

# **Corrective Measures Work Plan**

## Monitoring Well Reinstallation and Decommissioning

July 2026 (REVISED)

### ***Submitted for:***

4380 Bullard Avenue Site  
552 Nereid Avenue, Bronx, New York 10470  
New York City Tax Map Designation: Block 5035, Lot 30  
NYSDEC BCP Site Number: C203126

### ***Prepared for:***

SnL XX, LLC  
Steve Spirou, Member

### ***Submitted to:***

New York State Department of Environmental Conservation  
Division of Environmental Remediation  
625 Broadway, 12th Floor  
Albany, New York 12233-7016

### ***IMPACT Project Number:***

16831



**IMPACT ENVIRONMENTAL ENGINEERING & GEOLOGY, PLLC**

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# CORRECTIVE MEASURES WORK PLAN

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**Site Name:** 4380 Bullard Avenue Site  
**Site Address:** 552 Nereid Avenue, Bronx, New York 10470  
**NYSDEC Site No.:** C203126 – Brownfield Cleanup Program (BCP)  
**Site Parcel:** Block 5035, Lot 30 (0.384 acres)  
**Site Owner:** SnL XX, LLC – Steve Spirou (steve@erillc.com)  
**SMP Effective Date:** December 23, 2024 (SMP finalized November 24, 2024)  
**PRR Reporting Period:** December 23, 2024 – April 23, 2026  
**Prepared By:** Impact Environmental Engineering and Geology, PLLC (IEEG)  
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**NYSDEC PM:** Daniel R. Nierenberg, P.G. | Remedial Bureau B, Section C | 518-402-9554  
**Report Date:** July 14, 2026 (REVISED)

## I. SITE BACKGROUND AND REGULATORY CONTEXT

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The 4380 Bullard Avenue Site (Site), located at 552 Nereid Avenue, Bronx, New York 10470 (Block 5035, Lot 30), is enrolled in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as Site Number C203126. The Site encompasses approximately 0.384 acres and is currently used for commercial storage. The Site is shown on the Site Location Map provided as Figure 1.

**Primary Contamination and Remedy:** Site contamination was dominated by polychlorinated biphenyls (PCBs; Aroclor 1254, up to 3,680 mg/kg) in soil. Groundwater petroleum-range organics were attributed to an off-site upgradient source (nearby gas station); chlorinated volatile organic compounds (VOCs) detected in soil vapor were attributed to an off-site source. An Interim Remedial Measure (IRM) completed between November 2020 and June 2021 (SESI, Inc.) removed approximately 15,700 tons of PCB-impacted soil and one underground storage tank (UST). A Decision Document (DD) issued in July 2021 established a Track 4 Restricted Use remedy for the Site.

**Approved Remedy and Engineering/Institutional Controls:** The approved remedy includes the following engineering and institutional controls: (1) a concrete cellar slab cover system with a Colphene liner; (2) a Sub-Slab Depressurization System (SSDS) consisting of nine (9) vapor monitoring ports (VMP-1 through VMP-9), two (2) inline roof fans (R1-1 and R1-2), and two (2) PVC risers; (3) a groundwater use restriction; (4) a land

use restriction (commercial/industrial); (5) an Environmental Easement (Recording No. 2021000448372, filed with the NYC City Register on November 12, 2021); and (6) a low-occupancy restriction limiting cellar use to commercial storage only (consistent with 40 CFR Part 761.3 and the Environmental Easement).

The Site is subject to a Site Management Plan (SMP) finalized by NYSDEC on November 24, 2024. Section 4.4 of the SMP establishes an annual groundwater monitoring program requiring sample collection from four (4) on-site monitoring wells (MW-7, MW-8, MW-11, and MW-12). Groundwater depth at the Site is approximately 30 feet below ground surface (ft bgs), with flow directed west-northwest toward the Bronx River (approximately 0.10 miles west). Locations of the existing monitoring wells are shown on the Monitoring Well Installation Map provided as Figure 2.

## **II. PRR IC/EC CERTIFICATION – BASIS FOR CORRECTIVE MEASURES**

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The Periodic Review Report (PRR) for the period December 23, 2024 through April 23, 2026 (PRR Period) includes an IC/EC Certification Form as required by 6 NYCRR Part 375. The IC/EC Certification requires Impact Environmental to certify whether all engineering controls (ECs) functioned as designed during the PRR Period. Due to the inability to conduct annual groundwater monitoring as required by SMP Section 4.4, IEEG cannot provide an unqualified "YES" certification for ECs. This deficiency is the sole basis for the corrective measures described in this Work Plan.

Impact Environmental emphasizes that this "NO" certification response applies exclusively to groundwater monitoring; it does not reflect any deficiency in the engineering or effectiveness of the SSDS or cover system. Specifically:

- **SSDS Performance:** All nine (9) sub-slab VMPs recorded vacuum readings at or above the SMP minimum criterion of  $-0.004$  in. w.c. during all five (5) quarterly inspections conducted during the PRR Period. Both inline fans (R1-1 and R1-2) maintained flow rates exceeding the 100 cfm performance criterion throughout the PRR Period.
- **Cover System:** The concrete cellar slab and Colphene liner cover system remained intact and functional throughout the PRR Period, with no observed settlement, penetration, or deterioration.

The sole EC deficiency identified in the PRR is the inability to conduct annual groundwater monitoring due to non-viable monitoring wells. This Work Plan describes the corrective measures required to restore the groundwater monitoring capability in accordance with SMP Section 4.4 and NYSDEC direction.

### III. NON-VIABLE WELL FINDINGS – DECEMBER 2025

During the Q4 2025 SSDS quarterly O&M inspection on December 22, 2025, Impact Environmental personnel concurrently attempted to conduct the annual groundwater monitoring event required under SMP Section 4.4. All four (4) monitoring wells (MW-7, MW-8, MW-11, and MW-12) were found to be non-viable. The observed conditions at each well are summarized in Table 1 and depicted on Figure 2.

**Table 1. Summary of Non-Viable Well Conditions – December 22, 2025.**

| Well ID | Location          | Depth to Water (ft bgs) | Total Depth (ft bgs) | Field Observations / Basis for Non-Viability                                                                                                                                                                                                                                                                                                           |
|---------|-------------------|-------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MW-7    | West of Site      | Dry                     | 29.03                | Monitoring well was found dry with a total depth to bottom of 29.03 ft bgs — insufficient to span the water table (~30 ft bgs). Well was originally installed as a shallow perimeter well; likely the seasonal water table had dropped below the well screen interval at the time of this event. Last confirmed viable sampling event: September 2021. |
| MW-8    | Northeast of Site | N/A                     | 39.91                | Wellhead access point not accessible due to concrete cover placed by the prior property operator. Concrete cover prevents well development or sampling without pavement removal. Last confirmed viable sampling event: September 2021.                                                                                                                 |
| MW-11   | West of Site      | 39.71                   | 40.68                | Insufficient water column in 1-inch diameter well for low-flow purging and representative sampling. Last confirmed viable sampling event: September 2021. DTW at that time not recorded in current project files; GW was above total well depth at that event.                                                                                         |
| MW-12   | Northwest of Site | 39.94                   | 43.61                | Insufficient water column in 1-inch diameter well for low-flow purging and representative sampling.                                                                                                                                                                                                                                                    |

*Notes: ft bgs = feet below ground surface; N/A = not applicable (well inaccessible); Depth to Water measured at time of attempted 12/22/25 monitoring event.*

Based on these observed conditions, the monitoring well network is no longer capable of supporting the required groundwater monitoring program under SMP Section 4.4. IEEG notified NYSDEC of these findings by email on January 5, 2026. NYSDEC responded on January 8, 2026 directing IEEG to prepare and submit a corrective measures work plan per SMP Sections 4.4 and 7.3. The NYSDEC correspondence is provided as Appendix A.

#### **IV. CORRECTIVE ACTION BACKGROUND AND BASIS FOR DELAY**

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NYSDEC directed Impact Environmental to prepare and submit this corrective measures work plan by email on January 8, 2026. The preparation of this Work Plan was delayed in part due to a property operator transition that occurred during the PRR Period. Specifically, the property operator transitioned from Extra Space Storage to Manhattan Mini Storage. This transition required IEEG to reestablish direct coordination with property ownership to obtain site access and authorization for field activities.

That matter has since been fully resolved. Impact Environmental has been contracted directly through property ownership (SnL XX, LLC) and has confirmed site access and authorization for all proposed corrective measures described herein.

In addition, prior to initiating any field activities, Impact Environmental will submit a 60-Day Change of Use Notification (CON) to NYSDEC as directed in the January 8, 2026 NYSDEC email, in accordance with the Environmental Easement and BCP program requirements.

## **V. PROPOSED SCOPE OF WORK**

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The proposed scope of work includes the following sequential tasks, each described in detail in the subsections below: (A) regulatory notifications and permitting; (B) monitoring well decommissioning; (C) replacement monitoring well installation; (D) well development; (E) licensed survey; (F) investigation-derived waste (IDW) management; and (G) health and safety.

### **A. Regulatory Notifications and Permits**

Prior to initiating any field activities, the following notifications and permits will be obtained:

- NYSDEC/NYSDOH Approval: Field activities will not commence until this Work Plan has been reviewed and approved in writing by NYSDEC and NYSDOH.
- 60-Day Change of Use Notification (CON): A CON form has been submitted to NYSDEC concurrently with this Work Plan, as directed in the January 8, 2026 NYSDEC email, in accordance with the Site's Environmental Easement and BCP requirements.
- NYC DOT Sidewalk Permits: Sidewalk opening permits will be obtained from the New York City Department of Transportation (NYC DOT) for any well locations requiring sidewalk disturbance.
- Utility Marking (NY 811): A utility marking request will be submitted through New York 811 and, as applicable.
- Health and Safety Plan (HASP): A site-specific HASP prepared in accordance with OSHA 29 CFR 1910.120 (HAZWOPER) will be finalized and on-site prior to commencement of any field activities. The HASP is provided as Appendix B to this Work Plan.

### **B. Monitoring Well Decommissioning**

The four (4) existing non-viable monitoring wells (MW-7, MW-8, MW-11, and MW-12) will be decommissioned in accordance with NYSDEC CP-43 (Guidelines for the Decommissioning and Abandonment of Water Wells in New York State). Decommissioning will be completed prior to replacement well installation at each location. The decommissioning procedure will include the following steps:

- Remove the well cap and lock assembly and measure total well depth to confirm conditions.
- Insert a tremie pipe to the bottom of the well.
- Pump neat cement grout (Portland cement, water-to-cement ratio  $\leq 0.45$  by weight; 3–5% bentonite admixture to reduce shrinkage) from the bottom of the well to the ground surface.

- Allow grout to set and confirm surface completion.
- Restore the surface to match surrounding conditions (concrete or pavement patch, as applicable).

Note: MW-8 is currently inaccessible due to a concrete cover placed by the prior property operator. Concrete pavement removal will be required at MW-8 prior to decommissioning. All decommissioning activities will be documented on field forms including: well ID, date, personnel, grout mix proportions and volumes, pre- and post-decommissioning conditions, and photographic documentation.

### **C. Replacement Monitoring Well Installation**

Four (4) permanent replacement monitoring wells (designated MW-7R, MW-8R, MW-11R, and MW-12R) will be installed at or adjacent to the locations of the decommissioned wells, as depicted on Figure 2. The replacement wells will be constructed as 2-inch diameter wells to provide improved groundwater recharge and adequate sample volume recovery for a more reliable long-term groundwater sampling program. Soil borings will be advanced using hollow-stem auger or direct-push drilling methods by a NYSDEC-licensed water well driller. Representative soil samples will be collected at selected depth intervals during boring advancement for geologic logging and depth-to-groundwater confirmation. Representative soil samples will also be screened using headspace techniques, whereby representative soil will be placed in a clean plastic bag, sealed, and allowed to equilibrate for approximately five (5) minutes. Following equilibration, the headspace within the bag will be screened using a photoionization detector (PID). Organoleptic observations, including evidence of product, sheen, staining, and odors, will be documented during boring advancement and recorded in the field logs.

Based on the Remedial Investigation conducted by SESI (April 2020), groundwater was encountered between approximately 28 and 35 ft bgs across the Site, at a water table elevation of 79 to 92 ft above mean sea level (MSL). Historical monitoring well construction and groundwater depth data collected by SESI during monitoring well installation activities in August 2021 will be used as a reference for replacement well design, as summarized in Table 2.

The following well construction components will be used at each installation:

- Well Screen: Minimum 10-foot section of 2-inch Schedule 40 PVC with 0.010-inch slot, positioned to span the water table (estimated groundwater depth ~30 ft bgs). Well screen intervals will be designed to straddle the water table and will extend approximately five (5) feet above the

seasonal high groundwater table elevation and five (5) feet below the seasonal low groundwater table elevation, as confirmed during drilling activities.

- **Filter Pack:** Clean, well-graded silica sand (No. 2/12 or equivalent) placed from the bottom of the boring to approximately 2 feet above the top of the well screen.
- **Bentonite Seal:** Minimum 2-foot-thick bentonite pellet seal placed immediately above the filter pack to provide an annular seal and prevent cross-contamination.
- **Annular Grout:** Neat cement grout placed via tremie pipe from above the bentonite seal to the ground surface.
- **Surface Completion:** Traffic-rated, flush-mount or bollard-protected steel outer casing with locking PVC cap, appropriate for the surface setting (sidewalk, parking area, or similar).

The proposed replacement well construction parameters are summarized in Table 2.

**Table 2. Proposed Replacement Monitoring Well Construction Summary.**

| Well ID | Location          | Est. Total Depth (ft bgs) | Casing Diameter / Material         | Screen Interval (ft bgs) | Notes                                                                                                                                                                                                                                                                                                                                                                             |
|---------|-------------------|---------------------------|------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MW-7R   | West of Site      | 32                        | 2-in. Sch. 40 PVC / 0.010-in. slot | 21.6 – 31.6-             | MW-7 found dry to total depth of 29.03 ft bgs (Dec. 2025); historical data (SESI Post-remedial Monitoring Well Construction Logs, August. 2021) indicates GW at approximately 26.6 ft bgs at this location. Screen 21.6-31.6 ft bgs spans estimated seasonal GW range. Reinstalled if MW-7 confirmed non-viable at mobilization; total depth contingent on field confirmation.    |
| MW-8R   | Northeast of Site | 37.2                      | 2-in. Sch. 40 PVC / 0.010-in. slot | 27.2 – 37.2              | MW-8 inaccessible at Dec. 2025 event due to concrete cover over casing. Based on historical data (SESI Post-remedial Monitoring Well Construction Logs, August. 2021), GW expected at approximately 32.2 ft bgs at this location; MW-8 is positioned upgradient (northeast) of the Site. Screen 27.2-37.2 ft bgs spans probable seasonal GW range. Reinstalled following concrete |

|        |                   |    |                                    |         |                                                                                                                                                                                                                                                                                                                     |
|--------|-------------------|----|------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                   |    |                                    |         | removal; total depth contingent on field conditions.                                                                                                                                                                                                                                                                |
| MW-11R | West of Site      | 39 | 2-in. Sch. 40 PVC / 0.010-in. slot | 29 - 39 | Replaces non-viable 1-inch MW-11. GW confirmed at DTW = 39.71 ft bgs (Dec. 2025); Upsized to 2-inch to provide improved recharge and adequate sample volume. Based on historical data (SESI Post-remedial Monitoring Well Construction Logs, August. 2021), GW expected at approximately 34 ft bgs at this location |
| MW-12R | Northwest of Site | 39 | 2-in. Sch. 40 PVC / 0.010-in. slot | 29 – 39 | Replaces non-viable 1-inch MW-12. GW confirmed at DTW = 39.94 ft bgs Upsized to 2-inch to provide improved recharge and adequate sample volume. Based on historical data (SESI Post-remedial Monitoring Well Construction Logs, August. 2021), GW expected at approximately 34 ft bgs at this location              |

*Notes: ft bgs = feet below ground surface; Sch. = Schedule; PVC = polyvinyl chloride. Depths are approximate and will be confirmed in the field. Final screen intervals will be determined in the field based on observed groundwater conditions. Any material deviation from proposed well construction will be documented and submitted to NYSDEC/NYSDOH prior to or concurrent with the Well Completion Report.*

#### **D. Well Development**

Following a minimum 48-hour curing period allowing the bentonite seal and neat cement grout to sufficiently cure, each replacement well will be developed using a combination of mechanical surging and bailing, whereby groundwater will be repeatedly agitated within the screened interval using a surge block or equivalent device and removed using a bailer or pump until water is visually clear, sediment production is minimized, and turbidity is reduced to  $\leq 50$  NTUs. Measurements of pH, specific conductance, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity will be collected periodically during development to document well conditions and evaluate restoration of hydraulic communication between the well and the surrounding formation. The  $\leq 50$  NTU turbidity target is the primary development completion criterion and is consistent with NYSDEC DER-10, Section 2.1(g)(2)(i), which establishes 50 NTU as the target turbidity level for monitoring well development and sampling. pH, specific conductance, dissolved oxygen, and ORP are monitored as supporting indicators that formation groundwater—rather than introduced drilling or development water, is being produced and that hydraulic communication

between the well and the surrounding formation has been restored. At a minimum, three (3) casing volumes will be removed from each well to achieve the development objectives.

All development activities including volumes removed, field parameter readings, and elapsed time will be documented on field forms.

#### **E. Licensed Survey**

Upon completion of installation and development, a New York State licensed land surveyor will survey all replacement wells to determine top-of-casing (TOC) elevations and horizontal locations (northing and easting) in State Plane New York East Zone coordinates (NAD 83) and NAVD 88 vertical datum, consistent with the existing site datum established in the FER. Survey data will be used to update the groundwater elevation maps and Site figures in the Well Completion Report.

#### **F. Investigation-Derived Waste (IDW) Management**

All IDW generated during field activities — including drill cuttings, grout returns, development and purge water, and decommissioning grout returns — will be managed in accordance with the Site's SMP and applicable federal, state, and local regulations. Soil cuttings will be containerized in DOT-approved drums pending characterization. Development water will be containerized and disposed of at a licensed facility. IDW volumes, disposal methods, and manifests will be documented in the Well Completion Report.

#### **G. Health and Safety**

All field activities will be conducted under a site-specific Health and Safety Plan (HASP) prepared in accordance with 29 CFR 1910.120 (HAZWOPER) and NYSDEC guidance. The HASP is provided as Appendix B to this Work Plan.

At minimum, Level D personal protective equipment (PPE) — including hard hat, safety glasses, steel-toed boots, high-visibility vest, and nitrile gloves — will be required for all site personnel during field activities. The Site Safety Officer will assess site conditions upon arrival and may upgrade PPE requirements based on observed air monitoring results, soil conditions, or other site hazards. Photoionization detector (PID) monitoring will be conducted during well/boring advancement and well development to assess for elevated VOC concentrations in the work zone.

A Community Air Monitoring Program (CAMP) will be implemented at the Site during any soil disturbance or ground-intrusive activity (e.g., drilling), in accordance with Appendix F of the DEC-approved November 2024 Site Management Plan. The objective of the CAMP is to provide protection for the surrounding community from potential airborne contaminant releases as a result of intrusive activities. Each

monitoring station will be equipped with instruments to continuously measure and record levels of VOCs and particulates. In addition to the fixed monitoring stations, VOCs will be monitored within the work zone using a hand-held PID. Any exceedances of CAMP action levels will be recorded and addressed in accordance with CAMP requirements, and the NYSDEC and NYSDOH will be notified to determine what, if any, additional monitoring or mitigative measures should be employed.

In the event of a dust or odor complaint, and in the event of any exceedance related to the CAMP, the NYSDEC and NYSDOH project managers will be notified within 24 hours. Any CAMP exceedance will be reported to the NYSDEC and NYSDOH on the same business day and as soon as possible. Notification of the exceedance will be sent via email along with the reason for the exceedance, the measure(s) taken to address the exceedance, and how the exceedance was resolved.

## **VI. QUALITY ASSURANCE/QUALITY CONTROL**

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All field activities will be supervised by a Qualified Environmental Professional (QEP), as defined under 6 NYCRR Part 375-1.2, or a licensed professional under direct QEP oversight, in accordance with 6 NYCRR Part 375 and the Site SMP. The following QA/QC measures will be implemented:

- All field activities will meet or exceed industry standards of care and documentation.
- Calibration of all multi-parameter field instruments (pH, conductance, DO, ORP, turbidity) prior to each field event, with calibration logs maintained in the project file.
- Photographic documentation of all well installation, decommissioning, and development activities.
- Health and safety monitoring including PID readings maintained per the HASP (Appendix B) throughout field operations.

Quality assurance and quality control procedures associated with future groundwater sampling activities will be implemented in accordance with the DEC-approved November 2024 Site Management Plan.

## VII. CORRECTIVE MEASURES SCHEDULE

The following table presents the proposed implementation schedule for the corrective measures, contingent upon timely NYSDEC/NYSDOH review and approval of this Work Plan. IEEG requests expedited review given the pending PRR IC/EC Certification deficiency.

**Table 3. Corrective Measures Implementation Schedule**

| Task / Milestone                                                          | Anticipated Timing                                               | Notes                                                                                                                  |
|---------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Work Plan Submission to NYSDEC/NYSDOH                                     | July 2026                                                        | This document. 60-Day CON submitted concurrently.                                                                      |
| NYSDEC/NYSDOH Review and Approval                                         | ~30 following submission (dependent on NYSDEC review)            | Impact requests expedited review given pending PRR IC/EC certification.                                                |
| NYC DOT Sidewalk Permit Applications                                      | Upon Work Plan approval                                          | As applicable for street-frontage well locations.                                                                      |
| NY 811 / OCMC Utility Clearance                                           | Minimum 72 hours prior to mobilization                           | Mandatory pre-drill clearance via NY 811 and NYC OCMC.                                                                 |
| Well Decommissioning (MW-7, MW-8, MW-11, MW-12)                           | Within 15 days of Work Plan approval (August 2026); 1-day event  | Per NYSDEC CP-43. Pavement removal for MW-8 included.                                                                  |
| Replacement Well Installation (MW-7R through MW-12R) and Well Development | Following decommissioning; 2–3 day event (August 2026)           | 2-inch Sch. 40 PVC at all 4 locations per Table 2. Minimum 24-hour grout cure; stabilization criteria per Section V.D. |
| Monitoring Well Development                                               | Minimum of 48 hours after installation                           | Allow bentonite seal and grout mixture to cure sufficiently prior development.                                         |
| Licensed Survey (TOC elevations and horizontal locations)                 | Within 2 weeks of installation                                   | State Plane NY East Zone / NAVD 88 per Site datum.                                                                     |
| Annual Groundwater Sampling Event (SMP Section 4.4)                       | At least 7 days after well development                           | NYSDEC Part 375.6 List VOCs, SVOCs, PCBs and Metals                                                                    |
| Well Completion Report Submission                                         | Within 15 days of field completion                               | Documents decommissioning, installation, development, survey, and GW sampling data per Section VIII.                   |
| PRR Amendment (IC/EC Certification and GW Monitoring Data)                | Within 45 days of sampling event completion (September/Oct 2026) | Incorporates Well Completion Report findings; revised IC/EC Certification; submitted per SMP Section 7.3.              |

*Notes: CON = Change of Use Notification; TOC = top of casing; SMP = Site Management Plan; PRR = Periodic Review Report; HASP = Health and Safety Plan; GW = groundwater. Schedule is contingent upon NYSDEC/NYSDOH approval and NYC DOT permit timelines.*

## VIII. REPORTING

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Upon completion of all field activities, a Well Completion Report will be prepared and submitted to NYSDEC and NYSDOH within 15 days of field completion. The Well Completion Report will include:

- Monitoring well decommissioning activities, including grout mix proportions, volumes placed, and post-decommissioning photographic documentation;
- Replacement well construction records for each new well, including boring logs, well completion diagrams, material specifications, and geologic descriptions;
- Well development records, including field parameter stabilization data and total volume of water removed;
- Licensed survey data (State Plane NY East Zone / NAVD 88) for all replacement wells;
- Annual groundwater sampling data, including field parameter logs, chain-of-custody forms, and certified analytical laboratory reports;
- Soil boring logs and monitoring well construction logs associated with all replacement monitoring wells will be prepared and incorporated into the SMP and included as appendices to the Well Completion Report; and
- Chain-of-custody and IDW disposal records.

The replacement wells (MW-7R, MW-8R, MW-11R, and MW-12R) will be incorporated into the existing groundwater monitoring program established under SMP Section 4.4, as shown on the SMP Groundwater Monitoring Well Location Map (Figure 3). Annual groundwater sampling will be performed at all four (4) replacement wells in accordance with the analytical requirements specified in SMP Section 4.4.

The Well Completion Report and associated groundwater sampling data will be incorporated into a PRR amendment, which will include a revised IC/EC Certification Form and will be submitted to NYSDEC and NYSDOH within 45 days of the sampling event completion, in accordance with SMP Section 7.3.

In accordance with 6 NYCRR 375-1.6(3) daily work reports will be submitted to the NYSDEC and the NYSDOH PMs during all field activities conducted under this plan by the end of each day following the reporting period and will include:

- An update of progress made during each day;
- Locations of work being performed;
- Photographs of work completed each day;

- A summary of work planned for the following day;
- The names and titles of staff performing on-site activities;
- A timeline of daily work activities, including start and end times;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including exceedances;
- A summary of any data collected in association with site activities;
- An explanation of notable Site conditions; and,
- Any deviations from the approved work plan.

CAMP will be conducted during ground intrusive activities and soil handling activities. NYSDEC and the NYSDOH will be notified of CAMP results that exceed action levels, including duration and actions taken in response to any such exceedance. Notifications will be provided to the NYSDEC and the NYSDOH as soon as possible, within a minimum 24 hours from the exceedance event.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC or NYSDOH of emergencies (accidents, spills, etc.), requests for changes to the CMWP or other sensitive or time critical information. However, such conditions must also be included in the daily reports. Any and all Site notifications, including emergency conditions and changes to the CMWP, will be addressed directly to the NYSDEC PM and the NYSDOH PM via personal communication.

Daily reports will include a description of daily activities keyed to a map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and any complaints received from the public. All complaints received will immediately be reported to the NYSDEC PM and the NYSDOH PM. The NYSDEC assigned project number will appear on all reports.

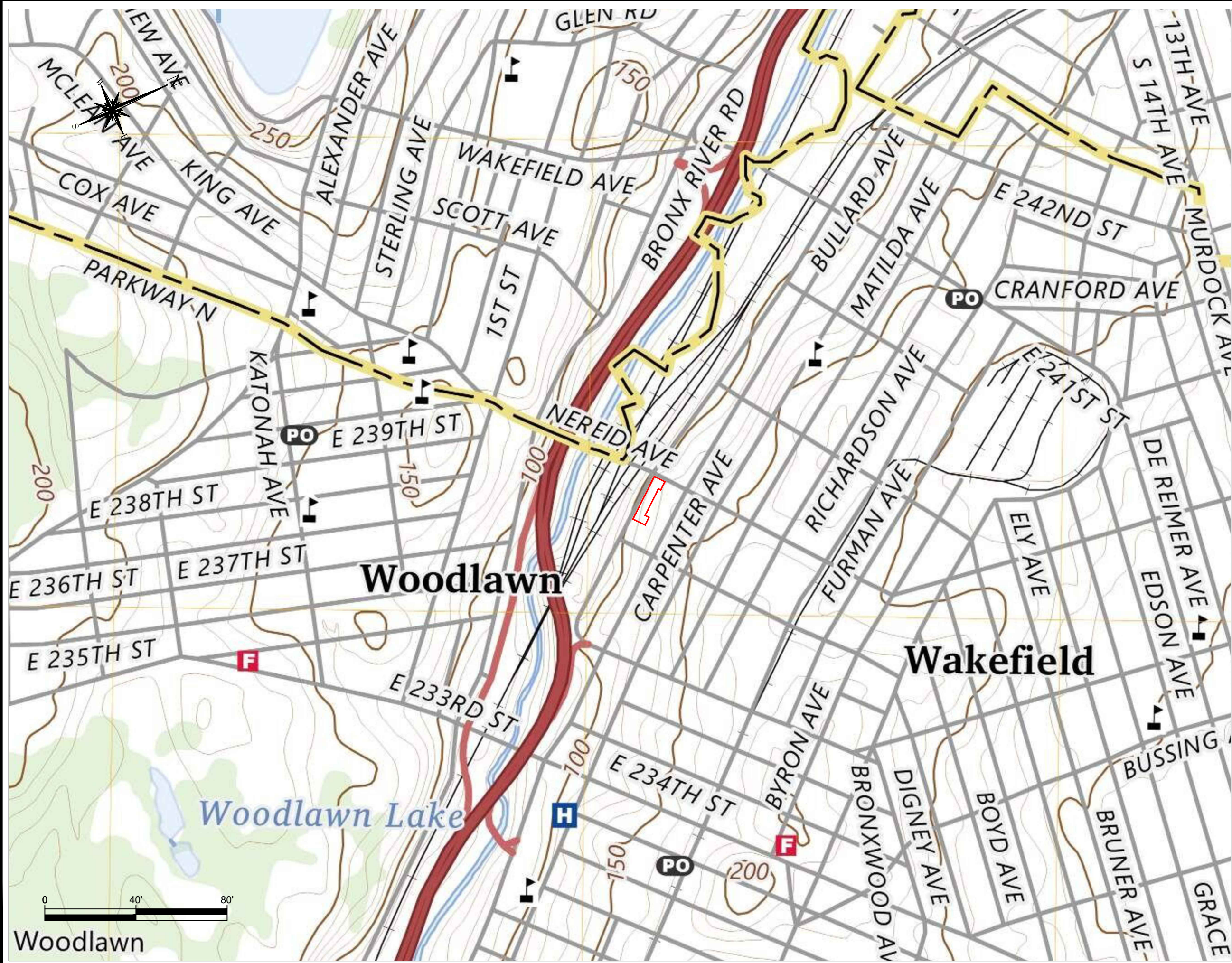
## FIGURES

### **Figure 1: Site Location Map**

*[Figure to be attached – Site location in relation to regional geography and site boundaries, Bronx, NY]*

### **Figure 2: Monitoring Well Installation Map**

*[Figure to be attached – Existing and replacement monitoring well locations, 4380 Bullard Avenue / 552 Nereid Avenue, Bronx, NY]*



NOTES:  
1. DRAWING IS BASED ON USGS 7.5-MINUTE TOPOGRAPHIC MAP - MOUNT VERNON, NY QUADRANGLE, 2023.

LEGEND:

BCP SITE BOUNDARY

FIGURE 1:  
SITE LOCATION MAP

4380 BULLARD AVENUE  
BRONX, NY  
BLOCK: 5035, LOT: 30

|              |           |
|--------------|-----------|
| SHEET NO.    |           |
| 01           |           |
| PROJECT NO.  | 12500     |
| DESIGNED BY: | YY        |
| DRAWN BY:    | AB        |
| CHECKED BY:  | DF        |
| DATE:        | 7/28/2023 |
| SCALE:       | 1" = 40'  |
| REVISIONS    |           |
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|                                                                                                                                                                                                                     |                   |                                                                                                                                                        |                    |                |       |                             |       |           |                                                                                 |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|-------|-----------------------------|-------|-----------|---------------------------------------------------------------------------------|--------|
|                                                                                                                                     | PROJECT NAME:     | 4380 Bullard Ave                                                                                                                                       |                    |                |       | MONITORING WELL NO.         |       | MW-7      |                                                                                 |        |
|                                                                                                                                                                                                                     | PROJECT LOCATION: | Bronx, New York                                                                                                                                        |                    |                |       | JOB NO.                     |       | 10652     |                                                                                 |        |
|                                                                                                                                                                                                                     |                   |                                                                                                                                                        |                    |                |       | GROUND ELEVATION:           |       |           |                                                                                 |        |
| BORING BY: AARCO                                                                                                                                                                                                    | DATE STARTED      | 8/27/21                                                                                                                                                | DEVELOPMENT PERIOD |                |       | INSIDE CASING DIAMETER (in) |       | 2"        |                                                                                 |        |
| INSPECTOR: Jack Norgard                                                                                                                                                                                             | DATE COMPLETED    | 8/27/21                                                                                                                                                | DEVELOPMENT METHOD |                |       | BOREHOLE DIAMETER (in)      |       | 4"        |                                                                                 |        |
| NJ DEP PERMIT NO.: New York                                                                                                                                                                                         | DATE DEVELOPED    | 8/27/21                                                                                                                                                | DEVELOPMENT RATE   |                | # gpm | INITIAL WATER LEVEL (ft):   |       | 26.6' BGS |                                                                                 |        |
| WELL CONSTRUCTION                                                                                                                                                                                                   |                   | DEPTH (ft)                                                                                                                                             | Sample             | Blows on Spoon |       |                             |       | REC       | SOIL DESCRIPTION AND STRATIFICATION                                             | P.I.D. |
|                                                                                                                                                                                                                     |                   | 0                                                                                                                                                      |                    | 0/6            | 6/12  | 12/18                       | 18/24 | (in)      |                                                                                 |        |
| Depth (feet below grade)<br>Top of Casing: 0<br>Ground Surface 0<br>Top of Riser 2"<br>Top of Seal 2"<br>Top of Sand Pack 3'<br>Top of Screen 21.8'<br>Bottom of Screen 31.8'<br>Bottom of Boring 31.8'<br>Remarks: |                   | Casing Type:<br><br>Well Cap: Flush<br>Grout Type: Bentonite<br>Well Key:<br><br>Riser Pipe: 1" Diameter<br><br>Pack Size: #2 Sand<br><br>Screen Size: |                    |                |       |                             |       |           | No soil sleeves were obtained due to air rotary and air hammer drilling methods |        |
|                                                                                                                                                                                                                     |                   | 5                                                                                                                                                      |                    |                |       |                             |       |           |                                                                                 |        |
|                                                                                                                                                                                                                     |                   | 10                                                                                                                                                     |                    |                |       |                             |       |           |                                                                                 |        |
|                                                                                                                                                                                                                     |                   | 15                                                                                                                                                     |                    |                |       |                             |       |           |                                                                                 |        |
|                                                                                                                                                                                                                     |                   | 20                                                                                                                                                     |                    |                |       |                             |       |           |                                                                                 |        |
|                                                                                                                                                                                                                     |                   | 25                                                                                                                                                     |                    |                |       |                             |       |           |                                                                                 |        |
|                                                                                                                                                                                                                     |                   | 30                                                                                                                                                     |                    |                |       |                             |       |           |                                                                                 |        |
|                                                                                                                                                                                                                     |                   | 35                                                                                                                                                     |                    |                |       |                             |       |           | Bottom of boring reached at 31.8' below ground surface                          |        |
|                                                                                                                                                                                                                     |                   | 40                                                                                                                                                     |                    |                |       |                             |       |           |                                                                                 |        |

Approximate Change in Strata: \_\_\_\_\_ Inferred Change in Strata: \_\_\_\_\_

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted. Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

Approximate Change in Strata: \_\_\_\_\_ Inferred Change in Strata: \_\_\_\_\_

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|                                                                                  |                   |                              |                    |                |       |                             |       |         |                                     |        |
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|  | PROJECT NAME:     | 4380 Bullard Ave             |                    |                |       | MONITORING WELL NO.         |       | MW-11   |                                     |        |
|                                                                                  | PROJECT LOCATION: | Bronx, New York              |                    |                |       | JOB NO.                     |       | 10652   |                                     |        |
|                                                                                  |                   | Installed by EnviroTrac, LTD |                    |                |       | GROUND ELEVATION:           |       |         |                                     |        |
| BORING BY: AARCO                                                                 | DATE STARTED      |                              | DEVELOPMENT PERIOD |                |       | INSIDE CASING DIAMETER (in) |       | 1"      |                                     |        |
| INSPECTOR: EnviroTrac, LTD                                                       | DATE COMPLETED    |                              | DEVELOPMENT METHOD |                |       | BOREHOLE DIAMETER (in)      |       | 2"      |                                     |        |
| NJ DEP PERMIT NO.: New York                                                      | DATE DEVELOPED    |                              | DEVELOPMENT RATE   |                | # gpm | INITIAL WATER LEVEL (ft):   |       | 34' BGS |                                     |        |
| WELL CONSTRUCTION                                                                |                   | DEPTH (ft)                   | Sample             | Blows on Spoon |       |                             |       | REC     | SOIL DESCRIPTION AND STRATIFICATION | P.I.D. |
|                                                                                  |                   | 0                            |                    | 0/6            | 6/12  | 12/18                       | 18/24 | (in)    |                                     |        |
| Depth (feet below grade)                                                         |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Casing:                                                                   |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Ground Surface                                                                   |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Riser                                                                     |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 5                            |                    |                |       |                             |       |         |                                     |        |
| Well Cap: Flush                                                                  |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Seal                                                                      |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Grout Type: Bentonite                                                            |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Sand Pack                                                                 |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Well Key:                                                                        |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 10                           |                    |                |       |                             |       |         |                                     |        |
| Riser Pipe: 1" Diameter                                                          |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 15                           |                    |                |       |                             |       |         |                                     |        |
| Top of Screen                                                                    |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 20                           |                    |                |       |                             |       |         |                                     |        |
| Pack Size: #2 Sand                                                               |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 25                           |                    |                |       |                             |       |         |                                     |        |
| Screen Size:                                                                     |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 30                           |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 35                           |                    |                |       |                             |       |         |                                     |        |
| Bottom of Screen                                                                 |                   | 40                           |                    |                |       |                             |       |         |                                     |        |
| Bottom of Boring                                                                 |                   | 40                           |                    |                |       |                             |       |         |                                     |        |
| Remarks:                                                                         |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 40                           |                    |                |       |                             |       |         |                                     |        |

Approximate Change in Strata: \_\_\_\_\_ Inferred Change in Strata: \_\_\_\_\_

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|                                                                                  |                   |                              |                    |                |       |                             |       |         |                                     |        |
|----------------------------------------------------------------------------------|-------------------|------------------------------|--------------------|----------------|-------|-----------------------------|-------|---------|-------------------------------------|--------|
|  | PROJECT NAME:     | 4380 Bullard Ave             |                    |                |       | MONITORING WELL NO.         |       | MW-12   |                                     |        |
|                                                                                  | PROJECT LOCATION: | Bronx, New York              |                    |                |       | JOB NO.                     |       | 10652   |                                     |        |
|                                                                                  |                   | Installed by EnviroTrac, LTD |                    |                |       | GROUND ELEVATION:           |       |         |                                     |        |
| BORING BY: AARCO                                                                 | DATE STARTED      |                              | DEVELOPMENT PERIOD |                |       | INSIDE CASING DIAMETER (in) |       | 1"      |                                     |        |
| INSPECTOR: EnviroTrac, LTD                                                       | DATE COMPLETED    |                              | DEVELOPMENT METHOD |                |       | BOREHOLE DIAMETER (in)      |       | 2"      |                                     |        |
| NJ DEP PERMIT NO.: New York                                                      | DATE DEVELOPED    |                              | DEVELOPMENT RATE   |                | # gpm | INITIAL WATER LEVEL (ft):   |       | 34' BGS |                                     |        |
| WELL CONSTRUCTION                                                                |                   | DEPTH (ft)                   | Sample             | Blows on Spoon |       |                             |       | REC     | SOIL DESCRIPTION AND STRATIFICATION | P.I.D. |
|                                                                                  |                   | 0                            |                    | 0/6            | 6/12  | 12/18                       | 18/24 | (in)    |                                     |        |
| Depth (feet below grade)                                                         |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Casing:                                                                   |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Ground Surface                                                                   |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Riser                                                                     |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 5                            |                    |                |       |                             |       |         |                                     |        |
| Well Cap: Flush                                                                  |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Seal                                                                      |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Grout Type: Bentonite                                                            |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Top of Sand Pack                                                                 |                   |                              |                    |                |       |                             |       |         |                                     |        |
| Well Key:                                                                        |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 10                           |                    |                |       |                             |       |         |                                     |        |
| Riser Pipe: 1" Diameter                                                          |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 15                           |                    |                |       |                             |       |         |                                     |        |
| Top of Screen                                                                    |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 20                           |                    |                |       |                             |       |         |                                     |        |
| Pack Size: #2 Sand                                                               |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 25                           |                    |                |       |                             |       |         |                                     |        |
| Screen Size:                                                                     |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 30                           |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 35                           |                    |                |       |                             |       |         |                                     |        |
| Bottom of Screen                                                                 |                   | 44                           |                    |                |       |                             |       |         |                                     |        |
| Bottom of Boring                                                                 |                   | 44                           |                    |                |       |                             |       |         |                                     |        |
| Remarks:                                                                         |                   |                              |                    |                |       |                             |       |         |                                     |        |
|                                                                                  |                   | 40                           |                    |                |       |                             |       |         |                                     |        |

Approximate Change in Strata: \_\_\_\_\_ Inferred Change in Strata: \_\_\_\_\_

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## **APPENDIX A**

### **NYSDEC Correspondence – Monitoring Well Non-Viable Conditions**

Impact Environmental Email dated January 5, 2026 and  
NYSDEC Response dated January 8, 2026

---

**RE: 552 Nereid Avenue, Bronx - (BCP Site No. C203126)**

---

**From** Nierenberg, Daniel R (DEC) <daniel.nierenberg@dec.ny.gov>

**Date** Thu 1/8/2026 1:57 PM

**To** Dan Fruhauf <dfruhauf@impactenvironmental.com>

**Cc** Kevin Kleaka, PG <kkleaka@impactenvironmental.com>; Quandt, Sarah M (DEC) <Sarah.Quandt@dec.ny.gov>; Robinson, Johnathan M (HEALTH) <Johnathan.Robinson@health.ny.gov>

Good afternoon, Dan,

Happy New Year to you, and thanks for the call, Tuesday.

As discussed and based on the information below, it appears the groundwater monitoring wells will need to be reinstalled, if they are not viable, in accordance with Section 4.4 of the December 2024 Site Management Plan (SMP). Additionally, a work plan for the reinstallation of monitoring wells needs to be submitted to the NYDEC/NYSDOH for review and approval, in accordance with Section 7.3 of the SMP.

Lastly, please submit a [60-day Change of Use Notification form](#) for the anticipated monitoring well reinstallation work for documentation purposes.

Please let me know if you have any questions or comments.

Thank you.

Dan

**Daniel R. Nierenberg, P.G.**

he/him/his

Remedial Bureau B, Section C

Division of Environmental Remediation

**New York State Department of Environmental Conservation**

625 Broadway, Albany, NY 12233-7016

Desk: (518) 402-9554/Cell: (518) 860-5496 | [daniel.nierenberg@dec.ny.gov](mailto:daniel.nierenberg@dec.ny.gov)

[www.dec.ny.gov](http://www.dec.ny.gov) |  |  | 



Department of  
Environmental  
Conservation

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<https://mysend.ny.gov:443/nys/send/to/user/danielnierenbergdecnygov>

---

**From:** Dan Fruhauf <dfruhauf@impactenvironmental.com>

**Sent:** Monday, January 5, 2026 1:29 PM

**To:** Nierenberg, Daniel R (DEC) <daniel.nierenberg@dec.ny.gov>

**Cc:** Kevin Kleaka, PG <kkleaka@impactenvironmental.com>

**Subject:** 552 Nereid Avenue, Bronx - (BCP Site No. C203126)

*ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.*

Happy New Year Dan,

We are writing to inform you that Impact completed the Q4 SSSDS O&M and engineering controls inspection at the 552 Nereid Avenue site (Bronx, NY) in late December. During the same mobilization, we also attempted to perform the annual groundwater monitoring event; however, we were unable to collect groundwater samples due to well conditions encountered in the field, as summarized below.

- MW-7: The well was gauged and found to be dry; no groundwater was encountered to the total depth of 29.03 ft bgs.
- MW-11: Groundwater was encountered at 39.71 ft bgs; total depth 40.68 ft bgs. The well was purged immediately after gauging; however, it went dry within a few minutes of purging after 4 hours there was not enough volume to properly purge or collect a sample.
- MW-12: Groundwater was encountered at 39.94 ft bgs; total depth 73.61 ft bgs. Purging was initiated and the well went dry immediately after purging began and did not recharge to a volume that could be sampled within 4 hours.
- MW-8: The well appears to be covered with concrete and was not accessed.

Please note that MW-11 and MW-12 are 1-inch-diameter wells, which likely contributes to limited water recovery during purging. MW-11 and MW-12 were allowed to recover for approximately four hours and were subsequently re-gauged, at which time only 1-3 of inches of water were observed.

As background, these are existing SESI monitoring wells that were incorporated into the Site Management Plan (SMP) during the transition from SESI to Impact, based on the records obtained these were viable wells.

Given the above, please advise how you would like us to proceed. Specifically:

1. Would NYSDEC like us to replace the monitoring well network (e.g., MW-7, MW-11, MW-12, and MW-8), or
2. Would NYSDEC consider a scope reduction and allow us to focus on attempting to revitalize MW-11 and MW-12 (and address MW-8 as needed), prior to committing to full replacement?

We appreciate your guidance and will align the next steps with NYSDEC's preference.

Thanks!



**DAN FRUHAUF** | Project Manager

O: [631-269-8800](tel:631-269-8800) x141 C: [631-901-2470](tel:631-901-2470)

170 Keyland Court, Bohemia, NY 11716

[Our email policies](#)

**APPENDIX B**  
**Health and Safety Plan (HASP)**

# **Health and Safety Plan**

## **Brownfield Cleanup Program**

**July 14, 2026**

***Prepared for:***

4380 Bullard Avenue Site  
552 Nereid Avenue (formerly 4380 Bullard Avenue)  
Bronx, NY 10470  
Block: 5035 Lot: 30  
NYSDEC BCP Site Number C203126

***Submitted to:***

New York State Department of Environmental Conservation  
Division of Environmental Remediation  
47-40 21<sup>st</sup> Street  
Long Island City, NY

***Report user:***

SnL XX, LLC  
3333 New Hyde Park Road, Suite 200  
Lake Success, NY

***IEEG Project Number:***

16389



**IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY**

| 170 Keyland Court | Bohemia | New York | 11716 | 631.269.8800

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## 1 Introduction

This Health and Safety Plan (HASP) describes the procedures to be followed in order to reduce employee exposure to potential health and safety hazards that may be present during environmental investigation activities being performed at the site. The emergency response procedures necessary to respond to such hazards are also described within this HASP. All activities performed under this HASP are targeted to comply with Occupational Safety and Health Administration (OSHA) Regulations 29 CFR Part 1910.120 (Hazardous Waste Operations and Emergency Response [HAZWOPER]).

This document is not, nor does it purport to be, a complete description of all safety and health requirements applicable to work performed at the site. Rather, the HASP is a general overview of the compliance policies and work practices applicable to the primary tasks and hazards associated with the environmental assessment portion of the development project, as well as a recitation of minimum safety and health compliance obligations for contractors, subcontractors and workers at the site. All subcontractors of any tier operating at the worksite are obligated to implement and maintain comprehensive safety and health plans for their own employees and to ensure that their employees comply with all applicable safety and health requirements. All subcontractors operating at the worksite should refer to the applicable specific OSHA Standards for detailed requirements.

### 1.1 Purpose

The purpose of this HASP is to provide the contractors' field personnel, as well as other site-occupants, with an understanding of the potential chemical and physical hazards that exist or may arise while portions of this project are being performed. To this end, this HASP also presents information on the progression of the environmental restoration activities and specific details regarding the handling of materials excavated from the site.

The primary objective is to ensure the well being of all field personnel and the community surrounding this site. In order to accomplish this, project staff and approved subcontractors of any tier shall acknowledge and adhere to the policies and procedures established herein. Accordingly, all personnel assigned to the remediation activities associated with this project (Remedial Personnel) shall read this HASP and sign the Agreement and Acknowledgment Statement (Appendix A) to certify that they have read, understood, and agree to abide by its provisions. A copy of this HASP will be available to anyone that requests it. Personnel involved in construction activities (Construction Personnel) and other Personnel (e.g. government officials, administrators, bank inspectors, assessors, etc.) that will have limited exposure to the site native soil/fill material during construction activities will be instructed on how to reduce the probability of exposure to site contaminants, but will not be required read the HASP.

## **2 Application of Health and Safety Plan**

The procedures of this HASP apply for any person that will enter the boundaries of the site or a portion of the Site during environmental investigation activities. When the Project Manager has designated an area of the site as clear of any environmental issues, construction contractors and subcontractors of any tier will perform the balance of the work in accordance with their individual OSHA-compliant corporate HASP.

### **2.1 Restoration Personnel**

Employees of contractors and subcontractors of any tier performing the following activities will be considered Restoration Personnel:

- Excavation of native soil/fill material
- Loading of native soil/fill onto vehicles
- Processing of native soil/fill into components
- Transporting of native soil/fill across the site
- Sampling of native soil/fill material for subsequent physical or chemical analysis
- Cleaning or decontaminating equipment or personnel
- Handling of ground waters

All subcontractors, of any tier, must submit a HASP to the Site Health and Safety Officer for review and approval prior to mobilizing to the site. Only HASPs that comply with this HASP will be approved. Where a subcontractors HASP is deficient, the Site Health and Safety Officer will provide written notification of any required changes. Approved HASPs will be submitted to the Project Manager and retained on-site for reference by the Site Health and Safety Officer.

#### **2.1.1 Construction Personnel**

For this document, "Construction Personnel" is the term given for those employees of contractors and subcontractors of any tier performing activities associated with site development other than those performed by the Remedial Personnel. This designation does not preclude that Construction Personnel will traverse or work upon native soil/fill material, rather, it infers that it will not involve performing tasks that will create a route of exposure to the contaminants contained therein. Construction Personnel will receive instruction to limit the potential for exposure to these contaminants. Construction Personnel will be prohibited from entering Environmental Remediation Areas (i.e., active excavation / handling / processing areas, loading areas, exclusion zones or support zones).

### 3 Key Personnel / Identification of Health & Safety Personnel

#### 3.1 Key Personnel

A list of the pertinent personnel authorized to be present on site is as follows:

| <u>Title</u>                                                | <u>Name</u>          | <u>Telephone Number</u>                       |
|-------------------------------------------------------------|----------------------|-----------------------------------------------|
| Senior Project Manager<br><i>Impact Environmental</i>       | Kevin Kleaka         | (O) 631-269-8800 ext: 129<br>(C) 516-805-8892 |
| Project Manager<br><i>Impact Environmental</i>              | Daniel Fruhauf       | (O) 631-269-8800 ext: 144<br>(C) 631-901-2470 |
| Field Operations Leader<br><i>Impact Environmental</i>      | Juliana de la Fuente | (O) 631-269-8800 ext: 197<br>(C) 631-275-4865 |
| Site Health & Safety Officer<br><i>Impact Environmental</i> | Juliana de la Fuente | (O) 631-269-8800 ext: 197<br>(C) 631-275-4865 |

#### 3.2 Organizational Responsibility

##### 3.2.1 Senior Project Manager

The Senior Project Manager will be responsible for implementing the project and obtaining any necessary personnel or resources for the completion of the project. Specific duties will include:

- Selecting a Site Health and Safety Officer and field personnel for the work to be undertaken on site;
- Providing authority and resources to ensure that the Site Health and Safety Officer is able to implement and manage safety procedures;
- Preparing reports and recommendations about the project to clients and affected personnel;

- Ensuring that all persons allowed to enter the site (e.g., EPA, contractors, state officials, visitors) are made aware of the potential hazards associated with the substances known or suspected to be on site, and are knowledgeable as to the on-site copy of the specific HASP; and
- Ensuring that the Site Health and Safety Officer is aware of all of the provisions of this HASP and is instructing all personnel on site about the safety practices and emergency procedures defined in the plan.

### *3.2.2 Project Manager*

The Project Manager will be responsible for implementing the Senior Project Manager' duties as well as oversee activities regarding the project both in the field and in the office as well as interact with environmental regulatory agencies, sub-contractors and internal company personnel.

- Coordinating the activities of all construction and Remedial Personnel, to include informing them of the required Personal Protective Equipment (PPE) and insuring their signature acknowledging this HASP;
- Ensuring that the tasks assigned are being completed as planned and on schedule; and
- Serving as liaison with public officials where there is no Public Affairs official designated.

### *3.2.3 Field Operations Leader*

The Field Operations Leader will be responsible for field operations and safety. Specific duties will include, but are not limited to:

- Scheduling with the construction company and their subcontractors;
- Coordinating with the Site Health and Safety Officer in determining protection levels;
- Documenting field activities;
- Coordinate activities between environmental and construction personnel;
- Coordination with waste management contractors; and
- Review and approval of waste disposal facilities.

In the event that the Project Manager and the Site Health and Safety Officer are not on site, the Field Operations Leader will assume all responsibility of the Site Health and Safety Officer.

### *3.2.4 Site Health and Safety Officer*

The Site Health and Safety Officer shall be responsible for the implementation of the HASP on site. Specific duties will include:

- Monitoring the compliance of construction and environmental remediation activities personnel (field personnel) for the routine and proper use of the PPE that has been designated for each task;
- Routinely inspecting PPE and clothing to ensure that it is in good condition and is being stored and maintained properly;
- Stopping work on the site or changing work assignments or procedures if any operation threatens the health and safety of workers or the public;
- Monitoring personnel who enter and exit the site and all controlled access points;
- Reporting any signs of fatigue, work-related stress, or chemical exposures to the Project Manager;
- Dismissing field personnel from the site if their actions or negligence endanger themselves, co-workers, or the public, and reporting the same to the Project Manager;
- Reporting any accidents or violations of the HASP plan to the Project Manager and documenting the same for the project in the records;
- Knowing emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire and police departments;
- Ensuring that all project-related personnel have signed the personnel agreement and acknowledgments form contained in this HASP; and
- Coordinate upgrading and downgrading PPE as necessary due to changes in exposure levels, monitoring results, weather, and other site conditions.

#### **4 Chemical Hazard Analysis and Control Measures**

Based on previous environmental investigations performed at the site, the contaminants of concern include the following:

- VOC's
- PCBs

Volatile organic compounds (VOC's) were found in soil vapor, and PCBs were found in soil. A summary of the health hazards associated with the contaminant of concerns are shown below.

##### **4.1 VOC's**

The previous environmental investigations performed at the site has identified the VOC's in soil vapor. Soil vapor sampling results indicate that tetrachloroethene (PCE) and trichloroethene (TCE) were detected in all sampling points at concentrations above the respective New York State Department of Health (NYSDOH) Indoor/Outdoor Air Guidance Values. PCE and TCE were detected above the NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (SCO) in several shallow soil samples (0-2 fbg). PCE concentrations above the NYSDEC Unrestricted Use SCOs

appear to be confined in the soil just below the concrete floor of the Site building. PCE and TCE were also detected at concentrations exceeding the NYSDEC Ambient Water Quality Standards (AWQS) in all groundwater samples. Possible routes of exposure include inhalation, ingestion, and absorption. Prolonged exposure to VOCs above their respective OSHA permissible exposure limits may result in irritation of the mucous membranes of the respiratory system, eyes, and mouth. Overexposure to VOCs may also result in the depression of the central nervous system. Symptoms may include drowsiness, headache, and fatigue.

#### **4.2 PCBs**

Polychlorinated biphenyls (PCBs; Aroclor 1254) were detected in Site soil at concentrations up to 3,680 mg/kg during previous investigations and are the primary contaminant of concern. PCBs are persistent, bioaccumulative compounds. Possible routes of exposure include dermal contact with, and incidental ingestion of, impacted soil/fill, and inhalation of soil-derived particulates. Potential health effects associated with PCB exposure include dermal effects (e.g., chloracne) and effects on the liver, immune, endocrine, reproductive, and developmental systems; USEPA classifies PCBs as probable human carcinogens (Group B2). Dermal contact with impacted soil/fill will be minimized through nitrile gloves and Level D PPE, and airborne particulate exposure will be controlled through the Community Air Monitoring Program (CAMP) and dust-suppression measures.

### **5 Health and Safety Risk Analysis**

The field tasks covered by the HASP will include material excavation with hydraulic equipment and hand tools, the manual sorting of materials, and containerization of soil and groundwater samples. Additionally, standard job task hazards that are inherent to a construction project will exist.

#### **5.1 Explosion and Fire**

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to explosion and fire. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Fire Protection and Prevention Standard, set forth at 29 C.F.R. § 1910 part 1926.35, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations. The following are possible fire and explosion hazards that may be encountered on the job site along with fire preventive measures to take.

##### **5.1.1 Flammable Vapors**

The presence of flammable vapors can pose a potential fire and health hazard. Hazard reduction procedures include monitoring the ambient air with an oxygen/LEL meter (combustible gas indicator). If the LEL reading exceeds 20%, all work will stop and employees will leave the site immediately and contact the fire department. For OSHA-defined “confined space” activities, work will stop if the LEL reading exceeds 10%.

#### *5.1.2 High Oxygen Levels*

Atmospheres that contain a level of oxygen greater than 23% pose an extreme fire hazard (the usual ambient oxygen level is approximately 20.5%). All personnel encountering atmospheres that contain a level of oxygen greater than 23% must evacuate the site immediately and must notify the Fire Department. If the oxygen level is less than 19.5%, do not enter the space without level B PPE.

#### *5.1.3 Fire Prevention*

- During equipment operation, periodic vapor concentration measurements should be taken with an explosimeter or combustimeter. If at any time the vapor concentrations exceed 20% of the lower explosive limit (LEL), then the Site Health and Safety Officer or designated field worker should immediately shut down all operations.
- Only approved safety cans will be used to transport and store flammable liquids.
- All gasoline and diesel-driven engines requiring refueling must be shut down and allowed to cool prior to filling.
- Smoking is not allowed during any operations within the work area in which petroleum products or solvents in free-floating, dissolved, or vapor forms, or other flammable liquids may be present.
- No open flame or spark is allowed in any area containing petroleum products or other flammable liquids.

### *5.2 Operational Safety Hazards*

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to earth moving equipment. Rather, contractors, subcontractors and workers at the site must refer to OSHA’s Excavation Standard, set forth at 29 C.F.R. § 1910 Subpart P as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

#### *5.2.1 Heavy Machinery / Equipment*

All site employees must remain aware of those site activities that involve the use of heavy equipment and machinery. Respiratory protection and protective eyewear may be worn frequently during site activities. This protective equipment significantly reduces peripheral vision of the wearer. Therefore, it is essential that all employees at the site exercise extreme caution during operation of equipment and machinery to avoid physical injury to themselves or others.

#### *5.2.2 Vehicular Traffic*

All employees will be required to wear a fluorescent safety vest at all times while on site. In addition, supplemental traffic safety equipment use can be exercised when warranted by specific task. Supplemental equipment can be items such as cones, flags, barricades, and/or caution tape. Drivers of waste transportation vehicles will only exit vehicles in designated areas within the Support Zone. During this time, drivers will only be allowed to inspect the placement of waste loads and cover their trailers.

### **5.3 Noise Hazards**

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to noise hazards. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Occupational Noise Exposure Standard, set forth at 29 C.F.R. § 1910 part 1926.52, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Hearing protection shall be provided to the employees where sound pressure levels exceed 85 dB. Hearing protection shall be worn where sound pressure levels in areas and/or on equipment exceeds 90 dB. Typical heavy excavation operations have been monitored with a sound level meter and indicate that hearing protection is required for all personnel while engaged in this action.

### **5.4 Safe Material Handling**

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to safe material (soil/fill) handling. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Eye and Face, and Respiratory Safety Standards, set forth at 29 C.F.R. § 1910 Parts 1926.102 and 1926.103 as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Skin and eye contact with contaminated soil/fill or materials in contact with the soil/fill may occur during excavation, handling and decontamination activities. Nitrile gloves and approved safety glasses must be worn to prevent exposure to the associated contaminants. Employees working at or near (within ten feet of) excavation fronts could be required to wear respiratory protection. If necessary, all associated activities will be performed pursuant to 29 C.F.R. § 1910 Parts 1926.134 (a)(2) and 1926.55.

## 5.5 Temperature Hazards

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to temperature stresses. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Technical Manual (TED 1-0.15A), Section III – Chapter 4 (1999) as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

Since climatic changes cannot be avoided, work schedules will be adjusted to provide time intervals for intake of juices, juice products, and water in an area free from contamination and in quantities appropriate for fluid replacement to prevent heat stress conditions from occurring.

### 5.5.1 *Types of Heat Stress*

Heat stress may occur even in moderate temperature areas and may present any or all of the following:

#### 5.5.1.1 Heat Rash

Result of continuous exposure to heat, humid air, and chafing clothes. Heat rash is uncomfortable and decreases the ability to tolerate heat.

#### 5.5.1.2 Heat Cramps

Result of the inadequate replacement of body electrolytes lost through perspiration. Signs include severe spasms and pain in the extremities and abdomen.

#### 5.5.1.3 Heat Exhaustion

Result of increased stress on the vital organs of the body in the effort to meet the body's cooling demands. Signs include shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness.

#### 5.5.1.4 Heat Stroke

Result of overworked cooling system. Heat stroke is the most serious form of heat stress. Body surfaces must be cooled and medical help must be obtained immediately to prevent severe injury and/or death. Signs include red,

hot, dry skin, absence of perspiration, nausea, dizziness and confusion, strong, rapid pulse that could lead to coma or death.

#### 5.5.2 Heat Stress Prevention

- A. Replace body fluids (water and electrolytes) lost through perspiration. Solutions may include a 0.1% salt and water solution or commercial mixes such as "Gatorade". Employees must be encouraged to drink more than the amount required in order to satisfy thirst.
- B. Use cooling devices to aid the natural body ventilation. Cooling occurs through evaporation of perspiration and limited body contact with heat-absorbing protective clothing. Utilize fans and air conditioners to assist in evaporation. Long, cotton underwear is suggested to absorb perspiration and limit any contact with heat-absorbing protective clothing (i.e., coated Tyvek suits).
- C. Conduct non-emergency response activities in the early morning or evening during very hot weather.
- D. Provide shelter against heat and direct sunlight to protect personnel. Take breaks in shaded areas.
- E. Rotate workers utilizing protective clothing during hot weather.
- F. Establish a work regime that will provide adequate rest periods, with personnel working in shifts.

#### 5.6 Cold Exposure Hazards

Work schedules will be adjusted to provide sufficient rest periods in a heated area for warming up during operations conducted in cold weather. Also, thermal protective clothing such as wind and/or moisture resistant outerwear is recommended to be worn.

If work is performed continuously in the cold at or below -7 °C (20 °F), including wind chill factor, heated warming shelters (tents, cabins, company vehicles, rest rooms, etc.) shall be made available nearby and the worker should be encouraged to use these shelters at regular intervals, the frequency depending on the severity of the environmental exposure. The onset of heavy shivering, frostnip, the feeling of excessive fatigue, drowsiness, irritability, or euphoria, are indications for immediate return to the shelter. When entering the heated shelter, the outer layer of clothing shall be removed and the remainder of the clothing loosened to permit sweat evaporation. A change of dry work clothing shall be provided as necessary to prevent workers from returning to their work with wet clothing.

Dehydration, or the loss of body fluids, occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. Warm sweet drinks and soups should be provided at the work site to provide caloric intake and fluid volume. The intake of coffee should be limited because of a diuretic and circulatory effect (adapted from TLV's and Biological Exposure Indices 1988-1989, ACGIH).

## 5.7 Community Air Monitoring Plan (CAMP)

Real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary during the Remedial Investigation as Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

- o Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

- o Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

### VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- 1 If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- 2 If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half

the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3 If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4 All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

#### Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1 If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m<sup>3</sup>) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m<sup>3</sup> above the upwind level and provided that no visible dust is migrating from the work area.

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

3 All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review. A Vapor/Particulate Monitoring Sheet can be found in Appendix C.

## 6 Personnel Training

### 6.1 Pre-assignment and OSHA Training

All Remedial Personnel that will be in direct contact (that is hand digging, sampling, processing) with the native soil/fill materials must complete an initial 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training course and, where necessary, a current eight hour refresher course (as required annually after initial 40-hour training completion). Restoration Personnel that will not be in direct contact with native

soil/fill materials are only required to prove they have read and understood the procedures presented in this HASP.

On-site managers and supervisors of Restoration Personnel (Field Operations Leader, Site Health and Safety Officer) directly responsible for employees engaged in hazardous substance operations have received an initial 40-hour HAZWOPER training course and an additional (above the 40-hour HAZWOPER) eight hours of supervisory training. These training requirements comply with the OSHA Hazardous Waste Operations and Emergency Response Regulation, 29 CFR 1910.120. The Site Health and Safety Officer will be certified in First Aid and Cardiovascular Pulmonary Resuscitation.

The Site Health and Safety Officer will conduct an on-site training meeting for all Construction Personnel and observers that could potentially be exposed to the native soil/fill material during construction activities. Training meetings will be provided routinely for any new project personnel. This program will cover specific health and safety equipment and protocols and potential problems inherent to each project operation. The Site Health and Safety Officer will be present for any activities being performed by Construction Personnel that will involve the handling of soil/fill during construction activities to provide supervision on exposure reduction. This may include insuring the use of proper PPE and air quality monitoring.

## 6.2 Respirator Requirements

### 6.2.1 *Respirator Requirements and Fit Testing*

The OSHA respiratory protection standard, 29 CFR 1910.134, under paragraph (f)(2), requires fit testing for all employees using tight fitting respirators including filtering facepiece respirator. The fit test must be performed before the respirator is used and must be repeated at least annually and whenever a different respirator facepiece is used or a change in the employee's physical condition could affect the respirator fit.

The user seal check is a separate requirement under paragraph (g)(1)(iii) and must be performed each time the employee dons the respirator. Employers must adhere to the recommendations of the respirator's manufacturer; different manufacturers recommend different procedures.

### 6.2.2 *Medical Surveillance*

OSHA requires a medical evaluation to determine whether each employee required to wear a respirator is physically able to wear a respirator and perform the work. This evaluation can be a medical examination or an evaluation of employee responses to the OSHA Respirator Medical Evaluation Questionnaire located in Appendix B

of the Respiratory Protection Standard. Either method must be performed by a physician or other licensed healthcare professional. Appendix B has a copy of the forms to be completed.

A medical examination may be necessary whenever the employee gives a positive response to any of questions 1 through 8 in Appendix B, Part A, Section 2.

## **7 Personal Protective Equipment**

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to personal protective equipment. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Personal Protective Equipment Standard, set forth at 29 C.F.R. § 1910. Part 1926.28(a) as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

The purpose of personal protective clothing and equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered on-site when engineering and other controls are not feasible or cannot provide adequate protection. Careful selection and use of adequate PPE should protect the health of all on-site workers. No single combination of PPE is capable of protecting against all hazards. Therefore, PPE should be used in conjunction with, not in place of, other protective methods, such as engineering controls and safe work practices.

Site-specific chemicals of concern include semi-volatile organic compounds. These chemicals are of moderate to low hazard. Therefore, level D personal protective equipment will be required at all times when on site. The following is a breakdown of the types of protective clothing and equipment to be used during the site activities.

### ***7.1.1 Levels of Protection***

The Site Health and Safety Officer will determine whether a level of protection should be upgraded or downgraded. Changes in the level of protection will be recorded in the dedicated site logbook along with the rationale for the changes (see Section 7.1.3 for additional information on PPE upgrades). Level D PPE will be the minimum requirement at all times during the environmental remediation portion of the project.

### ***7.1.2 Level D Personal Protective Equipment***

All initial site access and activities will be done in Level D attire. Level D protection is sufficient under conditions where no contaminants are present or those activities that do not pose a potential threat of unexpected inhalation of or contact with hazardous levels of any substances. Typical Level D activities may include sediment, logging and groundwater sampling, and as surficial site surveys.

- Hard hat
- Safety glasses (as appropriate)
- Steel toe and shank boots
- Fluorescent vest
- Hearing protection (as appropriate)

#### *7.1.3 Modified Level D Personal Protective Equipment*

- Hard hat
- Safety glasses
- Steel toe and shank boots
- Fluorescent vest
- Nitrile "N-Dex" inner gloves
- Latex outer boots (chemical resistant)
- Polyethylene coated Tyvek suit
- Hearing protection (as appropriate)

#### *7.1.4 Level C Personal Protective Equipment*

Level C protection, as described in this plan, will be available at a minimum for those activities that involve surface and subsurface soil (strata disturbance such as well installation, and all subsurface media sampling activities such as split-spoon sampling and borings). Level C protection equipment should be readily available at all times. Consistent with OSHA training, prior to donning Level C, oxygen percent must be continuously monitored.

- Buddy system required at all times
- Full face respirator with NIOSH approved OV/AG/HEPA combination cartridges (MSA GMC-H)
- Saranex coated Tyvek Suit
- Inner Nitrile "N-Dex" gloves
- Outer Nitrile (NBR) gloves
- Steel toe and shank boots
- Outer boots (chemical resistant)
- Hard hat
- Hearing protection (as appropriate)

#### *7.1.5 Level B Personal Protective Equipment*

Some activities may require Level B protection. In atmospheres potentially containing toluene and xylenes, the protective ensemble should include chemical resistant clothing since the two compounds have skin absorption potential.

Regional Health and Safety representatives must be on site upon start-up of any project requiring level B protection. This should be understood to include subcontractors conducting Level B activity.

- Buddy system required at all times
- Supplied air respirator or SCBA
- Saranex coated Tyvek Suit
- Inner Nitrile "N-Dex" gloves
- Outer Nitrile (NBR) gloves
- Steel toe and shank boots
- Outer boots (chemical resistant)
- Hard hat
- Hearing protection (as appropriate)

#### *7.1.6 Personal Use Factors and Equipment Change Out Schedule*

Prohibitive or precautionary measures should be taken as necessary to prevent workers from jeopardizing safety during equipment use.

If necessary, all respiratory protective equipment used will be approved by NIOSH/MSHA. Respirator cartridges will be changed once per eight-hour shift at a minimum. This can be accomplished at the end of the workday during respirator decontamination. Employees working within the excavation front should change the cartridge of their respirators once every four hours. If odor breakthrough is detected while wearing the respirator or if breathing becomes difficult, change cartridges immediately. A filter change out schedule is provided below.

| <b>Remedial Worker</b> | <b>Work Area</b>         | <b>Filter Type</b> | <b>Replacement Rate</b> |
|------------------------|--------------------------|--------------------|-------------------------|
| Site Screener          | EZ – At Excavation Front | MSA GMC-H          | Every 4 Hours           |
| Laborer                | EZ – At Excavation Front | MSA GMC-H          | Every 2 Hours           |
|                        | SZ, CRZ                  | MSA GMC-H          | Every 8 Hours           |
| Equipment Operator     | EZ                       | MSA GMC-H          | Every 4 Hours           |
|                        | SZ, CRZ                  | MSA GMC-H          | Every 8 Hours           |
| Administrator          | EZ                       | MSA GMC-H          | Every 4 Hours           |
|                        | SZ, CRZ                  | MSA GMC-H          | Every 8 Hours           |

When utilizing protective garments such as Tyvek suits, gloves, and booties, all seams between protective items will be sealed with duct tape.

Contact with contaminated surfaces, or surfaces suspected of being contaminated, should be avoided. This includes walking through, kneeling in, or placing equipment in puddles, mud, discolored surfaces, or on drums and other containers.

Eating, smoking, drinking, and/or the application of cosmetics in the immediate work area is prohibited. Ingestion of contaminants or absorption of contaminants into the skin may occur.

The use of contact lenses on the job site is strongly advised against. Contact lenses may trap contaminants and/or particulate between the lens and eye, causing irritation. However, when glasses are not available, contact lenses are preferred over faulty vision. When contact lenses are worn, safety glasses and/or goggles must be worn at all times while on the job site. Wearing contact lenses with a respirator in a contaminated atmosphere is prohibited under 29 CFR ss1910.134 (e)(5)(iii).

## **8 Work Zones**

### **8.1 Work Zone Definitions**

Work and support areas shall be established based on ambient air data and proposed work sites. They shall be established in order to contain contamination within the smallest areas possible and shall ensure that each employee has the proper PPE for the area or zone in which work is to be performed.

#### **8.1.1 Exclusion Zone (EZ)**

It is within this zone that the excavation or environmental remediation activities such as tank abandonment operations (as described in 8.1.1.1) are performed. No one shall enter this zone unless the appropriate PPE is donned. The location of this zone will change as the construction-related excavation activities are performed.

#### **8.1.2 Contaminant Reduction Zone (CRZ)**

It is within this zone that the decontamination process is undertaken. Personnel and their equipment must be adequately decontaminated before leaving this zone for the support zone. This zone will be set up between the EZ (no less than 100 feet away) and the site boundary.

### 8.1.3 *Support Zone (SZ)*

The support zone is considered to be uncontaminated; as such, protective clothing and equipment are not required but should be available for use in emergencies. All equipment and materials are stored and maintained within this zone. Protective clothing is put on within the SZ before entering the EZ or the CRZ. The SZ will be established in a safe environment at least 50 feet away from the EZ.

## 9 **General Safety and Health Provisions**

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to general safety and health provisions. Rather, contractors, subcontractors and workers at the site must refer to OSHA's General Safety and Health Provision Standard, set forth at 29 C.F.R. § 1910 subparts C and G as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

### 9.1 **Safety Practices / Standing Orders**

The following are important safety precautions that will be enforced during work activities.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.
2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or any other activity.
3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garments are removed.
4. No excessive facial hair that interferes with the effectiveness of a respirator will be permitted on personnel required to wear respiratory protection equipment. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges attached to the respirator. Fit testing shall be performed prior to respirator use to ensure the wearer obtains a proper seal.
5. Contact with potentially contaminated surfaces should be avoided whenever possible. One should not walk through puddles; kneel on the ground; lean, sit, or place equipment on drums, containers, vehicles, or the ground.
6. Medicine and alcohol can potentiate the effect from exposure to certain compounds. Prescribed drugs and alcoholic beverages should not be consumed by personnel involved in the project.
7. Personnel and equipment in the work areas should be minimized, consistent with effective site operations.
8. Work areas for various operational activities should be established.

9. Procedures for leaving the work area must be planned and implemented prior to going to the site. Work areas and decontamination procedures must be established on the basis of prevailing site conditions.
10. Respirators will be issued for the exclusive use of one worker and will be cleaned and disinfected after each use.
11. Safety gloves and boots shall be taped to the disposable, chemical-protective suits as necessary.
12. All unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.
13. Noise mufflers or earplugs may be required for all site personnel working around heavy equipment. This requirement will be at the discretion of the Site Health and Safety Officer. Disposable, form-fitting plugs are preferred.
14. Cartridges for air-purifying respirators in use will be changed daily at a minimum.

#### 9.2 Buddy System

Site personnel will employ the buddy system when working under certain circumstances, such as enclosed spacing. Under the buddy system, each site worker is responsible for monitoring the well-being of another worker. No one will work alone when the buddy system is implemented. At no time will fewer than two employees be present at the site if activities are underway.

#### 9.3 Site Communications Plan

Mobile telephone and/or two-way radios will be used to communicate between the work parties on the site. The following standard hand signals will be used in case of failure of radio communication:

- |                        |                                  |
|------------------------|----------------------------------|
| ▪ Hands on top of head | = Need assistance                |
| ▪ Thumbs up            | = OK, I am alright, I understand |
| ▪ Thumbs down          | = No, negative                   |

Personnel in the Contaminated Zone should remain in constant radio communication or within sight of the project team leader. Any failure of radio communication will require the team leader to evaluate whether personnel should leave the zone.

#### 9.4 Retention of Records

The following records will be maintained on-site and in corporate records for no less than three years.

- Fit test results
- OSHA Training Certification

- Medical Questionnaire and/or Medical Clearance
- Medical Data Sheets
- Accident Report Forms

## **10 Decontamination Plan**

### **10.1 General**

Personnel involved in work activities at the site may be exposed to compounds in a number of ways, despite the most stringent protective procedures. Site personnel may come in contact with vapors, gases, mists, particulates in the air, or other site media while performing site duties. Use of monitoring instruments and site equipment can also result in exposure and transmittal of hazardous substances.

In general, decontamination involves scrubbing with a detergent water solution followed by clean water rinses. All disposable items shall be disposed of in a dry container. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in detergent and water and scrubbed with a brush. In addition to being contaminated, all respirators, non-disposable protective clothing, and other personal articles must be sanitized or replaced before they can be used again if they become soiled from exhalation, body oils, and perspiration. The manufacturer's instructions should be followed in sanitizing the respirator masks.

The Site Health and Safety Officer will be responsible for the proper maintenance, decontamination, and sanitizing of any respirator equipment that may be used on-site.

The decontamination zone layout and procedures should match the prescribed levels of personal protection.

The following procedures have been established to provide site personnel with minimum guidelines for proper decontamination. Personnel leaving the point of operations designated as the EZ must follow these minimum procedures. The decontamination process shall take place within the contaminant reduction zone.

### **10.2 Minimum Decontamination Procedure**

Personnel leaving the point of operations should remove or change outer gloves. At a minimum, boots shall be cleaned of all accumulated soil/fill. Outer boots must be properly washed where gross contamination is evident or disposed of. If Tyvek suits are being utilized, they should be removed or changed. Personnel should remove the Tyvek suits so that the inner clothing does not come in contact with any contaminated surfaces. After Tyvek removal, personnel shall

remove and discard outer Nitrile gloves. Personnel shall then remove the respirator, where applicable. Respirators shall be disinfected between uses with towelettes or other sanitary methods. Potable water, at a minimum, will be present so that site personnel can thoroughly wash hands and face after leaving the point of operations.

The Site Health and Safety Officer will monitor decontamination procedures to ensure their effectiveness. Modifications of the decontamination procedure may be necessary as determined by the Site Health and Safety Officer's observations.

### 10.3 Standard Decontamination Procedure

The following decontamination procedures should be implemented during site operations for the appropriate level of protection.

#### 10.3.1 Level B

|                                         |                                                                                                                                                                                                                                           |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Segregated equipment drop</b>        | Deposit equipment (tools, sampling devices, notes, monitoring instruments, radios, etc.) used on the site onto plastic drop cloths.                                                                                                       |
| <b>Boot covers and glove wash</b>       | Outer boots and outer gloves should be scrubbed with a decontamination solution of detergent and water or replaced.                                                                                                                       |
| <b>Rinse off boot covers and gloves</b> | Decontamination solution should be rinsed off boot covers and gloves using generous amounts of water. Repeat as many times as necessary.                                                                                                  |
| <b>Tape removal</b>                     | Remove tape from around boots and gloves and place into container with plastic liner.                                                                                                                                                     |
| <b>Boot cover removal</b>               | Remove disposable boot covers and place into container with plastic liner.                                                                                                                                                                |
| <b>Outer glove removal</b>              | Remove outer gloves and deposit in container with plastic liner.                                                                                                                                                                          |
| <b>Suit / safety boot wash</b>          | Completely wash splash suit, SCBA, gloves, and safety boots. Care should be exercised that no water is allowed into the SCBA regulator. It is suggested that the SCBA regulator be wrapped in plastic.                                    |
| <b>Suit / safety boot rinse</b>         | Thoroughly rinse off all decontamination solution from protective clothing.                                                                                                                                                               |
| <b>Tank or canister changes</b>         | This is the last step in the decontamination procedure for those workers wishing to change air tanks and return to the EZ. The worker's air tank or cartridge is exchanged, new outer glove and boot covers are donned, and joints taped. |
| <b>Removal of safety boots</b>          | Remove safety boots and deposit in container with a plastic liner.                                                                                                                                                                        |
| <b>SCBA backpack removal</b>            | Without removing the face piece, the SCBA backpack should be removed and placed on a table. The face piece should then be disconnected from the remaining SCBA unit and then proceed to the next station.                                 |
| <b>Splash suit removal</b>              | With care, remove the splash suit. The exterior of the splash suit should not come in contact with any inner layers of clothing.                                                                                                          |
| <b>Inner glove wash</b>                 | The inner gloves should be washed with a mild decontamination solution (detergent / water).                                                                                                                                               |
| <b>Inner glove rinse</b>                | Generously rinse the inner gloves with water.                                                                                                                                                                                             |
| <b>Face piece removal</b>               | Without touching the face with gloves, remove the face piece. The face piece should be deposited into a container that has a plastic liner.                                                                                               |
| <b>Inner glove removal</b>              | Remove the inner glove and deposit into a container that has a plastic liner.                                                                                                                                                             |

|                   |                                                                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Field wash</b> | Wash hands and face thoroughly. If highly toxic, skin corrosive, or skin absorbent materials are known or suspected to be present, a shower should be taken. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### *10.3.2 Level C and Level D*

The decontamination procedure for Level C and Level D will be satisfied with the Minimum procedures outlined in section 8.2.

#### **10.4 Heavy Equipment and Handling Equipment Decontamination**

Equipment traversing the site and exiting the site will be subjected to a decontamination protocol. At a minimum the protocol will consist of an inspection of the truck fenders, tires and mud flaps for accumulated soil/fill, and removal of all accumulations using hand tools (brush, broom and scrapers). If deemed necessary by the Health and Safety Officer, this inspection will be performed over a thirty by fifteen foot area that has been filled with ¾ inch crushed recycled concrete aggregate to facilitate the removal of soil/fill accumulations from the tires, and to immobilize soil/fill removed from the truck body. Additionally, all trucks hauling waste will be required to be covered prior to exiting the site.

At the conclusion of the use of each piece of excavation equipment on the site, it will be decontaminated with an Alconox / water solution followed by a clean water rinse within the Contaminant Reduction Zone. The rinsate will be allowed to charge into the site ground.

### **11 Emergency Response / Contingency Plan**

#### **11.1 Pre-Emergency Planning**

In order to properly prepare for emergencies, Safety Data Sheets (SDS) will be maintained on-site for the type of contaminants to which workers may be exposed. Based upon the results of previous investigations, these contaminants consist of a mixture of Chlorinated VOCs (cVOCs) and organic compounds consistent with those found within diesel and/or heating oil. The SDS for both products are presented in Appendix D.

In the event a suspected or known hazardous substance or substance container is encountered during site activities, a contingency plan will be triggered (see Section 11.3).

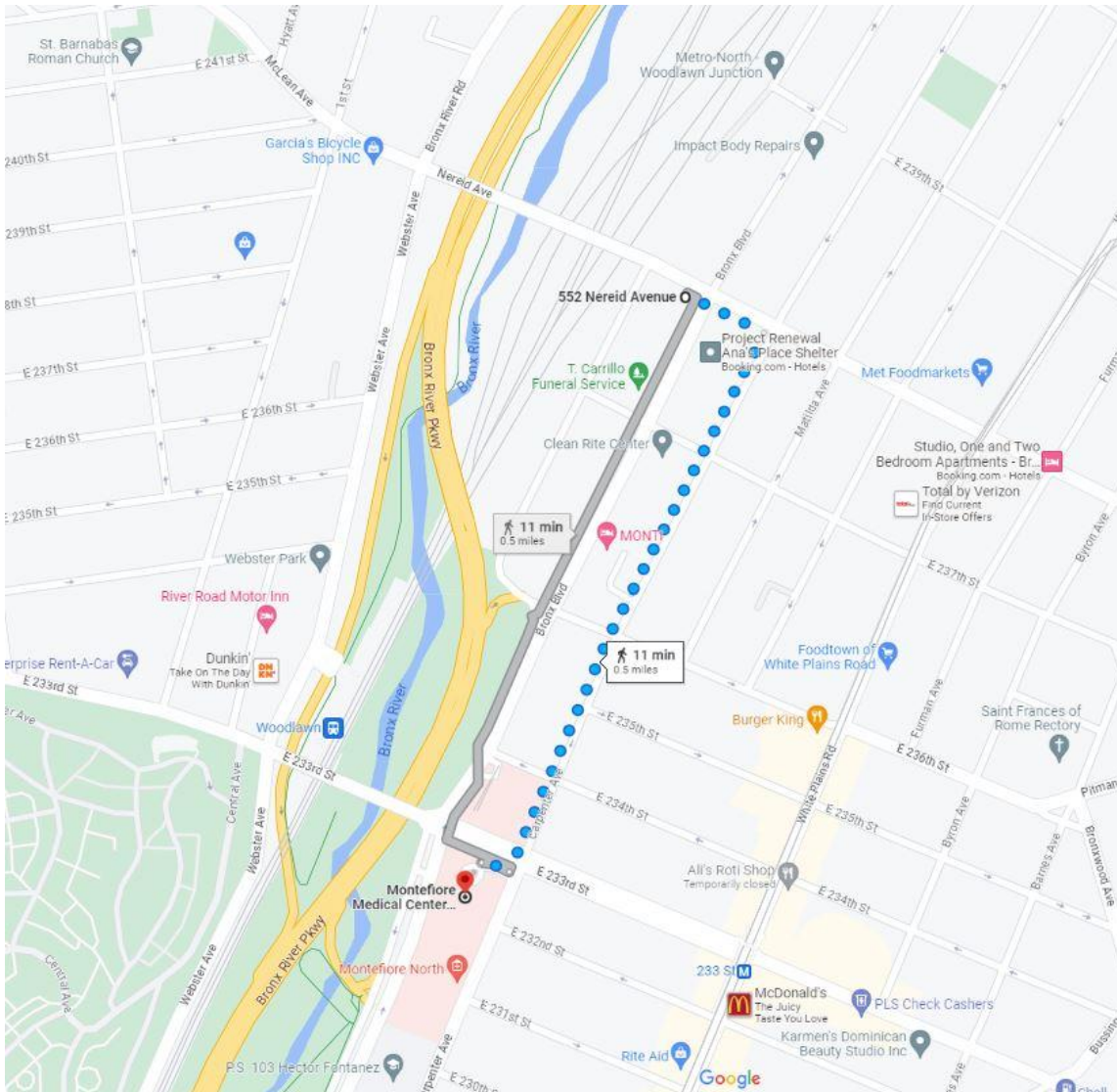
#### **11.2 Emergency Contact Information**

In the event of an accident or emergency situation, emergency procedures will be executed. Said procedures can and will be executed by the first person to observe an accident or emergency situation. The Project Field Manager will be notified about the situation immediately after emergency procedures are implemented.

*11.2.1 Emergency Contacts*

|                                  |              |                                            |
|----------------------------------|--------------|--------------------------------------------|
| <i>Emergency:</i>                | 911          |                                            |
| <i>Hospital:</i>                 | 17189209000  | Montefiore Medical Center Wakefield Campus |
| <i>Police:</i>                   | 911          | Police                                     |
| <i>Fire Department:</i>          | 911          | NYFD                                       |
| <i>Chemtrec:</i>                 | 800-424-9300 |                                            |
| <i>Poison Control Center:</i>    | 800-336-6997 |                                            |
| <i>National Response Center:</i> | 800-424-8802 |                                            |
| <i>US EPA (24-hour hotline):</i> | 800-424-9346 |                                            |

Directions to the nearest hospital are shown on the following page.



**552 Nereid Ave**  
Bronx, NY 10470



Head southeast on Nereid Ave toward Bronx Blvd

335 ft



Turn right onto Carpenter Ave

0.4 mi



Turn right

128 ft



Turn left

**Destination will be on the left**

79 ft

**Montefiore Medical Center Wakefield Campus**  
600 E 233rd St, Bronx, NY 10470

### 11.2.2 Utility Emergencies / Initiating Subsurface Investigation Work

Where necessary, utility markouts will be called in via the one call center or to the individual entities listed below.

|                                       |                |            |
|---------------------------------------|----------------|------------|
| <i>Mark Out One-Call Center (811)</i> | 1-800-272-4480 | No-Cuts    |
| <i>Gas Company:</i>                   | 718-643-4050   | Con Edison |
| <i>Telephone Company:</i>             | 516-661-6000   | Verizon    |
| <i>Electric Company:</i>              | 718-643-4050   | Con Edison |

### 11.3 Contingency / Evacuation Plan

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to emergency procedures. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Employee Emergency Action Plan Standard, set forth at 29 C.F.R. § 1910 Part 1926.35(a), as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

If an unknown substance or substance container is encountered during site activities, the following contingency plan will be triggered.

1. The Site Health and Safety Officer, Project Manager and Field Operations Leader will be notified and an Exclusion Zone (the aerial extent of which will be determined by the above safety staff) will be established.
2. All staff will be evacuated from the Exclusion Zone.
3. Air monitoring will be conducted down-wind of the Exclusion Zone.
4. The NYSDEC, as well as any other Government regulatory agency whose need may be prompted by the particular situation, will be notified.
5. Upon arrival of the NYSDEC or Government regulatory agency representative(s), site control will transfer to the appropriate Government personnel.

It may be possible that a situation could develop site emergency could necessitate the evacuation of all personnel from the site. If such a situation develops, an audible alarm shall be given for site evacuation (consisting of an air horn). Personnel shall evacuate the site in a calm and controlled fashion and regroup at a predetermined location. The route of evacuation will be dependent on wind direction, severity, type of incident, etc. The site must not be re-entered until back-up help, monitoring equipment, and/or personal protective equipment are on hand and the appropriate regulatory agencies have been notified.

#### 11.4 Emergency Medical Treatment Procedures

This Section is not, nor does it purport to be, a comprehensive recitation of safety and health requirements applicable to medical treatment and first aid. Rather, contractors, subcontractors and workers at the site must refer to OSHA's Medical Services and First Aid Standard, set forth at 29 C.F.R. § 1910 Part 1926.23 and 1926.50, as well as all supporting OSHA Compliance Directives and Letters of Interpretation, for complete information on safety and health compliance obligations.

All injuries, no matter how slight, will be reported to the site safety supervisor immediately. The safety supervisor will complete an accident report for all incidents (Appendix E).

Some injuries, such as severe lacerations or burns, may require immediate treatment. Unless required due to immediate danger, seriously injured persons should not be moved without direction from attending medical personnel.

##### *11.4.1 Standard Procedures for Injury*

1. Notify the Site Health and Safety Officer, Project Manager, and the NYCDEP and NYCDHPD of all accidents, incidents, and near emergency situations.
2. If the injury is minor, trained personnel should proceed to administer appropriate first aid.
3. Telephone for ambulance/medical assistance if necessary. Whenever possible, notify the receiving hospital of the nature of physical injury or chemical overexposure. If no phone is available, transport the person to the nearest hospital. Refer to the map in section 11.2.1.
4. When transporting an injured person to a hospital, bring this Health and Safety Plan with the attached MSDS to assist medical personnel with diagnosis and treatment.

##### *11.4.2 Chemical Overexposure*

In all cases of chemical overexposure, follow standard procedures as outlined below for poison management, first aid, and, if applicable, cardiopulmonary resuscitation. Different routes of exposure and their respective first aid/poison management procedures are outlined below.

|                                    |                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Ingestion</b>                   | Do not induce vomiting unless prompted by a health professional. Transport person to nearest hospital immediately.           |
| <b>Inhalation / Confined Space</b> | Do not enter a confined space to rescue someone who has been overcome unless properly equipped and a standby person present. |

|                                                                              |                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inhalation / Other</b>                                                    | Move the person from the contaminated environment. Initiate CPR if necessary. Call or have someone call for medical assistance. Refer to MSDS for additional specific information. If necessary, transport the victim to the nearest hospital as soon as possible. |
| <b>Skin Contact / Non-Caustic Contaminant (Petroleum, Gasoline, etc.)</b>    | Wash off skin with a large amount of water immediately. Remove any affected clothing and rewash skin using soap, if available. Transport person to a medical facility if necessary.                                                                                |
| <b>Skin Contact / Corrosive Contaminant (Acids, Hydrogen Peroxide, etc.)</b> | Wash off skin with a large amount of water immediately. Remove any affected clothing and rewash skin with water. Transport person to a medical facility if necessary.                                                                                              |
| <b>Eyes</b>                                                                  | Hold eyelids open and rinse the eyes immediately with large amounts of water for 15 minutes. Never permit the eyes to be rubbed. Transport person to a medical facility as soon as possible.                                                                       |

#### *11.4.3 First Aid for Injuries Incurred During Field Work*

A first aid kit and an emergency eyewash will be available on-site. Field crews, when performing field operations, will carry portable first aid kits that include emergency eye wash stations.

#### *11.4.4 First Aid Equipment List*

The first aid kit(s) kept at the site will consist of a weatherproof container with individually sealed packages for each type of item.

The kit will include at least the following items:

- Gauze roller bandages, 1-inch and 2-inch
- Gauze compress bandages, 4-inch
- Gauze pads, 2-inch
- Adhesive tape, 1-inch
- Bandage, 1-inch
- Butterfly bandages
- Triangular bandages, 40-inch
- Ampules of ammonia inhalants
- Antiseptic applicators or swabs
- Burn dressing and sterilized towels

- Surgical scissors
- Eye dressing
- Portable emergency eye wash
- Emergency oxygen supply
- Alcohol
- Hydrogen peroxide
- Clinical grade thermometer
- Tourniquet

#### *11.4.5 Other Emergency Equipment*

One portable fire extinguisher with a rating (ratio) of 20 pound A/B/C and one portable fire extinguisher with a rating of 2A will be conspicuously and centrally located between the restricted and non-restricted zones. In addition, similar extinguishers of the same size and class will be located in the site office trailer so that maximum travel distance to the nearest unit shall not exceed 50 feet. Portable extinguishers will be properly tagged with inspection dates and maintained in accordance with standard maintenance procedures for portable fire extinguishers. Field personnel will be trained in fire extinguisher use before field operations begin.

An emergency at any part of the site, such as fire or chemical release, might require that some appropriately trained site workers direct traffic on or near the site.

The following safety equipment to be used for traffic should be kept readily available on site in the field office:

- reflective/fluorescent vests
- flares
- traffic cones (and flags, or the equivalent, as needed)
- hazard tape (barricades as needed)
- working flashlights

### *11.5 Record of Injuries Incurred On-Site*

#### *11.5.1 Occupational Injuries and Illnesses Form (OSHA 200)*

All occupational injuries and illnesses that are required to be recorded under the Occupational Safety and Health Act will be registered on OSHA Form 300 (see Appendix F). The site safety supervisor will record occupational injuries and illnesses within 48 hours of occurrence, as required by statute.

*11.5.2 Employer's First Report of Injury*

The site safety supervisor for all accidents involving work injury at the site will complete this form (Appendix E). Follow-up procedures will include investigation of each accident or near-miss by the safety supervisor to assure that no similar accidents occur in the future.

**Appendix A:**  
Accident Report Form

## Employee Accident Report

### EMPLOYEE

Name \_\_\_\_\_ SS# \_\_\_\_\_ Emp ID# \_\_\_\_\_

Home Address \_\_\_\_\_

Sex: M F Birth Date \_\_\_\_\_ Street \_\_\_\_\_ city \_\_\_\_\_ zip code \_\_\_\_\_ phone \_\_\_\_\_  
Age: \_\_\_\_\_ Employment Status: Full time \_\_\_\_\_ Part time \_\_\_\_\_ % \_\_\_\_\_

Job Title \_\_\_\_\_ Time in Present Position \_\_\_\_\_ Yrs \_\_\_\_\_ Months \_\_\_\_\_

Department \_\_\_\_\_ Work Address \_\_\_\_\_

Supervisor \_\_\_\_\_ building/room # \_\_\_\_\_ phone \_\_\_\_\_

name \_\_\_\_\_ building/room # \_\_\_\_\_ phone \_\_\_\_\_

Accident Date \_\_\_\_\_ Time \_\_\_\_\_ am/pm Location \_\_\_\_\_

What were you doing and using (tools, chemicals, equipment, etc.) when the accident occurred? Describe what happened.

Was this part of your normal job duty? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_

Parts of body affected or injured \_\_\_\_\_

Witnesses: \_\_\_\_\_ / \_\_\_\_\_

Report prepared by (if different from the injured employee) \_\_\_\_\_ name \_\_\_\_\_ phone \_\_\_\_\_

name \_\_\_\_\_ phone \_\_\_\_\_

*I understand that it is my right to apply for Workers' Compensation benefits and that I have two years from the date of this accident to do so. For more information regarding workers' compensation, call the New York State Department of Labor. I also authorize release of medical information regarding this accident to the Prime Contractors claim administrators.*

EMPLOYEE SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

### SUPERVISOR/CHARGE PERSON

This accident was reported to me on \_\_\_\_\_ at \_\_\_\_\_ Cost Center/Dept # \_\_\_\_\_  
(date) (time)

IS FURTHER INVESTIGATION REQUIRED? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_  
Supervisor/Charge Person Signature \_\_\_\_\_ Date \_\_\_\_\_

### HEALTH CARE PROVIDER

Treated by: \_\_\_\_\_ print name \_\_\_\_\_ signature \_\_\_\_\_

Address \_\_\_\_\_ name of facility \_\_\_\_\_ street \_\_\_\_\_ city \_\_\_\_\_ state \_\_\_\_\_ zip code \_\_\_\_\_ phone \_\_\_\_\_

Hospitalized overnight as inpatient? \_\_\_\_\_ yes \_\_\_\_\_ no (if emergency room only mark no)

Diagnosis/Assessment \_\_\_\_\_

Parts of body affected \_\_\_\_\_

Reaggravation of previous work injury? \_\_\_\_\_ yes \_\_\_\_\_ no Date of initial injury \_\_\_\_\_

**Appendix B:**  
OSHA Form 200 – Occupational Injuries and Illnesses

## OMB DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to vary from 4 to 30 (time in minutes) per response with an average of 15 (time in minutes) per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments regarding this estimate or any other aspect of this information collection, including suggestions for reducing this burden, please send them to the OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, N.W. Washington, D.C. 20210

### Instructions for OSHA No. 200

#### I. Log and Summary of Occupational Injuries and Illnesses

Each employer who is subject to the recordkeeping requirements of the Occupational Safety and Health Act of 1970 must maintain for each establishment, a log of all recordable occupational injuries and illnesses. This form (OSHA No. 200) may be used for that purpose. A substitute for the OSHA No. 200 is acceptable if it is as detailed, easily readable, and understandable as the OSHA No. 200.

Enter each recordable case on the log within six (6) workdays after learning of its occurrence. Although other records must be maintained at the establishment to which they refer, it is possible to prepare and maintain the log at another location, using data processing equipment if desired. If the log is prepared elsewhere, a copy updated to within 45 calendar days must be present at all times in the establishment.

Logs must be maintained and retained for five (5) years following the end of the calendar year to which they relate. Logs must be available (normally at the establishment) for inspection and copying by representatives of the Department of Labor, or the Department of Health and Human Services, or States accorded jurisdiction under the Act. Access to the log is also provided to employees, former employees and their representatives.

#### II. Changes in Extent of or Outcome of Injury or Illness

If, during the 5-year period the log must be retained, there is a change in an extent and outcome of an injury or illness which affects entries in columns 1, 2, 6, 8, 9, or 13, the first entry should be lined out and a new entry made. For example, if an injured employee at first required only medical treatment but later lost workdays away from work, the check in column 6 should be lined out and checks entered in columns 2 and 3 and the number of lost workdays entered in column 4.

In another example, if an employee with an occupational illness lost workdays, returned to work, and then died of the illness, any entries in columns 9 through 12 would be lined out and the date of death entered in column 8.

The entire entry for an injury or illness should be lined out if later found to be nonrecordable. For example, an injury which is later determined not to be work related, or which was initially thought to involve medical treatment but later was determined to have involved only first aid.

#### III. Posting Requirements

A copy of the totals and information following the total line of the last page for the year, must be posted at each establishment in the place or places where notices to employees are customarily posted. This copy must be posted no later than February 1 and must remain in place until March 1. Even though there were no injuries or illnesses during the year, zeros must be entered on the totals line, and the form posted.

The person responsible for the annual summary totals shall certify that the totals are true and complete by signing at the bottom of the form.

#### IV. Instructions for Completing Log and Summary of Occupational Injuries and Illnesses

##### Column A - CASE OR FILE NUMBER. Self Explanatory

##### Column B - DATE OF INJURY OR ONSET OF ILLNESS

For occupational injuries, enter the date of the work accident which resulted in the injury. For occupational illnesses, enter the date of initial diagnosis of illness, or, if absence from work occurred before diagnosis, enter the first day of the absence attributable to the illness which was later diagnosed or recognized.

##### Columns C through F - Self Explanatory

##### Columns 1 and 8 - INJURY OR ILLNESS-RELATED DEATHS - Self Explanatory

##### Columns 2 and 9 - INJURIES OR ILLNESSES WITH LOST WORKDAYS - Self Explanatory

Any injury which involves days away from work, or days of restricted work activity, or both, must be recorded since it always involves one or more of the criteria for recordability.

##### Columns 3 and 10 - INJURIES OR ILLNESSES INVOLVING DAYS AWAY FROM WORK - Self Explanatory

##### Columns 4 and 11 - LOST WORKDAYS -- DAYS AWAY FROM WORK.

Enter the number of workdays (consecutive or not) on which the employee would have worked but could not because of occupational injury or illness. The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work. NOTE: For employees not having a regularly scheduled shift, such as certain truck drivers, construction workers, farm labor, casual labor, part-time employees, etc., it may be necessary to estimate the number of lost workdays. Estimates of lost workdays shall be based on prior work history of the employee AND days worked by employees, not ill or injured, working in the department and/or occupation of the ill or injured employee.

##### Columns 5 and 12 - LOST WORKDAYS -- DAYS OF RESTRICTED WORK ACTIVITY.

Enter the number of workdays (consecutive or not) on which because of injury or illness:

- (1) the employee was assigned to another job on a temporary basis, or
- (2) the employee worked at a permanent job less than full time, or
- (3) the employee worked at a permanently assigned job but could not perform all duties normally connected with it.

The number of lost workdays should not include the day of injury or onset of illness or any days on which the employee would not have worked even though able to work.

##### Columns 6 and 13 - INJURIES OR ILLNESSES WITHOUT LOST WORKDAYS - Self Explanatory

##### Columns 7a through 7g - TYPE OF ILLNESS. Enter a check in only one column for each illness.

TERMINATION OR PERMANENT TRANSFER - Place an asterisk to the right of the entry in columns 7a through 7g (type of illness) which represented a termination of employment or permanent transfer.

#### V. Totals

Add number of entries in columns 1 and 8.

Add number of checks in columns 2, 3, 6, 7, 9, 10 and 13.

Add number of days in columns 4, 5, 11 and 12.

Yearly totals for each column (1-13) are required for posting. Running or page totals may be generated at the discretion of the employer.

In an employee's loss of workdays is continuing at the time the totals are summarized, estimate the number of future workdays the employee will lose and add that estimate to the workdays already lost and include this figure in the annual totals. No further entries are to be made with respect to such cases in the next year's log.

#### VI. Definitions

OCCUPATIONAL INJURY is any injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from an exposure involving a single incident in the work environment. NOTE: Conditions resulting from animal bites, such as insect or snake bites or from one-time exposure to chemicals, are considered to be injuries.

OCCUPATIONAL ILLNESS of an employee is any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact.

The following listing gives the categories of occupational illnesses and disorders that will be utilized for the purpose of classifying recordable illnesses. For purposes of information, examples of each category are given. These are typical examples, however, and are not to be considered the complete listing of the types of illnesses and disorders that are to be counted under each category.

7a. Occupational Skin Diseases or Disorders. Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns or inflammation, etc.

7b. Dust Diseases of the Lungs (Pneumoconioses). Examples: Silicosis, asbestosis and other asbestos-related diseases, coal worker's pneumoconiosis, byssinosis, siderosis, and other pneumoconioses.

7c. Respiratory Conditions Due to Toxic Agents. Examples: Pneumonitis, pharyngitis, rhinitis or acute congestion due to chemicals, dusts, gases, or fumes; farmer's lung; etc.

7d. Poisoning (Systemic Effects of Toxic Materials). Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion, lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins; etc.

7e. Disorders Due to Physical Agents (Other than Toxic Materials). Examples: Heatstroke, sunstroke, heat exhaustion, and other effects of environmental heat, freezing, frostbite, and effects of exposure to low temperatures; caisson disease; effects of ionizing radiation (isotopes, X-rays, radium); effects of nonionizing radiation (welding flash, ultraviolet rays, microwaves, sunburn); etc.

7f. Disorders Associated with Repeated Trauma. Examples: Noise-induced hearing loss; synovitis, tenosynovitis, and bursitis. Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

7g. All Other Occupational Illnesses. Examples: Anthrax, brucellosis, infectious hepatitis, malignant and benign tumors, food poisoning, histoplasmosis, coccidioidomycosis, etc.

MEDICAL TREATMENT includes treatment (other than first aid) administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does NOT include first aid treatment (one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care) even though provided by a physician or registered professional personnel.

ESTABLISHMENT: A single physical location where business is conducted or where services or industrial operations are performed (for example: a factory, mill, store, hotel, restaurant, movie theater, farm, ranch, bank, sales office, warehouse, or central administrative office). Where distinctly separate activities are performed at a single physical location, such as construction activities operated from the same physical locations as a lumber yard, each activity shall be treated as a separate establishment.

For firms engaged in activities which may be physically dispersed, such as agriculture; construction; transportation; communications and electric, gas, and sanitary services, records may be maintained at a place to which employees report each day.

Records for personnel who do not primarily report or work at a single establishment, such as traveling salesmen, technicians, engineers, etc., shall be maintained at the location from which they are paid or the base from which personnel operate to carry out their activities.

WORK ENVIRONMENT is comprised of the physical location, equipment, materials processed or used, and the kinds of operations performed in the course of an employee's work, whether on or off the employer's premises.

**Appendix C:**  
Safety Meeting Sheet

[illegible]

**Appendix D:**  
Vapor Monitoring Sheet

| Air Quality Chart Data  |   |   |   |   |   | MAP |
|-------------------------|---|---|---|---|---|-----|
| Event #                 | 1 | 2 | 3 | 4 | 5 |     |
| Date/Time               |   |   |   |   |   |     |
| Location                |   |   |   |   |   |     |
| Tester                  |   |   |   |   |   |     |
| Weather                 |   |   |   |   |   |     |
| Instrument              |   |   |   |   |   |     |
| Calibration             |   |   |   |   |   |     |
| Ambient/Unit            |   |   |   |   |   |     |
| Reading/Unit            |   |   |   |   |   |     |
| NOTES<br>FOR<br>EVENTS: |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |
|                         |   |   |   |   |   |     |

Ionization Detector Response

| Photolionization Detector (PID) |                                    |
|---------------------------------|------------------------------------|
| Concentrations (in ppm)         | Level of PPE Required              |
| 0.0 to 5.0                      | Level D                            |
| 5.0 to 250.0                    | Level C                            |
| 250.0 to 750.0                  | Level B                            |
| Above 750.0                     | Immediately withdraw from the area |

Combustible Gas Response

| Combustible Gas Indicator (CGI) |                                    |
|---------------------------------|------------------------------------|
| Results (% of LEL)              | Procedure                          |
| 0.0 to 20.0                     | Continue with normal activity      |
| Above 20.0                      | Immediately withdraw from the area |

Oxygen Detector Response

| Combustible Gas Indicator (CGI) |                                    |
|---------------------------------|------------------------------------|
| Results (% Oxygen)              | Procedure                          |
| 0.0 to 19.5                     | Level B PPE is required            |
| 19.5 to 23.0                    | Continue with normal activity      |
| Above 23.0                      | Immediately withdraw from the area |

**Appendix E:**  
SDS



# PCE

## Material Safety Data Sheet

|                                |                        |          |                                              |
|--------------------------------|------------------------|----------|----------------------------------------------|
| Manufacturer's Name:           | Martin Asphalt Company | Date:    | January 15, 2014                             |
| Telephone Number:              | 800-662-0987           | Address: | 300 Christy Place<br>South Houston, TX 77587 |
| For Emergency Assistance Call: | (713) 941-4410         |          |                                              |

| NFPA HAZARD IDENTIFICATION | DEGREE OF HAZARD                      | HAZARD RATINGS                                                |
|----------------------------|---------------------------------------|---------------------------------------------------------------|
|                            | HEALTH: 0<br>FIRE: 0<br>REACTIVITY: 0 | 0= LEAST<br>1= SLIGHT<br>2= MODERATE<br>3= HIGH<br>4= EXTREME |

### SECTION 1 - COMPONENT DATA

|               |                               |
|---------------|-------------------------------|
| PRODUCT NAME: | PCE/LVOC-1                    |
| COMMON NAME   | BLENDED PETROLEUM HYDROCARBON |
| CHEMICAL NAME | BLENDED PETROLEUM HYDROCARBON |

### SECTION 2 - PHYSICAL DATA

|                                                                |                                          |       |                                        |                     |
|----------------------------------------------------------------|------------------------------------------|-------|----------------------------------------|---------------------|
| C.A.S. NUMBER:                                                 | MIXTURE (SEE DATA BELOW)                 |       |                                        |                     |
| BOILING POINT (°F):                                            | 212                                      |       |                                        |                     |
| SPECIFIC GRAVITY (H2O=1):                                      | 0.93                                     |       |                                        |                     |
| MELTING POINT (°F):                                            | NA                                       |       |                                        |                     |
| VAPOR PRESSURE:                                                | 17.535 (GAUGE)                           |       |                                        |                     |
| PERCENT VOLATILE:                                              | 0                                        |       |                                        |                     |
| VAPOR DENSITY (AIR=1):                                         | NA                                       |       |                                        |                     |
| EVAPORATIVE RATE (EE=1):                                       | NA                                       |       |                                        |                     |
| SOLUBILITY IN WATER:                                           | SOLUBLE                                  |       |                                        |                     |
| APPEARANCE AND ODOR:                                           | LIGHT BROWN LIQUID, FAINT PETROLEUM ODOR |       |                                        |                     |
| COMPONENT NAME/ CAS NO.                                        | % MIN                                    | % MAX | EXPOSURE LIMITS                        | UNITS               |
| HEAVY PARAFFINIC DISTILLATE SOLVENT EXTRACT (HPDSE)/64742-04-7 | 50                                       | 70    | OSHA PEL (OIL MIST) 8HR/TWA (OIL MIST) | 5 mg/m3<br>0.2mg/m3 |
| EMULSIFIER/ LISTED IN TSCA                                     | 0                                        | 10    | ORAL LD50 (RATS)                       | <19g/kg             |

### SECTION 3 - FIRE & EXPLOSION DATA

|                                       |                                                                                                                                                                                                                                 |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FLASH POINT (°F) & METHOD:            | HPDSE: 410 / C.O.C.                                                                                                                                                                                                             |
| FLAMMABILITY LIMITS:                  | LOWER: NA UPPER: NA                                                                                                                                                                                                             |
| AUTO IGNITION TEMPERATURE (°F):       | UNKNOWN                                                                                                                                                                                                                         |
| EXTINGUISHING MEDIA                   | USE DRY CHEMICAL, FOAM OR CARBON DIOXIDE.                                                                                                                                                                                       |
| SPECIAL FIRE FIGHTING PROCEDURES      | WATER MAY BE INEFFECTIVE BUT CAN BE USED TO COOL CONTAINERS EXPOSED TO HEAT OR FLAME. CAUTION SHOULD BE EXERCISED WHEN USING WATER OR FOAM AS FROTHING MAY OCCUR, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID. |
| UNUSUAL FIRE AND EXPLOSIVE CONDITIONS | DENSE SMOKE MAY BE GENERATED WHILE BURNING. CARBON MONOXIDE, CARBON DIOXIDE AND OTHER OXIDES MAY BE GENERATED AS PRODUCTS OF COMBUSTION.                                                                                        |

\*NA=NOT APPLICABLE \*\*ND=NOT DETERMINED



| SECTION 4 - REACTIVITY DATA         |                                        |
|-------------------------------------|----------------------------------------|
| STABILITY: STABLE                   | STABLE                                 |
| CONDITIONS TO AVOID:                | NONE                                   |
| HAZARDOUS POLYMERIZATION:           | WILL NOT OCCUR                         |
| INCOMPATIBILITY MATERIALS TO AVOID: | MAY REACT WITH STRONG OXIDIZING AGENTS |
| HAZARDOUS DECOMPOSITION PRODUCTS:   | NONE                                   |

| SECTION 5 - HEALTH HAZARD DATA |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SKIN CONTACT:                  | AVOID SKIN CONTACT, THIS PRODUCT MAY CAUSE SLIGHT SKIN IRRITATION UPON DIRECT CONTACT; BASED ON TESTING OF SIMILAR PRODUCTS AND/OR COMPONENTS. PROLONGED OR REPEATED CONTACT MAY RESULT IN CONTACT DERMATITIS WHICH MAY MAKE THE SKIN MORE SUSCEPTIBLE TO OTHER IRRITANTS, SENSITIZERS AND DISEASE. PROLONGED OR REPEATED CONTACT MAY RESULT IN OIL ACNE WHICH IS CHARACTERIZED BY BLACKHEADS WITH POSSIBLE SECONDARY INFECTION. CONSTITUENTS OF THIS PRODUCT HAVE BEEN ASSOCIATED WITH PHOTSENSITIVITY AN ABNORMAL SENSITIVITY OF SKIN TO SUNLIGHT. SEE DATA HEALTH BELOW |
| EYE CONTACT:                   | THIS PRODUCT IS RELATIVELY NON-IRRITATING TO THE EYES UPON DIRECT CONTACT BASED ON TESTING OF SIMILAR PRODUCTS AND/OR COMPONENTS.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| INHALATION:                    | THIS PRODUCT HAS A LOW VAPOR PRESSURE AND IS NOT EXPECTED TO PRESENT AN INHALATION HAZARD AT AMBIENT CONDITION. CAUTION SHOULD BE TAKEN TO PREVENT AEROSOLIZATION OR MISTING OF THIS PRODUCT. THE PERMISSIBLE EXPOSURE LIMIT (PEL) AND THRESHOLD LIMIT VALUE (TLV) FOR THIS PRODUCT AS OIL MIST IS 5 mg/m3 APPEAR TO BE WITHOUT SIGNIFICANT HEALTH RISK. THE SHORT-TERM EXPOSURE LIMIT FOR THIS PRODUCT AS AN OIL MIST IS 10 mg/m3.                                                                                                                                        |
| INGESTION                      | DO NOT INGEST. THIS PRODUCT IS RELATIVELY NON- TOXIC BY INGESTION. THIS PRODUCT HAS LAXATIVE PROPERTIES AND MAY RESULT IN ABDOMINAL CRAMPS AND DIARRHEA. SEE HEALTH DATA BELOW.                                                                                                                                                                                                                                                                                                                                                                                            |
| HEALTH DATA                    | ON RARE OCCASIONS, PROLONGED AND REPEATED EXPOSURE TO OIL MIST POSES A RISK OF PULMONARY DISEASE SUCH AS CHRONIC LUNG INFLAMMATION. THIS CONDITION IS USUALLY ASYMPTOMATIC AS A RESULT OF REPEATED SMALL ASPIRATIONS. SHORTNESS OF BREATH AND COUGH ARE THE MOST COMMON SYMPTOMS. THE PETROLEUM OIL USED FOR THIS PRODUCT IS CLASSIFIED AS CARCINOGENIC BY THE INTERNATIONAL AGENCY FOR RESEARCH OF CANCER. TO MINIMIZE EXPOSURE, DO NOT SUBJECT EMULSION TO TEMPERATURES ABOVE 212°F. TEMPERATURES IN THIS RANGE VOLATILIZE THE EMULSION.                                 |

| SECTION 6 - EMERGENCY AND FIRST AID PROCEDURES |                                                                                                                                                                                                                                                                        |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EYE CONTACT                                    | IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER AND CONTINUE FLUSHING UNTIL IRRITATION SUBSIDES. IF MATERIAL IS HOT, TREAT FOR THERMAL BURNS AND TAKE VICTIM TO HOSPITAL IMMEDIATELY.                                                                               |
| SKIN CONTACT                                   | REMOVE CONTAMINATED CLOTHING. WASH CONTAMINATED AREA THOROUGHLY WITH SOAP AND WATER. IF REDNESS OR IRRITATION OCCURS, SEEK MEDICAL ATTENTION. IF MATERIAL IS HOT, SUBMERGE INJURED AREA IN COLD WATER. IF VICTIM IS SEVERLEY BURNED, REMOVE TO A HOSPITAL IMMEDIATELY. |
| INHALATION                                     | THIS MATERIAL HAS A LOW VAPOR PRESSURE AND IS NOT EXPECTED TO PRESENT AN INHALATION EXPOSURE AT AMBIENT CONDITIONS.                                                                                                                                                    |
| INGESTION                                      | DO NOT INDUCE VOMITING. SEEK MEDICAL ATTENTION.                                                                                                                                                                                                                        |

\*NA=NOT APPLICABLE \*\*ND=NOT DETERMINED



| <b>SECTION 7 - PERSONAL HEALTH PROTECTION INFORMATION</b> |                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EYE PROTECTION                                            | EYE PROTECTION IS NOT REQUIRED UNDER CONDITIONS OF NORMAL USE. IF MATERIAL IS HANDLED SUCH THAT IT COULD BE SPLASHED INTO EYES, WEAR PLASTIC FACE SHIELD OR SPLASH-PROOF SAFETY GOGGLES.                                                                                                                                                                                                   |
| SKIN PROTECTION                                           | NO SKIN PROTECTION IS REQUIRED FOR SINGLE SHORT DURATION EXPOSURES, USE IMPERVIOUS CLOTHING (BOOTS, GLOVES, APRONS, ETC.) OVER PARTS OF THE BODY SUBJECT TO EXPOSURE. IF HANDLING HOT MATERIAL, USE INSULATED PROTECTIVE CLOTHING (BOOTS, GLOVES, APRONS, ETC.) LAUNDER SOILED CLOTHES. PROPERLY DISPOSE OF CONTAMINATED LEATHER ARTICLES INCLUDING SHOES, WHICH CANNOT BE DECONTAMINATED. |
| RESPIRATORY PROTECTION                                    | RESPIRATORY PROTECTION IS NOT REQUIRED UNDER CONDITIONS OF NORMAL USE. IF VAPOR OR MIST IS GENERATED WHEN THE MATERIAL IS HEATED OR HANDLED, USE AN ORGANIC VAPOR RESPIRATOR WITH A DUST AND MIST FILTER. ALL RESPIRATORS MUST BE NIOSH CERTIFIED. DO NOT USE COMPRESSED OXYGEN IN HYDROCARBON ATMOSPHERES.                                                                                |
| VENTILATION                                               | IF VAPOR OR MIST IS GENERATED WHEN THE MATERIAL IS HEATED OR HANDLED, ADEQUATE VENTILATION IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE MUST BE PROVIDED TO MAINTAIN CONCENTRATIONS BELOW THE SPECIFIED EXPOSURE OR FLAMMABLE LIMITS.                                                                                                                                                      |
| OTHER                                                     | CONSUMPTION OF FOOD AND BEVERAGES SHOULD BE AVOIDED IN WORK AREAS WHERE HYDROCARBONS ARE PRESENT. ALWAYS WASH HANDS AND FACE WITH SOAP AND WATER BEFORE EATING, DRINKING, OR SMOKING.                                                                                                                                                                                                      |

| <b>SECTION 8 - SPILL, LEAK &amp; DISPOSAL PROCEDURES</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED     | CONSULT HEALTH HAZARD DATA IN SECTION 5, PERSONAL HEALTH PROTECTION INFORMATION IN SECTION 7, FIRE & EXPLOSION DATA IN SECTION 3, AND REACTIVITY DATA IN SECTION 4. NOTIFY APPROPRIATE AUTHORITIES OF SPILL. CONTAIN SPILL IMMEDIATELY. DO NOT ALLOW SPILL TO ENTER SEWERS OR WATERCOURSES. REMOVE ALL SOURCES OF IGNITION. ABSORB WITH APPROPRIATE INERT MATERIAL SUCH AS SAND, CLAY, ETC. LARGE SPILLS MAY BE PICKED UP USING VACUUM PUMPS, SHOVELS, BUCKETS OR OTHER MEANS AND PLACED IN DRUMS OR OTHER SUITABLE CONTAINERS. |
| WASTE DISPOSAL METHOD                                    | ALL DISPOSALS MUST COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS. THE MATERIAL, IF SPILLED OR DISCARDED, MAY BE A REGULATED WASTE. REFER TO STATE AND LOCAL REGULATIONS. CAUTION! IF REGULATED SOLVENTS ARE USED TO CLEAN UP SPILLED MATERIAL, THE RESULTING WASTE MIXTURE MAY BE REGULATED. DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS MAY APPLY FOR TRANSPORTING THIS MATERIAL WHEN SPILLED. WASTE MATERIAL MAY BE LANDFILLED OR INCINERATED AT AN APPROVED FACILITY. MATERIALS SHOULD BE RECYCLED IF POSSIBLE.       |

| <b>SECTION 9 - SPECIAL PRECAUTIONS/ADDITIONAL INFORMATION</b> |                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HANDLING AND STORAGE REQUIREMENTS                             | DO NOT TRANSFER TO UNMARKED CONTAINERS. STORE IN CLOSED CONTAINERS AWAY FROM HEAT, SPARKS, OPEN FLAME, OR OXIDIZING MATERIALS. THIS PRODUCT IS NOT CLASSIFIED AS HAZARDOUS UNDER DOT REGULATIONS. FIRE EXTINGUISHERS SHOULD BE KEPT READILY AVAILABLE. SEE NFPA 30 AND OSHA 1910.106 FLAMMABLE AND COMBUSTIBLE LIQUIDS. |
| ADDITIONAL INFORMATION                                        | THIS PRODUCT IS NOT KNOWN TO CONTAIN ANY SARA TITLE III, SECTION 313 REPORTABLE CHEMICALS, AT OR GREATER THAN 1.0% (0.1% FOR CARCINOGENS) A COMPONENT OF THIS PRODUCT IS ON THE TOXIC SUBSTANCES CONTROL ACT (TSCA) INVENTORY.                                                                                          |

The information contained herein is based on the data available to us and is believed to be correct. However, Martin Asphalt Company makes no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. This information and product is furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of use thereof.

\*NA=NOT APPLICABLE \*\*ND=NOT DETERMINED



2221 Ninth Line | Oakville, ON L6H 7G7  
Phone: 905-337-7411 | Fax: 905-337-1686  
megaloid.ca

## Safety Data Sheet

### 1. PRODUCT IDENTIFICATION

|              |                                                                   |
|--------------|-------------------------------------------------------------------|
| Name         | <b>Trichloroethylene</b>                                          |
| Synonyms     | 1,1,2-trichloroethylene, acetylene trichloride, TCE & trade names |
| CAS#         | 79-01-6                                                           |
| Europe EC#   | 201-167-4                                                         |
| Product Uses | cleaning solvent for vapour degreasing                            |

#### EMERGENCY INFORMATION

Canada Call CANUTEC (collect) (613) 996-6666  
U.S.A. Call CHEMTREC (800) 424-9300

### 2. HAZARDS

| GHS Class (Category) | skin irritant (2)             | eye irritant (2)                     | STOT (3)                                 | carcinogen (1B)         | aquatic chronic (2)                                    |
|----------------------|-------------------------------|--------------------------------------|------------------------------------------|-------------------------|--------------------------------------------------------|
| Signal Words         | <b>WARNING</b>                | <b>WARNING</b>                       | <b>WARNING</b>                           | <b>DANGER</b>           | <b>no Signal Word</b>                                  |
| Hazard Statements    | causes skin irritation (H315) | causes serious eye irritation (H319) | may cause drowsiness or dizziness (H336) | may cause cancer (H350) | toxic to aquatic life with long-lasting effects (H411) |

#### GHS Precautionary Statements for Labelling

|           |                                                                             |
|-----------|-----------------------------------------------------------------------------|
| P261 P271 | Avoid breathing vapour. Use only in a well ventilated area                  |
| P262 P264 | Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. |
| P270      | Do not eat, drink or smoke when using this product.                         |
| P280      | Wear eye protection, protective gloves and clothing of butyl or "Viton".    |
| P273 P391 | Avoid release to the environment. Collect spillage.                         |

Canada – WHMIS  
Key:

D 1B, D 2A, D 2B  
B 2 – Flash Point <38°C, B 3 – Flash Point >38°C & <93°C  
D 1 – Immediately Toxic, D 2 – Chronic Toxicity  
C – Oxidising Substance, E – Corrosive, F – Reactive Substance



### 3. COMPOSITION

|                         | %    | TWAEV / TLV<br>ppm / mg/m <sup>3</sup> | LD <sub>50</sub> (mg/kg)<br>ORAL | LD <sub>50</sub> (mg/kg)<br>SKIN | LC <sub>50</sub> ppm<br>INHALATION |
|-------------------------|------|----------------------------------------|----------------------------------|----------------------------------|------------------------------------|
| 1,1,2-trichloroethylene | 100% | 10 / 55                                | 2400                             | 29,280                           | 7175                               |

### 4. FIRST AID

|             |                                                                                                                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SKIN:       | Wash with soap & plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.                                                                                                               |
| EYES:       | Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if irritation persists.                                                                                                            |
| INHALATION: | Remove from contaminated area promptly. <b>CAUTION: Rescuer must not endanger himself!</b> If breathing stops, administer artificial respiration and seek medical aid promptly.                                           |
| INGESTION:  | Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly. |

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

**Please ensure that this SDS is given to, and explained to people using this product.**



Member: Canadian Association of Chemical Distributors



## 5. FIRE FIGHTING & FLAMMABILITY

|                          |                                                                                               |
|--------------------------|-----------------------------------------------------------------------------------------------|
| Flash Point              | will not flash <sup>1</sup>                                                                   |
| Autoignition Temperature | 410°C / 770°F <sup>1</sup>                                                                    |
| Flammable Limits         | 8% i 50% i <i>only burns in continuous contact with ignition source</i>                       |
| Combustion Products      | hydrogen chloride & chlorine ( <i>both corrosive</i> ), plus phosgene ( <i>highly toxic</i> ) |
| Firefighting Precautions | as for substances sustaining fire; firefighters must wear SCBA                                |
| Static Discharge         | will accumulate a static charge, but cannot be ignited by a spark                             |

**NOTE:** Trichloroethylene may ignite in the presence of a welding torch – and then produce highly hazardous vapours.

## 6. ACCIDENTAL RELEASE MEASURES

|                 |                                                                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Leak Precaution | dyke to control spillage; dyke must be able to contain the entire volume of a bulk storage tank                                                                               |
| Handling Spill  | ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep shovel & store in closed containers for recycling or disposal |

## 7. HANDLING & STORAGE

Store in a cool environment, away from substances named in Part 10 (below).

Avoid breathing product vapour. Product should be used in equipment designed for the purpose (eg: vapour degreaser)

Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator (see Part 8). **Do not routinely wear a respirator for handling this product! Effective ventilation or engineering control of vapour is the ONLY acceptable way to protect people working with this product.**

When transferring product, if there is any danger of contact, wear appropriate protective clothing.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

**NOTE:** Although trichloroethylene is hard to ignite, fire can convert vapours into highly toxic, corrosive gases – Part 5, above.

## 8. EXPOSURE CONTROL & PERSONAL PROTECTION

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                                |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------|
| Ontario TWAEV | 10ppm / 55mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Ontario STEV | 25ppm / 135mg/m <sup>3</sup>   |
| ACGIH TLV     | 10ppm / 55mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ACGIH STEL   | 25ppm / 135mg/m <sup>3</sup>   |
| OSHA PEL      | 50ppm / 270mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OSHA STEL    | 200ppm / 1080mg/m <sup>3</sup> |
| Ventilation   | product should only be used in specially designed equipment (eg: vapour degreaser); mechanical ventilation should not be required so long as the equipment is working properly; <b>using this product in open air and relying on mechanical ventilation is NOT ACCEPTABLE</b> ; a respirator with organic vapour cartridge should be available for escape purposes, should vapour containment fail ( <i>always store respirators in airtight containers [eg: "Tupperware"] to maintain cartridge "freshness"</i> ) |              |                                |
| Hands         | nitrile gloves i other types also protect, always confirm suitability with supplier                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                                |
| Eyes          | safety glasses with side shields or chemical goggles – <i>always protect eyes!</i>                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |                                |
| Clothing      | impermeable (hands, above) apron, boots, long sleeves, if splashing is anticipated                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |                                |

**Please ensure that this SDS is given to, and explained to people using this product.**

## 9. PHYSICAL PROPERTIES

|                                                           |                                                                                |
|-----------------------------------------------------------|--------------------------------------------------------------------------------|
| Odour & Appearance                                        | clear, colourless, liquid with mild, sweet, <i>pleasant</i> ether odour        |
| Odour Threshold                                           | 80ppm ÷ 100ppm ÷ <i>well above the TLV; hazardous below odour threshold!</i>   |
| Vapour Pressure                                           | 60mmHg / 8kPa (20°C / 68°F); also 74.5mmHg / 9.9kPa (25°C / 77°F) <sup>1</sup> |
| Evaporation Rate ( <i>Butyl Acetate</i> = 1)              | 4.5-4.9                                                                        |
| Vapour Density (air = 1)                                  | 4.5                                                                            |
| Boiling Point                                             | 87°C / 189°F                                                                   |
| Freezing Point                                            | -73°C / -99°F; also -85°C / -121°F <sup>1</sup>                                |
| Specific Gravity                                          | 1.46 (20/20°C)                                                                 |
| Water Solubility                                          | 1.1 grams/litre (20°C / 68°F)                                                  |
| - in other solvents                                       | most organic solvents                                                          |
| Log P <sub>O/W</sub> (Octanol/H <sub>2</sub> O partition) | 2.53 <sup>1</sup>                                                              |
| Viscosity                                                 | 0.58centipoise (20°C / 68°F) <sup>1</sup>                                      |
| pH                                                        | none ÷ <i>does not yield hydrogen ions in solution</i>                         |
| Conversion Factor                                         | 1ppm = 5.36mg/m <sup>3</sup>                                                   |
| Molecular Weight                                          | 131                                                                            |

## 10. REACTIVITY

|                           |                                                                                                                                                                                                                                                          |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dangerously Reactive With | strong oxidising agents or reducing agents; reactive metals (eg: Na, K, Ca, Ba)                                                                                                                                                                          |
| Also Reactive With        | strong alkalis forming explosive dichloroacetylene gas; copper reacts with any dichloroethylene present to form explosive acetylides; reactive with epoxides; unstabilised trichloroethylene may corrode aluminium, copper, zinc in presence of moisture |
| Chemical Stability        | stable; will not polymerize ÷ except under x-ray or other radiation source, or in the presence of aluminium chloride                                                                                                                                     |
| Decomposes in Presence of | iron, copper, zinc or aluminium at 250-600°C cause decomposition to phosgene; reactive metals cause decomposition to dichloroacetylene                                                                                                                   |
| Decomposition Products    | apart from Hazardous Combustion Products ÷ dichloroacetylene                                                                                                                                                                                             |
| Mechanical Impact         | not sensitive                                                                                                                                                                                                                                            |

## 11. TOXICITY

### Effects, Acute Exposure

|                               |                                                                                                                                                                                                      |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skin Contact                  | severely irritating if not removed promptly; chemical burns if contact is prolonged (>5 minutes)                                                                                                     |
| Skin Absorption               | slight ÷ no systemic toxic effects by this route                                                                                                                                                     |
| Eye Contact                   | liquid severely irritating, may damage eyes; vapour irritates some above 160ppm, others at 350ppm blurred vision & other disturbances have been reported following contact with eyes                 |
| Inhalation                    | headache, dizziness, drowsiness, intoxication may occur at above 350ppm; irritating above 1000ppm; high concentrations can lead to unconsciousness & death, numbness & muscle weakness also reported |
| Ingestion                     | burning sensation in mouth & throat; headache, dizziness, drowsiness, intoxication & vomiting, followed by muscle weakness, plus possible delayed heart, kidney & liver damage                       |
| LD <sub>50</sub> (oral)       | 4920 & 5620mg/kg (rat), 2400mg/kg (mouse), >7330mg/kg (rabbit), >5865mg/kg (cat), 5680mg/kg (dog)                                                                                                    |
| LD <sub>50</sub> (skin)       | 29,280mg/kg (rabbit)                                                                                                                                                                                 |
| LC <sub>50</sub> (inhalation) | 7175, 7440, 8450, 40,920 & 48,730ppm (mouse), 7250 & 26,170ppm (rat)                                                                                                                                 |

### Effects, Chronic Exposure

|                      |                                                                                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General              | prolonged or repeated exposure may cause dermatitis; neurological damage (headache, sleeplessness, mood change), plus blurred or tunnel vision may be seen; loss of sensation in hands & feet may occur |
| Sensitising          | not a sensitizer                                                                                                                                                                                        |
| Carcinogen/Tumorigen | probable carcinogen ÷ IARC ÷ Group 1, ACGIH ÷ A2; the NTP rates trichloroethylene a carcinogen                                                                                                          |
| Reproductive Effect  | no known effect on humans or animals                                                                                                                                                                    |
| Mutagen              | mutagen in a few animal tests, but not in others <sup>1</sup> ; not known to be a mutagen or teratogen in humans                                                                                        |
| Synergistic With     | alcohol ÷ prior exposure to trichloroethylene followed by alcohol consumption causes upper body flush ÷ called <i>ndegreasers flush</i>                                                                 |

**Please ensure that this SDS is given to, and explained to people using this product.**

## 12. ECOLOGICAL INFORMATION

|                                |                                                                                                                                                                                         |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bioaccumulation                | trichloroethylene metabolised & excreted (½-life ~40hr) and will not bioaccumulate                                                                                                      |
| Biodegradation                 | biodegrades in aerobic sewage treatment facilities, but only in the presence of other carbon sources; biodegradation is much slower under anaerobic conditions                          |
| Abiotic Degradation            | reacts with atmospheric hydroxyl (OH) radicals; estimated ½-life in air 5-7 days                                                                                                        |
| Mobility in soil, water        | shown to have moderate mobility in soil and the water column                                                                                                                            |
| <b>Marine Toxicity</b>         |                                                                                                                                                                                         |
| LC <sub>50</sub> (96 hr) Fish  | 28 & 63mg/litre/96hr (Jordanella floridae), 41mg/litre/96hr (Pimephelas promelas), 16mg/litre Limada limada), 52 & 99mg/litre (Cyprinodon variegatus), 45mg/litre (Lepomis macrochirus) |
| LC <sub>50</sub> (48hr) Shrimp | 58mg/litre/ (Daphnia cucullata), 2.2, 8, 21 & 42-97mg/litre (Daphnia magna) & others                                                                                                    |
| EC <sub>50</sub> (Algae)       | 450mg/litre (Scenedesmus subspicatus), 175mg/litre (Selenastrum capricornutum), 95 & 150mg/litre (Skeletonema costatum)                                                                 |
| EC <sub>50</sub> (Bacteria)    | 235mg/litre (Bacillus subtilis), >400mg/litre (Chilomonas paramecium), 975mg/litre (Photobacterium phosphoreum) & others                                                                |

## 13. DISPOSAL

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste Disposal | <b>do not flush to sewer</b> , recycle solvent if possible, may be incinerated in approved facility <b>with flue gas monitoring and scrubbing after mixing with a suitable flammable waste solvent</b>                                                                                                                                                                                                                                                                                                                 |
| Containers     | <b>Drums</b> should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.<br><b>Pails</b> must be vented and thoroughly dried prior to crushing and recycling.<br><b>IBCs</b> (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years.<br><b>Never cut, drill, weld or grind on or near this container, even if empty</b> |

## 14. TRANSPORT CLASSIFICATION

|                         |                      |                          |
|-------------------------|----------------------|--------------------------|
| <b>Canada TDG</b>       | <b>PIN</b>           | <b>UN-1710</b>           |
| <b>AND</b>              | <b>Shipping Name</b> | <b>trichloroethylene</b> |
| <b>U.S.A. 49 CFR</b>    | <b>Class</b>         | <b>6.1</b>               |
|                         | <b>Packing Group</b> | <b>III</b>               |
| <b>Marine Pollutant</b> |                      | not a marine pollutant   |
| <b>ERAP Required</b>    |                      | <b>NO</b>                |



## 15. REGULATIONS

|                      |                     |
|----------------------|---------------------|
| <b>Canada DSL</b>    | <b>on inventory</b> |
| <b>U.S.A. TSCA</b>   | <b>on inventory</b> |
| <b>Europe EINECS</b> | <b>on inventory</b> |

### U.S.A. Regulations:

**Immediately Dangerous to Life or Health:** 1000 ppm; NIOSH considers trichloroethylene to be a potential occupational carcinogen.

**Allowable Tolerances:** Tolerances are established for residues of trichloroethylene resulting from its use as a solvent in the manufacture of foods as follows:

| <b>Food</b>                                    | <b>Parts per million</b>                                                                                                                                                                                        |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decaffeinated ground coffee                    | 25                                                                                                                                                                                                              |
| Decaffeinated soluble (instant) coffee extract | 10                                                                                                                                                                                                              |
| Spice oleoresins                               | 30 parts per million ( <i>provided that if residues of other chlorinated solvents are also present, the total of all residues of such solvents in spice oleoresins shall not exceed 30 parts per million</i> ). |

**OSHA Standards:** Permissible Exposure Limit: Table Z-2 8-hr Time Weighted Avg: 100 ppm. Permissible Exposure Limit: Table Z-2 Acceptable Ceiling Concentration: 200 ppm. Permissible Exposure Limit: Table Z-2 Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. Concentration: 300 ppm. Maximum Duration: 5 minutes in any 2 hours. Vacated 1989 OSHA PEL TWA 50 ppm (270 mg/cu m); STEL 200 ppm (1080 mg/cu m) is still enforced in some states.

**NIOSH Recommendations:** NIOSH considers trichloroethylene to be a potential occupational carcinogen. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration. Recommended Exposure Limit: 60 Minute Ceiling Value: 2 ppm. /During the usage of trichloroethylene as an anesthetic agent/ Recommended Exposure Limit: 10 Hour Time-Weighted Average: 25 ppm. /During exposures to trichloroethylene other than as an anesthetic agent/

**Please ensure that this SDS is given to, and explained to people using this product.**

## 15. REGULATIONS, cont'd

**Threshold Limit Values:** 8 hr Time Weighted Avg (TWA): 10 ppm; 15min Short Term Exposure Limit (STEL) 25 ppm, A2: Suspected human carcinogen.

**Atmospheric Standards:** This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Trichloroethylene is produced, as an intermediate or a final product, by process units covered under this subpart. Listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Trichloroethylene is included on this list.

**Federal Drinking Water Standards:** Maximum contaminant level goals for organic contaminants: Trichloroethylene, MCLG: zero. Maximum contaminant levels (MCL) for organic contaminants apply to community and non-transient, non-community water systems: Trichloroethylene, MCL 0.005 mg/L. EPA 5 ug/l

**State Drinking Water Standards:** Florida 3 ug/l, New Jersey 1 ug/l

**State Drinking Water Guidelines:** Arizona 3.2 ug/l, Connecticut 5 ug/l, Maine 32 ug/l, Minnesota 5 ug/L

**Clean Water Act Requirements:** Toxic pollutant designated pursuant to section 307(a)(1) of the Federal Water Pollution Control Act and is subject to effluent limitations. Trichloroethylene is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

**CERCLA Reportable Quantities:** Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 100 lb or 45.4 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

**RCRA Requirements:** As stipulated in 40 CFR 261.33, when trichloroethylene, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). A solid waste containing trichloroethylene may or may not become characterized as a hazardous waste when subjected to the Toxicity Characteristic Leaching Procedure listed in 40 CFR 261.24, and if so characterized, must be managed as a hazardous waste. When trichloroethylene is a spent solvent, it is classified as a hazardous waste from a nonspecific source, as stated in 40 CFR 261.31, and must be managed according to state and/or federal hazardous waste regulations.

**FDA Requirements:** Trichloroethylene is an indirect food additive for use as a component of adhesives. Tolerances are established for residues of trichloroethylene resulting from its use as a solvent in the manufacture of foods as follows:

| Food                                           | Parts per million                                                                                                                                                                                               |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Decaffeinated ground coffee                    | 25                                                                                                                                                                                                              |
| Decaffeinated soluble (instant) coffee extract | 10                                                                                                                                                                                                              |
| Spice oleoresins                               | 30 parts per million ( <i>provided that if residues of other chlorinated solvents are also present, the total of all residues of such solvents in spice oleoresins shall not exceed 30 parts per million</i> ). |

## 16. OTHER INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

Data from RTECS, HSDB (Haz. Substance Data Base), Cheminfo (CCOHS), IUCLID Datasheets (ESIS – European Chem. Substance Info. System), & others.

Preparation Date: May 2005 Revision Date: June 2008, June 2011, June 2014

**European Chemicals Agency (ECHA) dossier for Trichloroethylene:**

[http://apps.echa.europa.eu/registered/data/dossiers/DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249/DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249\\_DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249.html](http://apps.echa.europa.eu/registered/data/dossiers/DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249/DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249_DISS-9c83a2d3-4a9f-1ff5-e044-00144f67d249.html)

**Please ensure that this SDS is given to, and explained to people using this product.**



# SAFETY DATA SHEET

## No. 2 Fuel Oil

### 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](http://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):

Hazard Statements (GHS-US):

#### **Danger**

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.



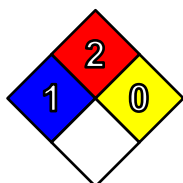
## SAFETY DATA SHEET

### No. 2 Fuel Oil

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, CO<sub>2</sub>, 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



## SAFETY DATA SHEET

### No. 2 Fuel Oil

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/m <sup>3</sup> * |
| Naphthalene    | 91-20-3    | ACGIH TLV-TWA | 10 ppm                  |
|                |            | OSHA PEL      | 10 ppm                  |
|                |            | ACGIH STEL    | 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. |



## SAFETY DATA SHEET

### No. 2 Fuel Oil

| Exposure    | Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Respiratory | <p>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.</p> <p>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.</p> |
| Thermal     | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 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.



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#### 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.



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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              |



## SAFETY DATA SHEET

### No. 2 Fuel Oil

#### 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 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%   |



# SAFETY DATA SHEET

## No. 2 Fuel Oil

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

### Acronyms

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



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

#### 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 \*\***