ( ) Other: _____

Head/Eye/Ear: ( ) Not Required

( ) Hard Hat ( ) Safety Glasses ( ) Goggles ( ) Welding Shield

( ) Splash Shield ( ) Ear Plugs/Muffs ( ) Other: _____

Footwear: ( ) Not Required

( ) Leather Work Boots ( ) Safety Toed Leather ( ) Chemical Overboots

( ) Safety Toed Rubber ( ) Other: _____

Other PPE:

( ) _____

( ) _____

_____

Signature of the person that performed the assessment

_____

Date of assessment

APPENDIX B: SAFETY DATA SHEETS

1. IDENTIFICATION

Product Identifier: Diesel Fuel

Synonyms: Diesel Fuel, Motor Vehicle Diesel Fuel, Dyed Diesel, * DieselOne®, * DieselOne® w/Platinum Plus DFX, Low Sulfur Diesel (LSD), Ultra Low Sulfur Diesel (ULSD)

Intended use of the product: Fuel

Contact:
Global Companies LLC
Water Mill Center
800 South St.
Waltham, MA 02454-9161
www.globalp.com

Contact Information: EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300
COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):

Flam. Liquid	Category 3	H226
Skin Corrosion/Irritation	Category 2	H315
Aspiration Hazard	Category 1	H304
STOT SE	Category 3	H336
Carcinogenicity	Category 2	H350
Aquatic Chronic	Category 2	H411
Serious Eye Damage/ Irritation	Category 2B	H319

Labeling Elements

Signal Word (GHS-US): **Danger**

Hazard Statements (GHS-US):
H226 – Flammable liquid and vapor.
H315 – Causes Skin irritation.
H304 – May be fatal if swallowed and enters airways.
H336 – May cause drowsiness or dizziness.
H350 – May cause cancer.
H411 – Toxic to aquatic life with long lasting effects.
H319 – May cause eye damage/irritation.

Precautionary Statements (GHS-US):
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 - Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.

P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 – Wash skin thoroughly after handling.
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P308+311 - If exposed or concerned: Get medical advice/attention.
P301+310 - If swallowed: Immediately call a poison center/doctor/…
P331 - Do NOT induce vomiting.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P403+235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:

NFPA 704
Health: 1
Fire: 2
Reactivity: 0

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Composition Information
Mixture

Name	Product Identifier (CAS#)	% (w/w)	Classification
Diesel Fuel	68476-34-6	100	Flam Liq. 3, H226; Skin Irrit. 2, H315; Aspiration 1, H304; STOT SE 3, H336; Carc.2. H350; Aquatic chronic 2, H411
Naphthalene	91-20-3	<0.1	Carc. 2, H351; Acute Tox. 4, H302; Aquatic Acute 1, H400; Aquatic Chronic 1, H410

Additional Formulation Information:
Diesel Fuel consists of C9+ hydrocarbons resulting from distillation of crude oil.

Low Sulfur Diesel Fuel typically contains less than 500 ppm of sulfur

Ultra Low Sulfur Diesel Fuel typically contains less than 15 ppm of sulfur

4. FIRST AID MEASURES

Route	Measures
Inhalation	Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
Ingestion	Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Ingestion may cause gastrointestinal disturbances including irritation, nausea, vomiting, and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory failure, and death.
Eye Contact	In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention. In case of contact lenses, remove immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and of the area of the body burned.

Most Important Symptoms
Contact with eyes and face may cause irritation. Long-term exposure may cause dermatitis (itching, irritation, pain and swelling).

Inhalation may cause irritation and significant or long term exposure could cause respiratory insufficiency and pulmonary edema.

Ingestion may cause aspiration, gastrointestinal disturbance, and CNS effects.

Immediate Medical Attention and Special Treatment
For contact with skin or eyes, immediately wash or flush contaminated eyes with gently flowing water. If possible, irrigate each eye continuously with 0.9% saline (NS). If ingested, rinse mouth. Do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

If inhaled, administer oxygen or establish a patent airway if breathing is labored. Suction if necessary. Monitor closely, anticipate seizures. Consider orotracheal or nostracheal intubation of airway control if patient is unconscious or is in severe respiratory distress.

Discard any clothing or shoes contaminated as they may be flammable.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Foam, carbon dioxide, dry chemical are most suitable

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, C02, water spray, firefighting foam, or Halon. Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment.

LARGE FIRES: Foam, carbon dioxide, dry chemical. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Specific Hazards / Products of Combustion
Moderate fire hazard when exposed to heat or flame with a very low flash point. Product is flammable and easily ignited when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters
Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water.

For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied firefighting foam.

Fighting Equipment/Instructions
Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and protective clothing.

Refer to Section 9 for fire properties of this chemical including flash point, auto ignition temperature, and explosive limits.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Personal Precautions
Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains, or trenches. Vapors may accumulate in low lying areas and reach ignitable concentrations. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned downwind of the spill area. Refer to Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits. Refer to Section 8. Contaminated clothing should not be near sources of ignition.

Emergency Measures
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Consider wind direction. Secure all ignition sources (flame, spark, hot work, hot metal, etc.) from area. Evaluate the direction of product travel, diking sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material. For large spills, isolate initial action distance downwind 1,000 ft. (300 m).

Environmental Precautions
Stop the spill to prevent environmental release if it can be done safely. Product is toxic to aquatic life. Take action to isolate environmental receptors including drains, storm sewers and natural water bodies. Keep on impervious surface if at all possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce / prevent airborne release.

Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state or local requirements for reporting environmental release where necessary. Refer to Section 15 for further information.

Containment and Clean-Up Methods
Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of firefighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with dry earth, sand or other non-combustible, inert oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container with clean, non-sparking tools for reclamation or disposal. Response and cleanup crews must be properly trained and must utilize proper protective equipment. Refer to Section 8 for appropriate protective equipment.

7. HANDLING AND STORAGE

USE ONLY AS A FUEL.
DO NOT SIPHON BY MOUTH.

Handling Precautions
Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to

reduce the possibility of static-initiated fire or explosion. Follow precautions to prevent static initiated fire.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API RP 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage
Large quantities of diesel fuel are stored in tanks or portable containers at an ambient storage temperature. Separate from incompatible chemicals (Refer to Section 10) by distance or secondary containment. Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers that are clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain flammable vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Storage tanks should have a venting system. If stored in small containers, the area should be well ventilated, away from ignition sources and protected from potential damage or vehicular traffic. Post “No Smoking” signs in product storage areas. This storage area should comply with NFPA 30 “Flammable and Combustible Liquid Code” or applicable building code. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks in Flammable and Combustible Liquid Service” and API RP 2015 “Safe Entry and Cleaning of Petroleum Storage Tanks”.

Incompatibles
Keep away from strong oxidizers, ignition sources and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Component	CAS #	List	Value
Diesel Fuel	68476-34-6	ACGIH TLV-TWA	100 mg/m3*
Naphthalene	91-20-3	ACGIH TLV-TWA OSHA PEL ACGIH STEL	10 ppm 10 ppm 15 ppm

*Critical effects; Skin; A3; CNS impairment.

Engineering Controls
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity. Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

Personal Protective Equipment

Exposure	Equipment
Eye / Face	Wear appropriate chemical protective glasses or goggles or face shields to prevent skin and eye contact especially caused from splashing.
Skin	Wear appropriate personal protective clothing to prevent skin contact. Gloves constructed of nitrile, neoprene or PVC are recommended when handling this material. Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure.

Exposure	Equipment
Respiratory	A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
Thermal	Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire. Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	
Appearance	Clear or straw-colored liquid. May be dyed red for distribution.	
Odor	Mild characteristic petroleum distillate odor.	
Odor Threshold	<1 ppm	
pH	Not available	
Melting Point	-22 to -0.4 ˚F (-30 to -18 ˚C)	
Boiling Point Range	320 to 690 ˚F (160 to 366 ˚C)	
Flash Point	> 125.6 ˚F (52 ˚C) PMCC	
Evaporation Rate	Slow, varies with conditions	
Flammability	Flammable liquid	
Flammable Limits	0.6 % - 6.5%	
Vapor Pressure	0.009 psia @ 70 ˚F	
Vapor Density	> 1	(air=1)
Specific Gravity	0.83-0.86 @ 60 ˚F (16 ˚C)	(water=1)
Solubility	Insoluble in water; miscible with other petroleum solvents.	
Partition Coefficient (N-octanol/water)	Log Kow range of 3.3 to >.6.0	
Autoignition Temperature	494 ˚F (257 ˚C)	
Decomposition Temperature	When heated it emits acrid smoke and irritating vapors.	
Viscosity	>3 cSt	
Percent Volatiles	100	

10. STABILITY AND REACTIVITY

Stability
This is a stable material that is flammable liquid (OSHA/GHS hazard category 3). Stable during transport.

Reactivity
Material is not self-reacting. Flammable concentrations may be present in air. Compound can react with oxidizing materials.

Possibility of Hazardous Reactions
Hazardous polymerization will not occur.

Incompatibility
Keep away from strong oxidizers such as nitric and sulfuric acids.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, static electricity, welding, smoking and other ignition sources.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
Acute Toxicity (Inhalation LC50)
Diesel Fuel (68476-34-6)
LC50 Inhalation Rat >6 mg/l/4h

Acute Toxicity (Dermal LD50)
Diesel Fuel (68476-34-6)
LD50 Dermal Rabbit >5000 mg/kg

Acute Toxicity (Oral LD50)
Diesel Fuel (68476-34-6)
LD50 Oral Rabbit >5000 mg/kg

Skin Corrosion/Irritation: Prolonged and repeated contact may cause skin irritation leading to dermatitis. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

Serious Eye Damage/Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: OSHA: NO, IARC: Group 3, NTP: NO, ACGIH: NOIC:A3, NIOSH: NO

IARC: Group 3 – Not classifiable as to their carcinogenicity to humans

ACGIH: A3 – Confirmed animal carcinogen with unknown relevance to humans.

Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

IARC classifies whole diesel fuel exhaust particulates (byproduct of combustion of this material) carcinogenic to humans (Group 1) and NIOSH regards diesel fuel exhaust particulate as a potential occupational carcinogen.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Specific Target Organ Toxicity (Single Exposure): Inhalation exposure may cause drowsiness or dizziness by inhalation exposure.

Aspiration Hazard: The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Potential Health Effects: Vapor irritating to skin, eyes, nose, and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of

combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

12. ECOLOGICAL INFORMATION

Toxicity:
This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Data for Component: Diesel Fuel (68476-34-6)

Material is toxic to aquatic organisms based on an acute basis (LC50/EC50 >1 but ≤ 10 mg/L in the most sensitive species tested).

Material is a long-term aquatic hazard based on a chronic basis (LC50/EC50 >1 but ≤ 10 mg/L in the most sensitive species tested).

Persistence and Degradation: This material is not expected to be readily biodegradable.

Bioaccumulative Potential: Not available

Mobility in Soil: Not available

Other Adverse Effects: None known

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options. May be considered a hazardous waste if disposed. Direct solid waste (landfill) or incineration at a solid waste facility is not permissible. Do not discharge to sanitary or storm sewer. Personnel handling waste containers should follow precautions provided in this document.

Shipping containers must be DOT authorized packages. Follow licensure and regulations for transport of hazardous material and hazardous waste as applicable.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	NA 1993 / UN 1202
Proper Shipping Name	Diesel Fuel
Hazard Class and Packing Group	3, PGIII
Shipping Label	Combustible liquid
Placard / Bulk Package	Combustible liquid, 1993
Emergency Response Guidebook Guide Number	128

IATA Information

UN Identification Number	UN 1202
Proper Shipping Name	Combustible-Liquid, N.O.S. (Fuel, Diesel)
Hazard Class and Packing Group	3, PGIII
ICAO Label	3
Packing Instructions Cargo	310
Max Quantity Per Package Cargo	220L
Packing Instructions Passenger	309Y
Max Quantity per Package	60L

ICAO

UN Identification Number	UN 1202
Shipping Name / Description	Combustible-Liquid, N.O.S. (Fuel, Diesel)
Hazard Class and Packing Group	3, PG III
IMDG Label	3

IMDG

UN Identification Number	UN 1202
Shipping Name / Description	Combustible-Liquid, N.O.S. (Fuel, Diesel)
Hazard Class and Packing Group	3, PGIII
IMDG Label	3
EmS Number	F-E-S-E
Marine Pollutant	Yes

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information
Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning And Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Clean Water Act (Oil Spills)
Any spill or release of this product to “navigable waters” (Essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts this material. This product does not contain any chemicals subject to the reporting requirements of CERCLA Section 103 or SARA 304.

SARA Section 313- Supplier Notification
This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States, or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

Pennsylvania Right to Know Hazardous Substance list:
The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Diesel Fuel	68476-34-6	100%

New Jersey Right to Know Hazardous Substance list:
The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
Diesel Fuel	68476-34-6	100%

California Proposition 65 WARNING: This product contains chemicals known to the State of California to cause Cancer or Reproductive Toxicity.

Component	CAS	Amount
Naphthalene	91-20-3	<0.1%

U.S. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)
Class B3 – Combustible Liquid
Class D2A – Materials causing other toxic effects. (Very Toxic)

16. OTHER INFORMATION

Version	4
Issue Date	May 20, 2016
Prior Issue Date	May 3, 2015

Description of Revisions
Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

˚F	Degrees Fahrenheit (temperature)
<	Less than
=	Equal to
>	Greater than
AP	Approximately
C	Centigrade (temperature)
kg	Kilogram
L	Liter
mg	Milligrams
mL	Milliliter
mm^2	Square millimeters
mmHg	Millimeters of mercury (pressure)
N/A	Not applicable
N/D	Not determined
ppm	Parts per million
sec	Second
ug	Micrograms

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
AL	Action Level
ANSI	American National Standards Institute
API	American Petroleum Institute
CAS	Chemical Abstract Service
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation
EC50	Ecological concentration 50%
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
GHS	Global Harmonized System
HMIS	Hazardous Materials Information System
IARC	International Agency for Research On Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
Koc	Soil Organic Carbon
LC50	Lethal concentration 50%
LD50	Lethal dose 50%
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NOIC	Notice of Intended Change

NTP	National Toxicology Program
OPA	Oil Pollution Act of 1990
OSHA	U.S. Occupational Safety & Health Administration
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act Reauthorization Act of 1986 Title III
REL	Recommended Exposure Limit (NIOSH)
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and
SCBA	Self Contained Breathing Apparatus
SPCC	Spill Prevention, Control, and Countermeasures
STEL	Short Term Exposure Limit (generally 15 minutes)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hr.)
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WEEL	Workplace Environmental Exposure Level (AIHA)
WHMIS	Canadian Workplace Hazardous Materials Information System

Disclaimer of Expressed and Implied Warranties

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

** End of Safety Data Sheet **

1. IDENTIFICATION

Product Identifier: No. 2 Fuel Oil

Synonyms: No. 2 Heating Oil, #2 Fuel Oil, Heating Oil Plus™, Low Sulfur Heating Oil (LSHO), Ultra Low Sulfur Heating Oil (ULSHO)

Intended use of the product: Fuel

Contact:
Global Companies LLC
Water Mill Center
800 South St.
Waltham, MA 02454-9161
www.globalp.com

Contact Information: EMERGENCY TELEPHONE NUMBER (24 hrs.): CHEMTREC (800) 424-9300
COMPANY CONTACT (business hours): 800-542-0778

2. HAZARD IDENTIFICATION

According to OSHA 29 CFR 1910.1200 HCS

Classification of the Substance or Mixture

Classification (GHS-US):

Flam. Liquid	Category 3	H226
Skin Corrosion/Irritation	Category 2	H315
Aspiration Hazard	Category 1	H304
Acute toxicity – Inhalation	Category 4	H332
STOT SE	Category 3	H336
Carcinogenicity	Category 2	H350
Aquatic Chronic	Category 2	H411
Eye damage/Irritation	Category 2	H319

Labeling Elements

Signal Word (GHS-US): **Danger**

Hazard Statements (GHS-US):
H226 – Flammable liquid and vapor.
H315 – Causes Skin irritation.
H304 – May be fatal if swallowed and enters airways.
H332—Harmful if inhaled.
H336 – May cause drowsiness or dizziness.
H350 – May cause cancer.
H411 – Toxic to aquatic life with long lasting effects.
H319 – May cause eye damage/irritation.

Precautionary Statements (GHS-US):
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 - Keep container tightly closed.
P240 – Ground/bond container and receiving equipment.

P241 – Use explosion-proof electrical/ventilating/lighting equipment pursuant to applicable electrical code.
P242 – Use only non-sparking tools.
P243 – Take precautionary measures against static discharge.
P261 – Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 – Wash skin thoroughly after handling.
P271 – Use only outdoors or in a well-ventilated area.
P273 – Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+361+353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse with water/shower.
P308+311 - If exposed or concerned: Get medical advice/attention.
P301+310 - If swallowed: Immediately call a poison center/doctor/…
P331 - Do NOT induce vomiting.
P370+P378 – In case of fire use firefighting foam or other appropriate media for Class B fires to extinguish.
P403+235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulation.

Other information:

NFPA 704
Health: 1
Fire: 2
Reactivity: 0

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Composition Information
Mixture

Name	Product Identifier (CAS#)	% (w/w)	Classification
No. 2 Fuel Oil	68476-30-2	95-100	Flam Liq. 3, H226; Skin Irrit. 2, H315; Aspiration 1, H304; STOT SE 3, H336; Carc.2. H350; Aquatic chronic 2, H411
Methyl Esters	N/A	0-5	N/A
Naphthalene	91-20-3	0.1	Carc. 2, H351; Acute Tox. 4, H302; Aquatic Acute 1, H400; Aquatic Chronic 1, H411

Additional Formulation Information:
No. 2 Fuel Oil consists of C9+ hydrocarbons resulting from distillation of crude oil.

Low Sulfur Heating Oil typically contains less than 500 ppm of sulfur

Ultra Low Sulfur Heating Oil typically contains less than 15 ppm of sulfur

4. FIRST AID MEASURES

Route	Measures
Inhalation	Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
Ingestion	Aspiration Hazard: DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Ingestion may cause gastrointestinal disturbances including irritation, nausea, vomiting, and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory failure, and death.
Eye Contact	In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention. In case of contact lenses, remove immediately.
Skin Contact	Remove contaminated clothing and shoes. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and of the area of the body burned.

Most Important Symptoms
Contact with eyes and face may cause irritation. Long-term exposure may cause dermatitis (itching, irritation, pain and swelling).

Inhalation may cause irritation and significant or long term exposure could cause respiratory insufficiency and pulmonary edema.

Ingestion may cause aspiration, gastrointestinal disturbance, and CNS effects.

Immediate Medical Attention and Special Treatment
For contact with skin or eyes, immediately wash or flush contaminated eyes with gently flowing water. If possible, irrigate each eye continuously with 0.9% saline (NS). If ingested, rinse mouth. Do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

If inhaled, administer oxygen or establish a patent airway if breathing is labored. Suction if necessary. Monitor closely, anticipate seizures. Consider orotracheal or nostracheal intubation of airway control if patient is unconscious or is in severe respiratory distress.

Discard any clothing or shoes contaminated as they may be flammable.

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Foam, carbon dioxide, dry chemical are most suitable

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, C02, water spray, firefighting foam, or Halon. Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other firefighting equipment.

LARGE FIRES: Foam, carbon dioxide, dry chemical. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Specific Hazards / Products of Combustion
Moderate fire hazard when exposed to heat or flame with a very low flash point. Product is flammable and easily ignited when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Combustion may produce smoke, carbon monoxide and other products of incomplete combustion.

Special Precautions and Protective Equipment for Firefighters
Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water.

For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied firefighting foam.

Fighting Equipment/Instructions
Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and protective clothing.

Refer to Section 9 for fire properties of this chemical including flash point, auto ignition temperature, and explosive limits.

6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPCC, SPILL CONTINGENCY or EMERGENCY PLAN.

Personal Precautions
Due to high vapor density, flammable / toxic vapors may be present in low lying areas, dikes, pits, drains, or trenches. Vapors may accumulate in low lying areas and reach ignitable concentrations. Ventilate the area. Use of non-sparking tools and intrinsically safe equipment is recommended. Potential for flammable atmosphere should be monitored using a combustible gas indicator positioned downwind of the spill area. Refer to Sections 2 and 7 for further hazard warnings and handling instructions.

Use appropriate personal protective equipment to prevent eye/skin contact and absorption. Use NIOSH approved respiratory protection, if warranted, to prevent exposures above permissible limits. Refer to Section 8. Contaminated clothing should not be near sources of ignition.

Emergency Measures
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Consider wind direction. Secure all ignition sources (flame, spark, hot work, hot metal, etc.) from area. Evaluate the direction of product travel, diking sewers, etc. to confirm spill areas. Do not touch or walk-through spilled material. For large spills, isolate initial action distance downwind 1,000 ft. (300 m).

Environmental Precautions
Stop the spill to prevent environmental release if it can be done safely. Product is toxic to aquatic life. Take action to isolate environmental receptors including drains, storm sewers and natural water bodies. Keep on impervious surface if at all possible. Use water sparingly to prevent product from spreading. Foam and absorbents may be used to reduce / prevent airborne release.

Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Follow federal, state or local requirements for reporting environmental release where necessary. Refer to Section 15 for further information.

Containment and Clean-Up Methods
Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of firefighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with dry earth, sand or other non-combustible, inert oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container with clean, non-sparking tools for reclamation or disposal. Response and cleanup crews must be properly trained and must utilize proper protective equipment. Refer to Section 8 for appropriate protective equipment.

7. HANDLING AND STORAGE

USE ONLY AS A FUEL.
DO NOT SIPHON BY MOUTH.

Handling Precautions
Handle as a flammable liquid. Keep away from heat, sparks, and open flame. No smoking. Electrical equipment should be approved for classified area. Bond and ground containers during product transfer pursuant to NFPA 70 and API RP 2003 to

reduce the possibility of static-initiated fire or explosion. Follow precautions to prevent static initiated fire.

Use good personal hygiene practices. Use only with protective equipment specified in Section 8. Avoid repeated and/or prolonged skin exposure. Use only outdoors or in well ventilated areas. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API RP 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage
Large quantities of fuel oil are stored in tanks or portable containers at an ambient storage temperature. Separate from incompatible chemicals (Refer to Section 10) by distance or secondary containment. Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers that are clearly labeled. Label all secondary containers that this material is transferred into with the chemical name and associated hazard(s). Empty product containers or vessels may contain flammable vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Storage tanks should have a venting system. If stored in small containers, the area should be well ventilated, away from ignition sources and protected from potential damage or vehicular traffic. Post “No Smoking” signs in product storage areas. This storage area should comply with NFPA 30 “Flammable and Combustible Liquid Code” or applicable building code. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 “Cleaning Mobile Tanks in Flammable and Combustible Liquid Service” and API RP 2015 “Safe Entry and Cleaning of Petroleum Storage Tanks”.

Incompatibles
Keep away from strong oxidizers, ignition sources and heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits

Component	CAS #	List	Value
No. 2 Fuel Oil	68476-30-2	ACGIH TLV-TWA	100 mg/m3*
Naphthalene	91-20-3	ACGIH TLV-TWA OSHA PEL ACGIH STEL	10 ppm 10 ppm 15 ppm

*Critical effects; Skin; A3; CNS impairment.

Engineering Controls
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Intrinsically safe equipment and non-sparking tools shall be used in circumstances where concentrations may exceed lower flammable limits. Grounding and bonding shall be used to prevent accumulation and discharge of static electricity. Emergency shower and eyewash should be provided in proximity to handling areas in the event of exposure to decontaminate.

Personal Protective Equipment

Exposure	Equipment
Eye / Face	Wear appropriate chemical protective glasses or goggles or face shields to prevent skin and eye contact especially caused from splashing.
Skin	Wear appropriate personal protective clothing to prevent skin contact. Gloves constructed of nitrile, neoprene or PVC are recommended when handling this material. Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure.

Exposure	Equipment
Respiratory	A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations. Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
Thermal	Product is stored at ambient temperature. No thermal protection is required except for emergency operations involving actual or potential for fire. Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Value	
Appearance	Clear or straw-colored liquid dyed red for distribution	
Odor	Mild petroleum distillate odor.	
Odor Threshold	<1 ppm	
pH	Not available	
Melting Point	-15 ˚F (-26 ˚C)	
Boiling Point Range	320 to 690 ˚F (160 to 366 ˚C)	
Flash Point	>125.6 ˚F (52 ˚C) PMCC	
Evaporation Rate	Slow, varies with conditions	
Flammability	Flammable liquid	
Flammable Limits	0.6 % - 7.5%	
Vapor Pressure	0.009 psia @ 70 ˚F	
Vapor Density	>1	(air=1)
Specific Gravity	0.81-0.88 @ 60 ˚F (16 ˚C)	(water=1)
Solubility	Insoluble in water; miscible with other petroleum solvents.	
Partition Coefficient (N-octanol/water)	Log Kow range of 3.3 to >.6.0	
Autoignition Temperature	494 ˚F (257 ˚C)	
Decomposition Temperature	When heated it emits acrid smoke and irritating vapors.	
Viscosity	>3 cSt	
Percent Volatiles	95-100	

10. STABILITY AND REACTIVITY

Stability
This is a stable material that is flammable liquid (OSHA/GHS hazard category 3). Stable during transport.

Reactivity
Material is not self-reacting. Flammable concentrations may be present in air. Compound can react with oxidizing materials.

Possibility of Hazardous Reactions
Hazardous polymerization will not occur.

Incompatibility
Keep away from strong oxidizers such as nitric and sulfuric acids.

Conditions to Avoid
Avoid high temperatures, open flames, sparks, static electricity, welding, smoking and other ignition sources.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
Acute Toxicity (Inhalation LC50)

No. 2 Fuel Oil (68476-30-2)
LC50 Inhalation Rat >4.6 mg/l/4h

Acute Toxicity (Dermal LD50)

No. 2 Fuel Oil (68476-30-2)
LD50 Dermal Rabbit >2000 mg/kg

Acute Toxicity (Oral LD50)

No. 2 Fuel Oil (68476-30-2)
LD50 Oral Rat >12000 mg/kg

Acute Toxicity (Oral LD50)

Methyl Esters
LD50 Oral Rat >14400 mg/kg

Skin Corrosion/Irritation: Prolonged and repeated contact may cause skin irritation leading to dermatitis. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

Serious Eye Damage/Irritation: Causes serious eye irritation.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not available

Carcinogenicity: OSHA: NO, IARC: Group 3, NTP: NO, ACGIH: NOIC:A3, NIOSH: NO

IARC: Group 3 – Not classifiable as to their carcinogenicity to humans ACGIH: A3 – Confirmed animal carcinogen with unknown relevance to humans

Petroleum middle distillates have been shown to produce skin tumors in laboratory animals following repeated and prolonged exposures. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

This product is similar to Diesel Fuel. IARC classifies whole diesel fuel exhaust particulates (byproduct of combustion of this material) carcinogenic to humans (Group 1) and NIOSH regards diesel fuel exhaust particulate as a potential occupational carcinogen.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Specific Target Organ Toxicity (Single Exposure): Inhalation exposure may cause drowsiness or dizziness by inhalation exposure.

Aspiration Hazard: The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Potential Health Effects: Vapor irritating to skin, eyes, nose, and throat. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

WARNING: The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

12. ECOLOGICAL INFORMATION

Toxicity
This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Data for Component: No. 2 Fuel Oil (68476-30-2)

Material is toxic to aquatic organisms based on an acute basis (LC50/EC50 >1 but $\leq$ 10 mg/L in the most sensitive species tested).

Material is a long-term aquatic hazard based on a chronic basis (LC50/EC50 >1 but $\leq$ 10 mg/L in the most sensitive species tested).

Persistence and Degradation: This material is not expected to be readily biodegradable.

Bioaccumulative Potential: Not available

Mobility in Soil: Not available

Other Adverse Effects: None known

Other Information: Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Consult federal, state and local waste regulations to determine appropriate disposal options. May be considered a hazardous waste if disposed. Direct solid waste (landfill) or incineration at a solid waste facility is not permissible. Do not discharge to sanitary or storm sewer. Personnel handling waste containers should follow precautions provided in this document.

Shipping containers must be DOT authorized packages. Follow licensure and regulations for transport of hazardous material and hazardous waste as applicable.

14. TRANSPORT INFORMATION

US DOT

UN Identification Number	NA 1993
Proper Shipping Name	Fuel oil (No. 2)
Hazard Class and Packing Group	3, PGIII
Shipping Label	Combustible liquid
Placard / Bulk Package	Combustible liquid, 1993
Emergency Response Guidebook Guide Number	128

IATA Information

UN Identification Number	UN 1993
Proper Shipping Name	Fuel oil (No. 2)
Hazard Class and Packing Group	3, PGIII
ICAO Label	3
Packing Instructions Cargo	355
Max Quantity Per Package Cargo	220L
Packing Instructions Passenger	344Y
Max Quantity per Package	60L

ICAO

UN Identification Number	UN 1993
Shipping Name / Description	Fuel oil (No. 2)
Hazard Class and Packing Group	3, PG III
IMDG Label	3

IMDG

UN Identification Number	UN 1993
Shipping Name / Description	Heating Oil, Light
Hazard Class and Packing Group	3, PGIII
IMDG Label	3
EmS Number	N/A
Marine Pollutant	Yes

15. REGULATORY INFORMATION

U.S. Federal, State, and Local Regulatory Information
Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning And Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	Yes
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Clean Water Act (Oil Spills)
Any spill or release of this product to “navigable waters” (Essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA Section 103 and SARA Section 304 (Release to the Environment)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts this material. This product does not contain any chemicals subject to the reporting requirements of CERCLA Section 103 or SARA 304.

SARA Section 313- Supplier Notification
This product does not contain any chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

EPA Notification (Oil Spills)
If the there is a discharge of more than 1,000-gallons of oil into or upon navigable waters of the United States, or if it is the second spill event of 42 gallons or more of oil into water within a twelve (12) month period, a written report must be submitted to the Regional Administrator of the EPA within sixty days of the event.

Pennsylvania Right to Know Hazardous Substance list:
The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
No. 2 Fuel Oil	68476-30-2	100%

New Jersey Right to Know Hazardous Substance list:
The following product components are cited in the New Jersey Right to Know Hazardous Substance List, and are present at levels which require reporting.

Component	CAS	Amount
No. 2Fuel Oil	68476-30-2	100%

California Proposition 65 WARNING: This product contains chemicals known to the State of California to cause Cancer or Reproductive Toxicity.

Component	CAS	Amount
Naphthalene	91-20-3	<0.1%

U.S. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Canadian Regulatory Information (WHMIS)
Class B3 – Combustible Liquid
Class D2A – Materials causing other toxic effects. (Very Toxic)

16. OTHER INFORMATION

Version	4
Issue Date	May 20, 2016
Prior Issue Date	May 3, 2015

Description of Revisions
Revised to meet Globally Harmonized System for chemical hazard communication requirements pursuant to OSHA regulatory revisions 77 FR 17884, March 26, 2012.

Abbreviations

˚F	Degrees Fahrenheit (temperature)
<	Less than
=	Equal to
>	Greater than
AP	Approximately
C	Centigrade (temperature)
kg	Kilogram
L	Liter
mg	Milligrams
mL	Milliliter
mm^2	Square millimeters
mmHg	Millimeters of mercury (pressure)
N/A	Not applicable
N/D	Not determined
ppm	Parts per million
sec	Second
ug	Micrograms

Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
AL	Action Level
ANSI	American National Standards Institute
API	American Petroleum Institute
CAS	Chemical Abstract Service
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation
EC50	Ecological concentration 50%
EPA	U.S. Environmental Protection Agency
ERPG	Emergency Response Planning Guideline
GHS	Global Harmonized System

HMIS	Hazardous Materials Information System
IARC	International Agency for Research On Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
Koc	Soil Organic Carbon
LC50	Lethal concentration 50%
LD50	Lethal dose 50%
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NOIC	Notice of Intended Change
NTP	National Toxicology Program
OPA	Oil Pollution Act of 1990
OSHA	U.S. Occupational Safety & Health Administration
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act Reauthorization Act of 1986 Title III
REL	Recommended Exposure Limit (NIOSH)
RVP	Reid Vapor Pressure
SARA	Superfund Amendments and
SCBA	Self Contained Breathing Apparatus
SPCC	Spill Prevention, Control, and Countermeasures
STEL	Short Term Exposure Limit (generally 15 minutes)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hr.)
UN	United Nations
UNECE	United Nations Economic Commission for Europe
WEEL	Workplace Environmental Exposure Level (AIHA)
WHMIS	Canadian Workplace Hazardous Materials Information System

Disclaimer of Expressed and Implied Warranties

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

** End of Safety Data Sheet **

APPENDIX C: JOB HAZARD ANALYSIS

Job Hazard Analysis

Environmental Assessment & Remediations 225 Atlantic Avenue, Patchogue, NY 11772

Site: DEC-BROOKLYN66	**Date Created:** 02/27/2018
Job Task: Well Installations	**Development Team:** IH, JH
Review Team: JH	**Review Date:** 2/11/19

Minimum Required Equipment:

Reflective vest	Nitrile gloves	Dust masks
Hard hat	Work gloves	
Steel toed boots	Goggles	
Hearing protection	Protective clothing	

Job Step	Potential Accidents or Hazards	Quality/Safe Work Practices
Vehicle Operation	Collision (vehicle or object)	Use spotters when backing up vehicles and equipment. Spotters are required when backing, but they may be necessary for forward moving vehicles too. Inspect the work area by walking around the vehicle and equipment to identify any potential striking hazards. Insure back up alarms are functioning properly if vehicle or equipment is so equipped.
	Getting vehicles stuck or decreased mobility in an emergency	Inspect the work area prior to moving vehicles. Use a spotter, as described above. Consider whether a tire repair contact or trip management plan needs to be prepared prior to Site activities. Use an alternate route, if possible, when road hazards are present.
	Personnel being struck	All field personnel are to wear ANSI high visibility vests. Reflective hard hats must also be worn when working around operating vehicles, machinery, or along active roadways. Be aware of surroundings and locations of personnel when operating vehicle.
General Field Activities	Slips, trips, falls	Be aware of your surroundings (rough terrain, debris, unstable surfaces, etc). Wear boots/shoes with skid resistant soles and steel-toes. Practice good housekeeping.
	Dangerous animals and vegetation	Identify and avoid toxic plants such as poison ivy. If identified, warn others of location. Wear long sleeves. Be alert for dangerous animals such as raccoons, aggressive dogs, or dangerous insects.
	Muscle strain	

		Do not lift objects/equipment heavier than you are capable of lifting without assistance (ie >50 lbs). Keep back straight and bend at the knee. Keep object close to body and avoid twisting. Use mechanical assistance and tools as necessary.
	Heat/cold stress	Wear proper attire. Takes breaks as necessary to stay warm/cool off. Keep hydrated.
	Misuse of hand tools (slips, falls, abrasions, cuts, eye injuries)	Ensure proper training has been conducted prior to using a particular piece of equipment. Ensure proper inspection of said equipment prior to use. Mark all faulty equipment and remove from use. Wear appropriate PPE as required for the type of tool used.
	Exposure to potentially contaminated media	All employees to have 40-hr OSHA HAZWOPER training with current 8-hr refresher. Wear goggles and nitrile gloves when handling potentially contaminated equipment such as water meters. Follow decontamination procedures outlined in the HASP. Review and understand SDS for potential contaminants. No eating, drinking, or smoking is permitted in work area. Remove PPE and wash hands before eating or drinking. Implement work zone air monitoring as outlined in the HASP. Decontaminate equipment between boring locations.
Generator Use	Electrocution	Always use grounded equipment and keep electrical equipment away from water. Inspect power cables for signs of wear or fraying. Replace any equipment or cables that show signs of wear. Do not use equipment with missing covers or exposed/frayed wires. Repairs to be made by qualified technicians only.
	Fire and explosion	Allow unit to cool 5-10 minutes prior to refueling. Avoid spills during refueling. Check that an operable fire extinguisher is present on support vehicle. Store gas only in dedicated fuel containers. Keep gas containers away from heat sources. No smoking is permitted onsite.
	Asphyxiation/exhaust	

		Use generator only in well ventilated areas. Keep generator downwind of work area.
Mixing Grout / Operating Grout Pump	Dust from bentonite/cement	Avoid breathing dust. Position yourself and others upwind when mixing. Use of dust masks is at the discretion of the field members. Use of Tyvek suiting at the discretion of the field members. Add water first.
	Pinch point/hand injury	Wear work gloves over nitrile. Avoid using open blade knives to open bags. Keep non-essential personnel away from mixer. Communicate intent with other personnel and utilize "show me your hands" practices before operating pump.
Concrete/asphalt removal via Jackhammer or Breaker Bar	Flying concrete	Wear goggles and/or face shield to protect against eye injury. Communicate intentions with other personnel. Establish a control zone to ensure pedestrian traffic and/or vehicles/property are not affected.
	Misuse of tools – general injury	Ensure proper training has been conducted prior to using a particular piece of equipment. Ensure proper inspection of said equipment prior to use. Mark all faulty equipment and remove from use. Wear appropriate PPE as required for the type of tool used.
	Excessive noise	Utilize hearing protection when operating jackhammer. Hearing protection must be worn when working around operating equipment if levels are greater than 85 dba. Establish hand signals for major activities (ie. stop, go, caution, etc).
Concrete Saw/Sawcutter Operation	Misuse of tool – general injury	Operator shall be property trained in the use of the tool. Ensure work area is clear of other workers. Inspect saw and blade prior to use. Ensure manufacturer's protective devices are in place and operational. Inspect and clear anticipated blade path prior to starting saw. Eye protection, heavy-duty gloves, and steel toed boots shall be worn.
	Excessive noise	Utilize hearing protection when operating jackhammer. Hearing protection must be worn when working around operating equipment if levels are greater than 85 dba. Establish hand signals for major activities (ie. stop, go, caution, etc).

	Harmful dust / asphyxiation / exhaust / Crystalline Silica Dust Inhalation	Use watering to minimize dust protection. Use saw only in well ventilated area. Utilize dust masks or P-100 HEPA mask if dust is being generated. Follow "Crystalline Silica Health & Safety Document".
	Fire and explosion	Allow unit to cool 5-10 minutes prior to refueling. Avoid spills during refueling. Check that an operable fire extinguisher is present on support vehicle. Store gas only in dedicated fuel containers. Keep gas containers away from heat sources. No smoking is permitted onsite.
Drilling Location/Setup	Drilling into underground utilities	NY811 shall be notified of drilling activities and proposed locations several days prior to beginning work. All utilities shall be located via GPR and conductive means, marked, and verified prior to beginning work. All locations shall be pre-cleared to 5-feet below grade surface.
	Striking overhead lines or objects with drill mast	Observe overhead lines, tree limbs, or other objects before raising mast. Anticipate radius of sweep going up and coming down and plan appropriately. Position drill rig no closer than 15 feet from overhead power lines.
	Rig/equipment damage, personnel injury	Trained operator shall inspect rig and equipment prior to beginning work. Inspect any hydraulic hoses for leaks and proper connections.
Gravel Pack Installation	Crystalline silica dust inhalation	Use a continuous water delivery system to minimize dust generation. Work in well ventilated area. Utilize P-100 HEPA mask during installation. Follow "Crystalline Silica Health & Safety Document".
Drilling (General)	Physical injury from moving parts of machinery, including changeout of augers/drill pipe and core barrel.	Avoid moving parts if machinery. Keep fingers, hands, and arms away from rotating parts. Do not wear loose-fitting clothing or items such as rings and watches that could get caught in moving parts. Wear work gloves, hard hat, and steel-toed boots at all times. Keep all drill bits secured when not in use. Rig is only to be operated by trained personnel. Follow "show me your hands" protocol.
	Muscle strain	Do not lift objects/equipment heavier than you are capable of lifting without assistance (ie >50 lbs). Keep back straight and bend at the knee. Keep object close to body and

		avoid twisting. Use mechanical assistance and tools as necessary.
	Weather extremes/lightning	Be aware of weather forecast. Do not raise mast or operate equipment if lightning is present.

Job Hazard Analysis

Environmental Assessment & Remediations 225 Atlantic Avenue, Patchogue, NY 11772

Site: DEC-BROOKLYN66	**Date Created:** 02/13/2017
Job Task: Environmental Sampling	**Development Team:** IH, JH
Review Team: JH	**Review Date: 2/11/19**

Minimum Required Equipment:

Reflective vest	Nitrile gloves
Hard hat	Goggles
Steel toed boots	Protective clothing

Job Step	Potential Accidents or Hazards	Quality/Safe Work Practices
Vehicle Operation	Collision (vehicle or object)	Use spotters when backing up vehicles and equipment. Spotters are required when backing, but they may be necessary for forward moving vehicles too. Inspect the work area by walking around the vehicle and equipment to identify any potential striking hazards. Insure back up alarms are functioning properly if vehicle or equipment is so equipped.
	Getting vehicles stuck or decreased mobility in an emergency	Inspect the work area prior to moving vehicles. Use a spotter, as described above. Consider whether a tire repair contact or trip management plan needs to be prepared prior to Site activities. Use an alternate route, if possible, when road hazards are present.
	Personnel being struck	Reflective hard hats and ANSI high visibility vests must be worn when working around operating vehicles, machinery, or along active roadways. Be aware of surroundings and locations of personnel when operating vehicle.
General Field Activities	Slips, trips, falls	Be aware of your surroundings (rough terrain, debris, unstable surfaces, etc). Wear boots/shoes with skid resistant soles and steel-toes. Practice good housekeeping.
	Dangerous animals and vegetation	Identify and avoid toxic plants such as poison ivy. If identified, warn others of location. Wear long sleeves. Be alert for dangerous animals such as raccoons, aggressive dogs, or dangerous insects.
	Muscle strain	Do not lift objects/equipment heavier than you are capable of lifting without assistance

		(ie >50 lbs). Keep back straight and bend at the knee. Keep object close to body and avoid twisting. Use mechanical assistance and tools as necessary.
	Heat/cold stress	Wear proper attire. Takes breaks as necessary to stay warm/cool off. Keep hydrated.
	Misuse of hand tools (slips, falls, abrasions, cuts, eye injuries)	Ensure proper training has been conducted prior to using a particular piece of equipment. Ensure proper inspection of said equipment prior to use. Mark all faulty equipment and remove from use. Wear appropriate PPE as required for the type of tool used.
	Vehicle/pedestrian encroachment	Use traffic cones and signage to delineate work zone. Reflective hard hats and ANSI high visibility vests must be worn when working around operating vehicles, machinery, or along active roadways.
Generator Use	Electrocution	Always use grounded equipment and keep electrical equipment away from water. Inspect power cables for signs of wear or fraying. Replace any equipment or cables that show signs of wear. Do not use equipment with missing covers or exposed/frayed wires. Repairs to be made by qualified technicians only.
	Fire and explosion	Allow unit to cool 5-10 minutes prior to refueling. Avoid spills during refueling. Check that an operable fire extinguisher is present on support vehicle. Store gas only in dedicated fuel containers. Keep gas containers away from heat sources. No smoking is permitted onsite.
	Asphyxiation/exhaust	Use generator only in well ventilated areas. Keep generator downwind of work area.
Groundwater Sampling	Exposure to potentially contaminated media	All employees to have 40-hr OSHA HAZWOPER training with current 8-hr refresher. Wear goggles and nitrile gloves when collecting samples and handling potentially contaminated equipment. Follow decontamination procedures outlined in the HASP. Review and understand MSDS for potential contaminants. No eating, drinking, or smoking is permitted in work area. Remove

		PPE and wash hands before eating or drinking.
	Exposure to sample preservation chemicals	Be careful when handling sample containers containing acid or caustic preservatives. Wear goggles and nitrile gloves when handling sample containers. Avoid inhalation of fumes from containers. Open containers in well ventilated areas. Know and understand MSDS for chemicals being handled.
	Slip/trip hazards	Be alert. Position equipment in an orderly and safe fashion. Exercise good housekeeping practices.

APPENDIX D: ACCIDENT/INCIDENT REPORT FORM

Long Island Environmental Assessment, Inc.

(dba Environmental Assessment & Remediations)

ACCIDENT/INCIDENT REPORT

Name: _____Date:_____

Location of Incident: _____

Time of Incident: _____Date and Time Reported: _____

Who Reported To: _____

Police/ Medical Involvement: _____

Hospital Name: _____

Copy of Police Report Incuded: _____Officers Name:_____

Injured/Fatalities: _____

Description of Incident: _____

_____

_____

Long Island Environmental Assessment, Inc.
(dba Environmental Assessment & Remediations)

_____

Witness Names: _____

_____

_____

Additional Information: _____

_____

_____

APPENDIX E: ACKNOWLEDGEMENT

I have read the Health & Safety Plan for this site (**EAR SITE ID:** *DEC-Brooklyn-Spencer*). I understand fully and agree to follow the procedures contained in it.

Employee Name (Print)	Employee Signature	Company	Date

APPENDIX B – COMMUNITY AIR MONTIORING PROGRAM

COMMUNITY AIR MONITORING PLAN

FEBRUARY 2019

UNKNOWN SPILL

BUSHWICK AND METROPOLITAN AVENUE

BROOKLYN, NEW YORK

NYSDEC SPILL# 1811154

Prepared For:

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

New York State - Department of
Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233

Prepared By:

ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

225 Atlantic Avenue
Patchogue, NY 11772

TABLE OF CONTENTS

1.0 INTRODUCTION

This document represents the Community Air Monitoring Plan (CAMP) for the unknown petroleum product entering the L- Train Subway tunnel via collection of subsurface soil and installation monitoring wells near the address listed on New York State Department of Environmental Conservation (NYSDEC) Spill# 1811154 (Bushwick and Metropolitan Avenue, Brooklyn). The area of investigation is located at the intersection of Bushwick Avenue and Metropolitan Avenue in Bushwick, Brooklyn. This CAMP was planned with systematic actions necessary to provide a measure of protection for downwind, offsite receptors from airborne contamination during ground-intrusive activities. This document will be communicated to, understood by, and implemented to all related personnel involved in the scope of the work either electronically and/or by hard copy.

2.0 PARTICULATE MONITORING

Continuous monitoring of airborne particulates will be conducted during all outdoor, ground-intrusive activities. Ground-intrusive activities at this site will include soil sample collection and installation of monitoring wells.

2.1 METHODOLOGY

Prior to beginning ground intrusive activities each day, wind direction will be determined onsite using air current test kit (smoke tubes). Onsite observation of wind direction will be confirmed by checking a real-time local weather report provided by an online weather service. Monitoring of wind direction using smoke tubes will be conducted at a minimum of once every two hours (greater frequency may be required depending upon weather conditions).

Continuous particulate monitoring will be conducted at both downwind and upwind locations of the work zone. Field observations will be made continuously throughout the day in order to relocate the monitoring equipment as necessary. Monitoring will be conducted using a DustTrak DRX Aerosol Monitor 8533 or similar device capable of meeting the performance requirements put forth in DER-10/Technical Guidance for Site Investigation and Remediation1. The devices will be equipped with an audible and/or visual alarm system and will be programmed to provide 15-minute time weighted averages and instantaneous concentration readings of airborne particulate concentrations.

In addition, particulate migration will be visually assessed during all ground-intrusive activities.

Figure 1 illustrates the possible monitoring locations during well installation activities in a westerly wind. Note that the monitoring locations are subject to change based on actual wind direction and location of the ground-intrusive work being conducted.

2.2 RESPONSE LEVELS & REQUIRED ACTIONS

Should the downwind particulate concentration (particulate matter less than or equal to 10 micrometers) be greater than 100 micrograms per cubic meter (ug/m3) of the upwind particulate concentration for any 15-minute period, an approved dust suppression technique is to be employed. Should airborne dust be visually observed migrating out of the work area, an approved dust suppression technique is to be employed.

Should particulate concentrations greater than 150 ug/m3 of the upwind concentrations be observed following implementation of dust suppression techniques, work is to be stopped pending re-evaluation of work methods and dust suppression methods. Work is not to resume until suppression methods successfully reduce the downwind particulate concentration to within 150 ug/m3 of the upwind concentration and no visual observation of migrating dust is reported.

2.2.1 Dust Suppression Techniques

Dust suppression techniques at this site can include the following:

- Wetting of equipment and/or excavation faces
- Covering inactive excavation areas with plastic sheeting

[1] NYSDEC, DER-10/Technical Guidance for Site Investigation and Remediation, May 3, 2010

These techniques would be employed pending necessity and prior approval. Water used for wetting equipment and/or excavation faces will be obtained from a nearby, onsite fire hydrant for which an appropriate use permit shall be obtained, or other potable source. Water would be applied in such a manner as to provide uniform wetting of the materials, and prevent excessive mud, pooling, and runoff.

3.0 VOLATILE ORGANIC COMPOUND MONITORING

Continuous monitoring of volatile organic compounds (VOC) will be conducted during all outdoor, ground-intrusive activities.

3.1 METHODOLOGY

Prior to beginning ground intrusive activities each day, wind direction will be determined onsite using an air current test kit (smoke tubes). Onsite observation of wind direction will be confirmed by checking a real-time local weather report provided by an online weather service. Monitoring of wind direction using smoke tubes will be conducted at a minimum of once every two hours (greater frequency may be required depending upon weather conditions).

VOC monitoring at the upwind perimeter of the work zone will be conducted continuously throughout the workday. Monitoring at the downwind perimeter of the work zone will be conducted continuously. Both upwind and downwind perimeters will be monitored using a PhotoVac® 2020 photo-ionization detector (PID) (or similar device) capable of meeting the performance requirements put forth in DER-10/Technical Guidance for Site Investigation and Remediation. The upwind and downwind devices will be programmed to provide 15-minute Short Term Exposure Limits (STEL), 8-hour Time Weighted Averages, and peak concentrations of VOC concentrations.

Prior to use each day, the PID's will be calibrated using a 100 parts per million (ppm) isobutylene standard.

3.2 RESPONSE LEVELS AND REQUIRED ACTIONS

Should the downwind VOC concentrations for any 15-minute period be greater than 5 ppm of the upwind concentration, work is to be stopped. If VOC concentrations readily drop to within 5 ppm of upwind, work shall resume.

Should downwind concentrations persist at concentrations greater than 5 ppm (but less than 25 ppm) of the upwind concentration, work is to be stopped pending source identification and appropriate corrective action(s). Work shall resume provided VOC concentrations at the midway distance between the work zone and any commercial or residential structure (or 200 feet downwind of the work zone, whichever is less) are within 5 ppm of upwind concentrations.

Work is to be halted should VOC concentrations at any perimeter exceed 25 ppm.

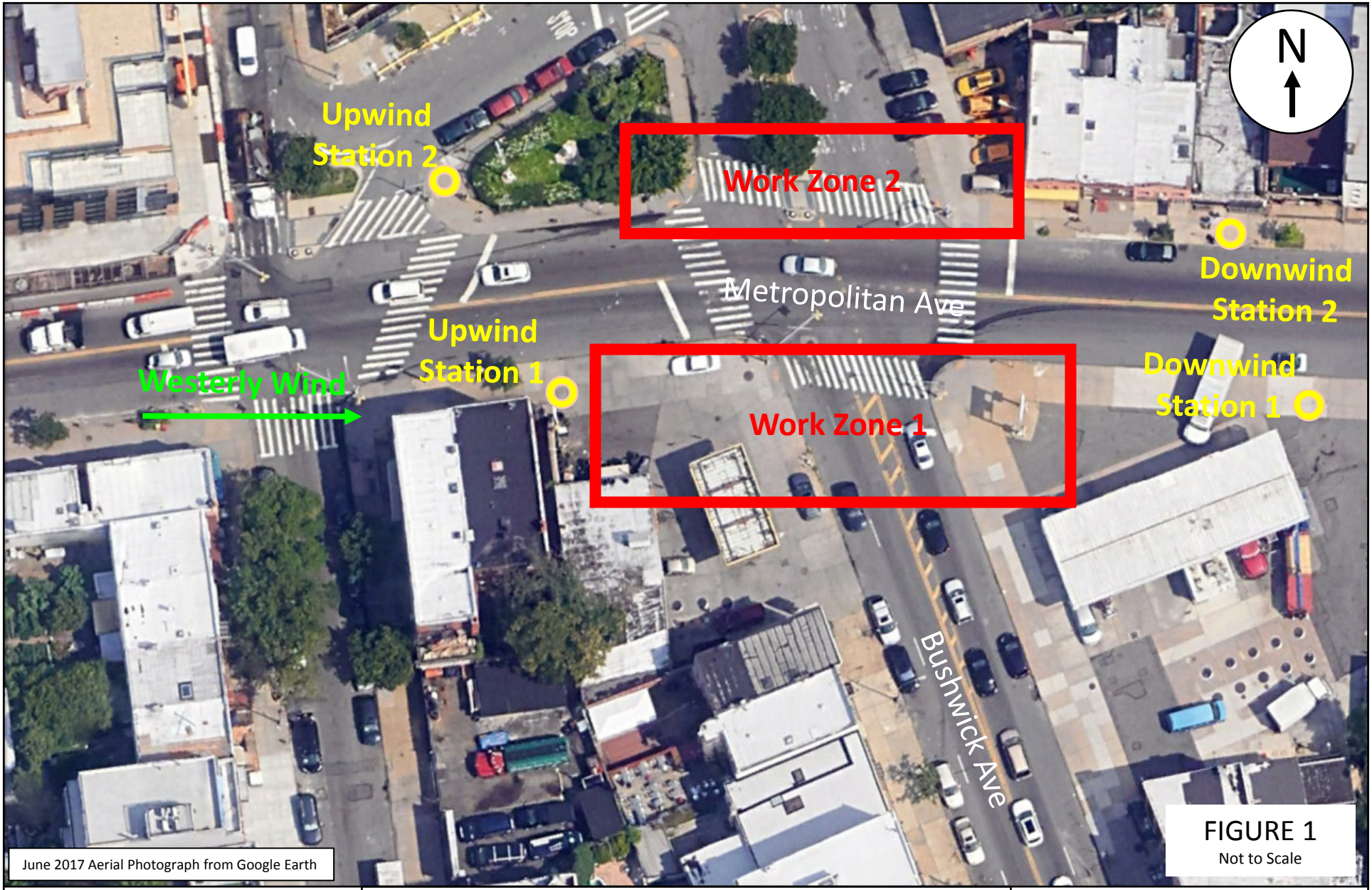
Please refer to project HASP section 5.2 for guidance pertaining to monitoring and action levels within the work zone.

4.0 DATA REVIEW

All monitoring data will be recorded by an EAR technician and will be available onsite for review by the NYSDEC. A sample CAMP field log is provided as Appendix A.

FIGURES

FIGURE 1: TYPICAL MONITORING STATION ARRAY



ENVIRONMENTAL ASSESSMENT & REMEDIATIONS

Site Map
Typical CAMP Monitoring Stations Array

Unknown Spill
Bushwick & Metropolitan Avenue
Brooklyn, New York
NYSDEC Spill# 1811154

APPENDIX A: SAMPLE CAMP FIELD LOG

Community Air Monitoring Plan (CAMP)

Site ______________________________ DataRAM ID ______________________________

Date ______________________________ PID ID ______________________________

Station ______________________________ Activity ______________________________

DataRam 4000 (ug/m^3)

Clock Time	Unit Time	Elasped	Conc.	TWA/15 min

PID (ppm)

Clock Time	Unit Time	Elapsed	STEL/15 min	Peak	TWA/8 hours

Conc. - Instantanous Concentration

DataRam 4000 TWA - Time Weighted Average (run time of 15 minutes)

PID TWA - Time Weighted Average (current sum/8 hours if less than 8 hours of data recorded)

STEL - Short Term Exposure Limit (15 minute moving average)

APPENDIX C - WASTE TRANSPORTER PERMIT

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF MATERIALS MANAGEMENT

PART 364
WASTE TRANSPORTER PERMIT NO. 1A-1036

Pursuant to Article 27 ,Titles 3 and 15 of the Environmental Conservation Law and 6 NYCRR 364

PERMIT ISSUED TO:

ISLAND PUMP & TANK CORP
40 DOYLE COURT
EAST NORTHPORT, NY 11731

PERMIT TYPE:

☐ NEW
■ RENEWAL
☐ MODIFICATION

CONTACT NAME:	MATTHEW SCHIEFERSTEIN	EFFECTIVE DATE:	02/08/2019
COUNTY:	SUFFOLK	EXPIRATION DATE:	**02/07/2020**
TELEPHONE NO:	(631)462-2226	US EPA ID NUMBER:	NYR000191726

AUTHORIZED WASTE TYPES BY DESTINATION FACILITY:

The Permittee is Authorized to Transport the Following Waste Type(s) to the Destination Facility listed :

Destination Facility	Location	Waste Type(s)	Note
110 Sand Company Clean Fill Disposal Site	Melville , NY	Non-Hazardous Industrial/Commercial	
AB Oil Service Ltd	Bohemia , NY	Non-Hazardous Industrial/Commercial	Petr. Cont. Water
Advanced Waste and Water Technology	Farmingdale , NY	Non-Hazardous Industrial/Commercial	Petr. Cont. Water
Brookhaven Waste Management Facility	Yaphank , NY	Non-Hazardous Industrial/Commercial	
Clean Water of New York Inc	Staten Island , NY	Non-Hazardous Industrial/Commercial	Petr. Cont. Water
Clear Flo Technologies Inc	Lindenhurst , NY	Non-Hazardous Industrial/Commercial	
Cycle Chem Inc dba ACV Enviro	New Windsor , NY	Petroleum Contaminated Soil	
Enviro Waste Oil Recovery Corp	Mahopac , NY	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Waste Oil	
ESMI of New York	Fort Edward , NY	Petroleum Contaminated Soil	
Industrial Oil Tank Used Oil Storage Facility	Oriskany , NY	Non-Hazardous Industrial/Commercial Waste Oil	
Miller Environmental Group, Inc.	Newburgh , NY	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Waste Oil	
NORLITE, LLC	COHOES , NY	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Hazardous Industrial/Commercial Waste Oil	

*** AUTHORIZED WASTE TYPES BY DESTINATION FACILITY LISTING (continued on next page) ***

NOTE: By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the Environmental Conservation Law, all applicable regulations, and the General Conditions printed on the back of this page.

ADDRESS:

New York State Department of Environmental Conservation
Division of Materials Management - Waste Transporter Program
625 Broadway, 9th Floor
Albany, NY 12233-7251

AUTHORIZED SIGNATURE: _____ Date: 01/25/19

NOTICE

This renewed permit is not valid until the effective date listed on the permit

WASTE TRANSPORTER PERMIT

GENERAL CONDITIONS

The permittee must:

1. Carry a copy of this waste transporter permit in each vehicle to transport waste. Failure to produce a copy of the permit upon request is a violation of the permit.

2. Display the full name of the transporter on both sides of each vehicle and display the waste transporter permit number on both sides and rear of each vehicle containing waste. The displayed name and permit number must be in characters at least three inches high and of a color that contrasts sharply with the background.

3. Transport waste only in authorized vehicles. An authorized vehicle is one that is listed on this permit.

4. Submit to the Department a modification application for additions/deletions to the authorized fleet of vehicles. The permittee must wait for a modified permit before operating the vehicles identified in the modification application.

5. Submit to the Department a modification application to add a new waste category or a new destination facility, or to change the current waste or destination facility category. The permittee must wait for a modified permit before transporting new waste types or transporting to new destination facilities.

6. Submit to the Department a modification application for change of address or company name.

7. Comply with requirements for placarding and packaging as set forth in New York State Transportation Law as well as any applicable federal rules and regulations.

8. Contain all wastes in the vehicle so there is no leaking, blowing, or other discharge of waste.

9. Use vehicles to transport only materials not intended for human or animal consumption unless the vehicle is properly cleaned.

10. Comply with requirements for manifesting hazardous waste, regulated medical waste, or low-level radioactive waste as set forth in the New York State Environmental Conservation Law and the implementing regulations. Transporters who provide a pre-printed manifest to a generator/shipper/ offeror of regulated waste shall ensure that all information is correct and clearly legible on all copies of the manifest.

11. Deliver waste only to transfer, storage, treatment and disposal facilities authorized to accept such waste. Permittee must demonstrate that facilities are so authorized if requested to do so.

12. Maintain liability insurance as required by New York State Environmental Conservation Law.

13. Maintain records of the amount of each waste type transported to each destination facility on a calendar-year basis. The transporter is obligated to provide a report of this information to the Department at the time of permit renewal, or to any law enforcement officer, if requested to do so.

14. Pay regulatory fees on an annual basis. Non-payment may be cause for revocation or suspension of permit.

15. This permit is not transferrable. A change of ownership will invalidate this permit.

16. This permit does not relieve the permittee from the obligation to obtain any other approvals or permits, or from complying with any other applicable federal, state, or local requirement.

17. **Renewal applications must be submitted no less than 30 days prior to the expiration date of the permit to:**

New York State Department of Environmental Conservation
Division of Materials Management, Waste Transporter Program
625 Broadway, 9th Floor
Albany, NY 12233-7251

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF MATERIALS MANAGEMENT

PART 364
WASTE TRANSPORTER PERMIT NO. 1A-1036

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ISLAND PUMP & TANK CORP
40 DOYLE COURT
EAST NORTHPORT, NY 11731

PERMIT TYPE:

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TELEPHONE NO:	(631)462-2226	US EPA ID NUMBER:	NYR000191726

AUTHORIZED WASTE TYPES BY DESTINATION FACILITY: (Continued)
The Permittee is Authorized to Transport the Following Waste Type(s) to the Destination Facility listed :

Destination Facility	Location	Waste Type(s)	Note
NORTHLAND ENVIRONMENTAL, LLC	PROVIDENCE , RI	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Hazardous Industrial/Commercial	
Posillico Materials	Farmingdale , NY	Petroleum Contaminated Soil	
REPUBLIC ENVIRONMENTAL SYSTEMS (TRANSPORTATION GROUP) LLC	HATFIELD , PA	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Hazardous Industrial/Commercial	
SUFFOLK CO SD#3 BERGEN POINT STP	WEST BABYLON , NY	Non-Hazardous Industrial/Commercial	
TRADEBE TREATMENT & RECYCLING NORTHEAST, LLC	MERIDEN , CT	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Hazardous Industrial/Commercial Waste Oil	
TRADEBE TREATMENT & RECYCLING OF BRIDGEPORT, LLC	BRIDGEPORT , CT	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Hazardous Industrial/Commercial Waste Oil	
Tully Environmental Inc d/b/a Clearbrook	Deer Park , NY	Non-Hazardous Industrial/Commercial Petroleum Contaminated Soil Grease Trap Waste Non-Residential Raw Sewage or Sewage-Contaminated Wastes	
VEOLIA ES TECHNICAL SOLUTIONS	FLANDERS , NJ	Non-Hazardous Industrial/Commercial Hazardous Industrial/Commercial	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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TELEPHONE NO:	(631)462-2226	US EPA ID NUMBER:	NYR000191726

AUTHORIZED VEHICLES:
The Permittee is Authorized to Operate the Following Vehicles to Transport Waste:

(Vehicles enclosed in <>'s are authorized to haul Residential Raw Sewage and/or Septage only)

18 (Eighteen) Permitted Vehicle(s)

NY 38993PC
NY 38994PC
NY 38995PC
NY 38996PC
NY 38997PC
NY 53182PC
NY 57516PC
NY 58853PC
NY 58854PC
NY 60461JV
NY 68398PC
NY 68399PC
NY 69280PC
NY 81385JW
NY 85821MD
NY 85822MD
NY 92793MD
NY BF54332
End of List