Health and Safety Plan

(Appendix C to Remedial Design Work Plan)

Southeast Rockford Groundwater Site

Area 9/10

Rockford, Illinois

CERCLIS ID No. ILD9801000417

March 31, 2003

Prepared for:

HAMILTON SUNDSTRAND CORPORATION
4747 Harrison Avenue
Rockford, Illinois 61125

Submitted by:

SECOR International Incorporated
446 Eisenhower Lane North
Lombard, Illinois 60148

APPENDIX C
SITE SPECIFIC HEALTH AND SAFETY PLAN

Remedial Design
Area 9/10
Rockford, IL
SECOR Project No.: 13UN.02072.00
March 31, 2003

Prepared for:

HAMILTON SUNDSTRAND CORPORATION
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SECOR
HEALTH AND SAFETY PLAN
REVIEW AND APPROVAL

CLIENT: Hamilton-Sundstrand Corporation (United Technologies Corp.) SITE NAME: Area 9/10, S.E. Rockford

PROJECT NAME: Remedial Design Area 9/10 PROJECT NUMBER: 13UN.02072.00.

START DATE: April 1, 2003 END DATE: February 1, 2004

PLAN EXPIRATION DATE: February 1, 2004 Note: plan to be reviewed on a 6 month basis

David Curnock Signature:_____ Date:_____
Project Manager

David Vasquez Signature:_____ Date:_____
SECOR Local Office Health and Safety Coordinator

Mark Densmore Signature:_____ Date:_____
Site Health and Safety Officer

David Curnock Signature:_____ Date:_____
Principal - in -Charge

Tom Beeching Signature:_____ Date:_____
Peer Reviewer

This Health and Safety Plan has been written for the use of **SECOR** and its employees. It may also be used as a guidance document by properly trained and experienced **SECOR** subcontractors and clients.

Our work can be hazardous, and it is imperative that we never forget that! It is the intent of this document to address our risks. The health and safety guidelines in this Plan were prepared specifically for this site, its conditions, purposes, dates and personnel and must be amended if conditions change. This Plan must not be used on any other site without prior research by trained health and safety specialists.

SECOR claims no responsibility for its use by others for purposes unrelated to this project. This Plan will provide useful information to subcontractors and will assist them in developing their own HASP. Subcontractors should sign this plan (See Attachment 8) as an acknowledgement of hazard information and notice that they must ensure that the risks posed by work on this site are addressed. **SECOR** is readily available to assist subcontractors in identifying and addressing their employees' risks.

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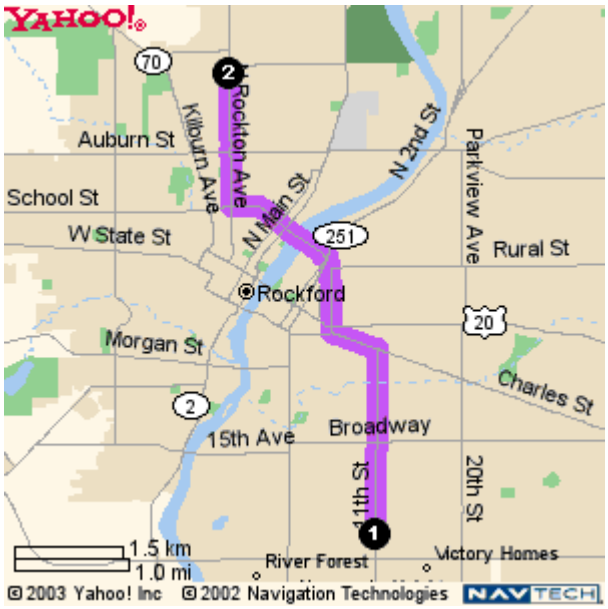
1.0 LOCAL EMERGENCY CONTACT NAMES, PHONE NUMBERS, AND DIRECTIONS TO THE HOSPITAL.

The location of the nearest telephone is: Cellular telephone with field personnel. Alternative: Hamilton-Sundstrand Office. Emergency phone number for all lines within the plant is **6666**.

	NAME	TELEPHONE NUMBER
Hospital	Rockford Memorial Center	815-971-5000 / **emergency 911**
Ambulance	Lifeline Ambulance Service	815-399-3313 / **emergency 911**
Police/Sheriff	Rockford Police Department	815-987-5800 / **emergency 911**
Fire	Rockford Fire Department	815-987-5800 / **emergency 911**



SITE 1 - AREA 9/10
SITE 2 - ROCKFORD HOSPITAL

DIRECTIONS

1. Start out going north on **11TH Street** toward **Broadway (1.6 miles)**
2. Turn left on **Charles Street (0.4 miles)**
3. Turn right on **S. Longwood Street (0.1 miles)**
4. Continue on **Longwood Street 0.3 miles)**
5. Continue on **Ramp (0.2 miles)**
6. Stay straight to go to **Whitman Street (0.8 Miles)**
7. Turn right on **North Rockton Avenue (1.1 miles)**

Distance: 4.8 miles Approximate Travel Time: 13 minutes

2.0 Objectives and Goals of this HASP

The purpose of this HASP is to:

- **Document a proactive, scientific exposure assessment which identifies and helps us understand our risks.**
- **Document proactive precautions we are going to take to avoid the risks.**

Our goal is to:

- **Complete our work on this site without any incidents at all with no injuries, no illnesses, and no impacts to the environment or to property and equipment. We expect all subcontractors and other project participants to share this goal.**

3.0 Scope of Work

The purpose of this work phase is to:

- Identify significant sources of groundwater contamination (in soil or groundwater) to aid in the development of a Remedial Design.
- Perform pilot study activities to provide support to the development of a Remedial Design.

This HASP was prepared for the use of SECOR personnel while performing the following tasks:

Task 1: Advance soil borings and collect soil samples.
Task 2: Install monitoring wells and refurbish existing wells, as necessary.
Task 3: Collect ground water samples / monitor ground water elevations.
Task 4: Install SVE system and air sparge system for Pilot Study.

The above stated tasks will be conducted in a manner consistent with the procedures described in the Work Plan for the Remedial Design prepared by SECOR and submitted to the USEPA. All work plans referenced in this HASP will be available with SECOR personnel onsite.

4.0 Background Information on the Project Site

The site is defined as the portion of the Southeast Rockford Groundwater Contamination Superfund site (SER site) known as Area 9/10. The area has a history of industrial activity dating back to 1926 when the Rockford Milling Machine and Rockford Tool companies merged to become the Sundstrand Machine Tool Company. Other industries currently operating in Area 9/10 are Rockford Products Corporation, J.L. Clark, and Paoli Manufacturing. Industries that had been manufacturing in Area 9/10 but are no longer in operation are Nylint Corporation, Rohrbacher Manufacturing, and Mid States Industrial.

The primary contaminants of concern associated with Area 9/10 are volatile organic contaminants including: 1,1,1-trichloroethane, 1,2-dichloroethene, 1,1-dichloroethane, perchloroethene, toluene, and xylene. There may also be some potential concern for lead, cadmium and chromium compounds associated with a former RCRA outside container storage area (OSA) located on the Hamilton Sundstrand facility.

5.0 Client Safety Procedures

Hamilton Sundstrand will require appropriate safety and health considerations of all SECOR and SECOR contractors entering for the performance of work on the plant property. All personnel will be required to participate in a hazard communication meeting which will include information regarding safe working conditions and potential hazards associated with the plant property.

6.0 Site Plan

A Site Location Map is included in **Attachment 1.** A proposed boring / Monitoring Well Location Map is included in **Attachment 2.**

7.0 Emergency Response

The Site Health & Safety Officer (SHSO) must be familiar with the directions to the hospital given in **Section 1.0.**

Injury or Illness

If an injury or illness occurs, take the following action:

- Determine if emergency response (fire/ambulance) staff are necessary. If so, dial **911** on cell phone or closest available phone *(closest available phone is the SECOR field vehicle field cell phone).* Provide the location of the injured person and other details as requested. If it makes sense to take an individual to the hospital, follow the directions in **Section 1.0.**

  If on HS plant property, any emergency is to be communicated to the HS plant security by dialing “6666” from any HS plant phone. Security will then enact the plant emergency systems depending on the situation reported.

- Get First Aid for the person immediately. Utilize first aid kit in vehicle. Also utilize the bloodborne pathogens kit.

- Notify the SHSO immediately. The SHSO is responsible for preparing and submitting the Incident/Near Miss Investigation Report to Mary Harris in SECOR's Human Resources within 24 hours of the incident, as well as notifying the employee's supervisor and Principal-in-Charge. Use the Incident/Near Miss Investigation Report and Root Cause Analysis Flowchart in **Attachment 3**. Ms. Harris' phone is (619) 718-9429. ***(Note: All incidents must be reported to***

Human Resources within 24 hours, but the actual investigation need not be completed within 24 hours.)

- The SHSO will assume responsibility during a medical emergency until more qualified emergency response personnel arrive at the site.

First Aid Procedures for Minor Cuts, Scratches, Bruises, etc.

- Each occupational illness or injury shall be reported immediately by employees to SHSO. The SHSO will complete the Incident/Near Miss Investigation Report in **Attachment 3** and report the incident to Human Resources.

Medical Cases Not Requiring Ambulance Service

- Medical cases normally not requiring ambulance services are injuries such as minor lacerations, minor sprains, etc.

- The SHSO will ensure prompt transportation of the injured person to a physician or hospital following the directions in **Section 1.0.**

- A representative of SECOR/sub-contractor should always drive the injured employee to the medical facility and remain at the facility until the employee is ready to return.

- If the driver of the vehicle is not familiar with directions to the hospital, a second person shall accompany the driver and the injured employee to the hospital

- If it is necessary for the SHSO to accompany the injured employee, provisions must be made to have another employee, properly trained and certified in first aid, to act as the temporary SHSO.

- If the injured employee is able to return to the jobsite the same day, he/she should bring with him/her a statement from the doctor containing such information as:

  - Date
  - Employee's name
  - Diagnosis
  - Date he/she is able to return to work, regular or light duty
  - Date he/she is to return to doctor for follow-up appointment, if necessary
  - Signature and address of doctor

  If the injured employee is unable to return to the jobsite the same day, the employee who transported him should bring this information back to the jobsite and report it to Mary Harris in Human Resources at (619) 718-9429 and the Director of Industrial Hygiene and Health & Safety, Philip Platcow at (617) 232-7355.

Emergency Cases Requiring Ambulance Services

- Medical cases requiring ambulance services would be such cases as severe head injuries, amputations, heart attacks, etc. If on HS plant property, any emergency is to be communicated to the HS plant security by dialing “6666” from any HS plant phone. Security will then enact the plant emergency systems depending on the situation reported

- Should ambulance service be necessary, the following procedures should be taken immediately.

  - Contact necessary ambulance service and company emergency services by dialing **911** and notify the SHSO for the site.

  - Administer first aid until ambulance service arrives.

  - While the injured employee is being transported, the SHSO should contact the medical facility to be utilized.

  - One designated representative should accompany the injured employee to the medical facility and remain at the facility until final diagnosis and other relevant information is obtained.

Death of an Individual or Hospitalization of Three or More Employees

The procedure as outlined in "First Aid and Medical Cases", above, should be followed. If the injured person dies, then SECOR Human Resources Department, local officials and coroner must be notified ***immediately***. SECOR Human Resources will notify the **local OSHA office within 8 hours of the incident or fatality** in the event of fatality or hospitalization of three or more employees. If on HS plant property, any emergency is to be communicated to the HS plant security by dialing “6666” from any HS plant phone. Security will then enact the plant emergency systems depending on the situation reported

Response to Spills or Cut Lines

Prevent problems by documenting the location of underground lines (e.g., product, sewer, telephone, fiber optic) before starting site work. If a line or tank is drilled through, or another leak occurs, document the event as soon as possible using the Incident Investigation Report in **Attachment 3. Notification of the event must be made to SECOR Human Resources within 24 hours**. Include dates, times, actions taken, agreements reached, and names of people involved. Use additional pieces of paper to document the event completely. The SHSO, PM and client must be notified immediately. The PM will notify the regulatory authority or utility as necessary.

In the event of a spill/release, follow this plan:

1. Stay upwind of the spill/release.
2. Wear appropriate PPE.
3. Turn off equipment and other sources of ignition.
4. Turn off pumps and shut valves to stop the flow/leak.
5. Plug the leak or collect drippings, when possible.
6. Use absorbent pads to collect product and impede its flow, if possible.
7. Call Fire Department immediately if fire or emergency develops.
8. Inform SECOR Project Manager about the situation.
9. Determine if the client wants SECOR to repair the damage or if the client will use an emergency repair contractor.
10. Based on agreements, contact emergency spill contractor for containment of free product. The contact for this project will be *Larry Carlson* Phone: (815) 226-6593 pager (815) 972-0601.
11. Advise the client of spill discharge notification requirements and determine who will complete and submit forms. *(Do not submit or report to agencies without the client's consent.)* Document each interaction with the client and regulators and note, in writing; name, title, authorizations, refusals, decisions, and commitments to any action.
12. Do not transport or approve transportation of contaminated soils or product until proper manifests have been completed and approved. Be aware that soils / product may meet criteria for hazardous waste.
13. Do not sign manifests as generator of wastes; contact PM or Waste Compliance Manager to discuss waste transportation.

Notifications – a spill/release requires completion of an Incident Investigation (II) as per SECOR's LPS program. **The PM must involve the client/generator in the Incident Investigation process. SECOR's incident investigation form must be completed (see Attachment 2) and submitted to Human Resources within 24 hours. The client/generator is under obligation to report to the proper government agencies. If the spill extends into waterways, the Coast Guard and the National Response Center (800) 424-8802 must be notified immediately by the client or with his permission.**

All spills/releases must be reported to Scott Moyer, Hamilton Sundstrand/United Technologies Corporation at 815-226-6232, (Client) within 24 hours.

8.0 Contractor Emergency Action Plan

The SHSO will ensure that the Subcontractor/Contractor is capable of efficient evacuation/emergency response in the event of an emergency. Subcontractor/Contractor's employees will be trained by their employer in site-specific evacuation/emergency procedures, including alarm systems and evacuation plans and routes.

The Subcontractor/Contractor shall instruct its employees that in the event of an emergency such as a fire, release, or accident involving injuries, they are required to

dial **911**. The reporting employee is to state the problem clearly and fully and remain on the line until dismissed by the operator. If on HS plant property, any emergency is to be communicated to the HS plant security by dialing “6666” from any HS plant phone. Security will then enact the plant emergency systems depending on the situation reported

SECOR staff and Subcontractor/Contractors working in an area where an emergency exists shall evacuate to a safe location, preferably upwind, away from the area and take attendance. The gathering location will be:

The parking lot southeast of the South Alley and Ninth Street intersection.

Subcontractor/Contractor has the responsibility to account for its own employees and to provide such information immediately to emergency response personnel upon request.

SECOR staff and Subcontractor/Contractor may not reenter the emergency site without specific approval from emergency response personnel.

In the event of fire ignition in close proximity to SECOR staff and Subcontractor/Contractor's employees, those persons shall evacuate the area and notify emergency personnel unless the fire is readily extinguished with portable dry chemical equipment on-hand. **When in doubt, emergency response personnel shall be notified.**

9.0 Government Contact Names and Phone Numbers

AGENCY	NAME	TELEPHONE NO.
National Response Center		(800) 428-8802
IEPA (PM)	Tom Williams	(217) 557-5250
Illinois Emergency Management Agency	(emergency)	(800) 782-7860
USEPA (RPM)	Russ Hart	(312)886-4844
J.U.L.I.E. (Utility Locators)	Phone Clerk	(800) 892-0123
Rockford Public works	Brad Moberg	(815) 987-5570

10.0 Project Personnel and Relevant Information

Questions about this project posed by neighbors, the press, or other interested parties should be directed to:

Name: Scott Moyer Company: Hamilton Sundstrand Phone: (815) 226-6232

The site phone number is: (630) 561-5015 (dedicated cellular phone)

Subcontractors shall review and sign the form in **Attachment 8 ACKNOWLEDGMENT & AGREEMENT FORM**

PROJECT JOB TITLE	NAME	TELEPHONE NO.	GENERAL PROJECT RESPONSIBILITIES	TRAINING DATES			MEDICAL SURVEIL-LANCE DATE
				40 Hr HAZWOPER	8 Hr Refresher	CPR/ First Aid	
Site Health and Safety Officer	*Mark Densmore*	(217) 698-7247 office (217) 494-1576 cell	Implementing this HASP. Has authority to stop work. Perform air quality tasks. Take charge of all incidents. Review subcontractor's HASP	04/02/93	02/03	Pending	03/03
Project Manager	*David Curnock*	(630) 792-1680 office (630) 561-4286 cell	Overall financial and logistics. Contact client and subs to understand all hazards. Discuss with SHSO. Follow-up all incidents upon notice.	06/84	06/02	Pending	4/03
Project Staff	*TBD*	(630)792-1680 office (217)698-7247 office	Conduct work in accordance with JSA and this HASP. Report all incidents and near misses immediately to Project Manager.				
Drilling Subcontractor	*Mid-America Drilling Company*	(877)587-9800 Toll Free	Conduct all drilling/soil borings & moinitoring well installations. (Subcontractor personnel have yet to be assigned).				
SECOR Principal-in-Charge	*David Curnock*	(630)792-1680 office	Provide immediate support at notice of all incidents	06/84	06/02	Pending	4/03
Client Contact	*Scott Moyer*	(314) 772-4300	Provide all known analytical data performed by others and notice of hazards. Provide access to site.	N/A	N/A	N/A	N/A
SECOR Director of Industrial Hygiene	*Philip Platcow, CIH*	(617) 232-7355 Office (617) 899-5403 Cell	Respond with corporate resources to all incidents as appropriate. Assist in HASP review. Assist in incident investigation.	1/13/95	2/21/02	12/00	12/00
SECOR Human Resources Director	*Marguerite Shuffelton*	(619) 718-9430	Assist with incident review, record keeping.				

11.0 Maximum Concentrations of Contaminants Identified Onsite

Listed below are the maximum concentrations of contaminants in the soil/groundwater that are expected to be encountered at the site.

Substance	Date of Sample	Media	Maximum Concentration Detected *(mg/l)*	Sample Location (Well ID)
1,1-Dichloroethene	6-7/96	GW	0.85	MW201
1,1-Dichloroethane	6-7/96	GW	0.69	MW201
1,2-Dichloroethene	6-7/96	GW	4.5	MW201
1,1,1-Trichloroethane	6-7/96	GW	12.0	MW201
Tetrachloroethene	6-7/96	GW	0.068	MW201
Toluene	6-7/96	GW	0.094	MW201
Xylene	6-7/96	GW	0.076	MW201

Substance	Date of Sample	Media	Maximum Concentration Detected *(mg/kg)*	Sample Location*
1,1-Dichloroethene	1990-92	Soil	61.0	Trench #1
1,1-Dichloroethane	1990-92	Soil	4.7	VE1
1,2-Dichloroethene	1990-92	Soil	0.009	SB-10
1,1,1-Trichloroethane	1990-92	Soil	1,800.0	Trench #2
Tetrachloroethene	1990-92	Soil	3,500.0	Trench #2
Toluene	1990-	Soil	3.6	Trench #1
Xylene	1990-	Soil	13.0	Trench #1
Lead	1990	Soil	4.39**	Trench #2
Cadmium	1990	Soil	0.9**	Tank #1

* Sample Data From RCRA Files, OSA Closure

** mg/L TCLP

12.0 Potential Airborne Contaminants

POTENTIAL AIRBORNE CHEMICALS ONSITE IN THIS PROJECT REVIEW THIS TABLE AND CONTACT SHSO WITH QUESTIONS						
CHEMICAL (OR CLASS)	**OSHA PEL ACGIH TLV**	**OTHER PERTINENT LIMITS**	**WARNING PROPERTIES**	**ROUTES OF EXPOSURE OR IRRITATION**	**ACUTE HEALTH EFFECTS**	**CHRONIC HEALTH EFFECTS/ TARGET ORGANS**
1,1,1-Trichloroethane (methyl chloroform)	PEL – TWA 350 ppm TLV – 350 ppm; STEL – 450 ppm	NIOSH Ceiling 350 ppm	Colorless liquid with a mild, chloroform like odor.	Inhalation, skin absorption, ingestion, and or eye contact.	Irritation to eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depressant/depression, poor equilibrium; dermatitis.	Cardiac arrhythmias; liver damage, **Target Organs**; Eyes, skin, central nervous system, cardiovascular system, liver.
1,1,2-Trichloroethane	PEL – TWA 10 ppm (skin) TLV 10 ppm	NIOSH considers this compound a carcinogen; REL – TWA 10 ppm.	Colorless liquid with a sweet, chloroform like odor.	Inhalation, skin absorption, ingestion, and/or eye contact	Irritation to eyes, nose; central nervous system depressant/depression; dermatitis.	Liver, kidney damage; Potential occupational liver carcinogen **Target Organs**; Eyes, respiratory system, central nervous system, liver, kidneys.
1,2-Dichloroethene (dichloroethylene)	PEL – TWA 200 ppm TLV – TWA 200 ppm	IDLH = 1000 ppm	Solvent Odor	Inhalation, skin absorption, ingestion, and/or eye contact	Typical solvent symptoms.	Likely liver, kidney, and CNS symptoms.
1,1-Dichloroethene (vinylidene chloride)	NO PEL Established TLV - 5 ppm	NIOSH considers this compound a carcinogen.	Colorless liquid or gas (above 89o F) with a mild, sweet, chloroform like odor.	Inhalation, skin absorption, ingestion, and/or eye contact	Irritation to eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty)	Liver, kidney dysfunction; pneumonitis; Potential occupational liver and kidney carcinogen **Target Organs**; Eyes, skin, respiratory system, central nervous system, liver, kidneys.
Tetrachloroethene	PEL - 100 ppm TLV - 25 ppm	PEL Ceiling – 200 ppm TLV STEL – 100 ppm IDLH – 150 ppm NIOSH considers this compound a carcinogen	Colorless liquid with a mild, chloroform like odor.	Inhalation, skin absorption, ingestion, and/or eye contact	Irritation to eyes, skin, nose, throat; respiratory system, nausea; flush face, neck; vertigo (an illusion of movement), dizziness, incoordination;	Somnolence (sleepiness, unnatural drowsiness); liver damage; Potential occupational liver carcinogen **Target Organs;** Eyes, skin,

					headache, skin erythema (skin redness)	respiratory system, liver, kidneys, central nervous system.
Toluene	PEL – 200 ppm TLV - 50 ppm	NIOSH REL – 100 ppm TWA: 150 ppm STEL ILDH – 500 ppm	Sweet, pungent, bemzene like odor	Inhalation, dermal, ingestion eyes	Skin (dermatitis) eye, respiratory tract irritant, headache, dizziness, weakness, and fatigue.	CNS, liver, kidneys, skin.
Xylenes	PEL – 100 ppm TLV – 100 ppm	TLV STEL – 500 ppm NIOSH REL – 100 ppm NIOSH REL STEL – 100 ppm IDLH – 900 ppm	Aromatic Odor	Inhalation, dermal, ingestion, eyes.	Throat and skin irritant (dermatitis), headache, nausea, drowsiness, fatigue.	CNS, liver, kidneys, skin, gastrointestinal damage, eye damage.
Trichloroethene (trichloroethylene)	PEL – 100 ppm TLV - 50 ppm	PEL Ceiling – 200 ppm NIOSH considers this compound a carcinogen	Colorless liquid (unless dyed blue) with a chloroform like odor.	Inhalation, dermal, ingestion, eyes.	Irritation to eyes, skin; headache, vertigo (an illusion of movement); visual disturbance, fatigue, giddiness, tremor, somnolence (sleepiness, unnatural drowsiness), nausea, vomiting; dermatitis.	Cardiac arrhythmias, paresthesia; liver injury; Potential occupational carcinogen of liver and kidney.
Cadmium (CAS # 7440-43-9)	PEL – 0.005 mg/m^3	IDLH – 9 mg/m^3 NIOSH considers this compound a carcinogen	Soft blue-white metal lumps or grey powder in elemental form.	Inhalation, dermal, ingestion, eyes.	Irritation to eyes and respiratory tract.	Kidneys, skin, gastrointestinal damage, eye damage.
Chromium (CAS# 7440-47-3)	PEL – TWA 1 mg/m^3 TLV – 0.5 mg/m^3	IDLH –250 mg/m^3 NIOSH REL – 0.5 mg/m^3	Steel grey lustrous metal in elemental form	Inhalation and dermal contact.	Skin irritant.	Skin sensitization.
Lead (CAS# 7439-92-1)	PEL– 0.05 mg/m^3 TLV – 0.15 mg/m^3	IDLH –100 mg/m^3 NIOSH REL – 0.100 mg/m^3 NIOSH considers this compound a carcinogen	Bluish-white or silvery grey solid in various elemental forms.	Inhalation, skin absorption, and ingestion	Irritation to skin, nose, throat; respiratory system, abdominal cramps, drowsiness, headache, nausea; vomiting, weakness, wheezing, pallor, and collapse.	CNS, blood, gastrointestinal tract kidneys and immune system. Paralysis of muscle groups, mood and personality changes and impaired development.

PEL = Permissible Exposure Limit;
REL = Recommended exposure limit set by NIOSH;
TLV = Threshold Limit Value set by the ACGIH (American Conference of Governmental Industrial Hygienists);
IDLH = Immediately Dangerous to Life or Health;
AIHA WEEL = Workplace Environmental Exposure Limits set by the AIHA (American Industrial Hygiene Association);
C = Ceiling limit;
SKIN = Skin absorption;
CNS = Central Nervous System;
STEL = Short Term Exposure Limit;
CVS = cardiovascular system
NIOSH = National Institute for Occupation Safety and Health;

Action Level Table For Air Quality Monitoring

- ***The level for respirator use indicated below is that concentration at which a respirator must be put on. It does not require the job to stop. The respirator is a tool to be used while determining why the exposure has reached that concentration. Take action to reduce the concentration by engineering controls such as water mist, spray foam, plastic cover, etc.***
- ***The level for work stoppage indicated below is that concentration at which work on the job must stop. Determine why exposures have reached that concentration and how they can be reduced. Site evacuation is not necessary at this level. It does not mean that stopping operations should reduce the likelihood that the concentration will continue to rise. Implement engineering controls to reduce the concentration, then resume work.***
- ***These values can be modified with particular knowledge of contaminants and site conditions. Contact Director of Industrial Hygiene & Health and Safety, Philip Platcow to discuss (617) 232-7355.***

CHEMICAL (OR CLASS)	MONITORING EQUIPMENT	TASK	MONITORING FREQUENCY/ LOCATION	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
Volatile Organic Vapors	FID/PID as appropriate for chemicals of concern. Read manual to determine.	From start of mobilization to completion and demobilization	Sampling should be continuous during the project while disturbing potentially contaminated soil or uncovering/removing tanks and piping, or during drilling. At least every 15 minutes in the breathing zone. Sample in at the exclusion zone boundaries every 30 minutes. Continuously sample during each soil and groundwater sampling interval	Respirator to be used will be full-face piece respirator with organic vapor/P 100 combination cartridges. The level for respirator use will be 5ppm on the PID/FID in the breathing zone sustained for two minutes.	25 ppm on the PID/FID in the breathing zone sustained for two minutes.
Oxygen/LEL	Combustible Gas Meter	Soil boring and management of IDW contaminated soil.	From start of disruption of potentially contaminated soil through removal of any contaminated soil.	< 19.5% use supplied air.	> 10% LEL
Temperature	Thermometer	All tasks when temperature is > 95°F.	Operate continuously during work at temperature > 95°F	Not Applicable	Take breaks in accordance with ACGIH TLV guidance.

13.0 Detailed List of Steps with Hazard Assessments and Precautions

Traffic Control Plan:

- *Saw horses, oversized cones and signs will be used as necessary to cordon off the work site. Workers will wear reflective vests and work only during day light hours. City officials will be informed and required permits (if any) will be obtained.*
- *Company vehicles will be parked as far away from traffic as possible.*
- *All drill rig movements will be coordinated with the knowledge of the facility manager (or his representative), all field personnel will be informed of drilling rig movements.*

Work on this project will be conducted during the hours: 6:00 a.m. to 7:00 p.m.

Shutoff valves/switches for utilities and products: The facility manager (or his representative) will be informed of any investigative activities being performed at the site, if necessary plant personnel will be responsible for facility utilities and products. Public utilities will be contacted if the need arises to shut off public utilities.

Task 1. The following section describes drilling and sampling activities.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Clear drilling locations. The drilling contractor will contact JULIE before drilling. Facility representatives will be present to help confirm the location of private utilities.	None	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience.	● Reference Utility Clearance Log (**Attachment 7**). ● Coordinate with Site Manger (or designee) to minimize potential conflicts. ● Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. ● Mark out the proposed borehole locations. ● Call J.U.L.I.E. for public line location clearance and get list of utilities being contacted. If necessary, coordinate private line locator for private property. ● Develop a traffic control plan with the client and local agencies as applicable. Plan may include use of cones, barrier tape, jersey barriers, etc (See Traffic Control Plan)
Obtain drill rig maintenance records from driller prior to drilling		Drill rig may not be maintained properly, which can cause the equipment to fail and cause an accident	● Call drilling company and obtain drill rig maintenance records prior to starting job. Verify that the maintenance records supplied are for the equipment brought to the site.
Mobilize with proper equipment/supplies for drilling.	Gather necessary PPE. Reflective vest for traffic, steel toed and shank shoes, hard hat, safety glasses with side shields, ear plugs/muffs, leather gloves for the non-chemical aspects of work; Chemical resistant apron for groundwater sampling aspects, full-face respirator with organic vapor cartridges, and other PPE as needed. Photo Ionization Detector (PID) increases of 10 ppm (in breathing zone) will trigger use of cartridges for organic vapor. Dry dusty conditions might necessitate the use of cartridges for particulate hazards. PPE will be properly disposed of when leaving the exclusion zone. Employees will don fresh PPE with every re-entrance into the exclusion zone.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment onsite.	● Start project with Production Safety Meeting (**Attachment 5**). ● Follow safe driving procedures. ● Employ safe lifting procedures. ● Make sure sub-contractors are aware of their responsibilities for labor, equipment and supplies. ● Review permit conditions.
Visually clear proposed drilling locations.		Underground and overhead installations.	● Complete Pre-Mobilization section of Utility Clearance Log (**Attachment 7**) and adjust drilling locations as necessary.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Set up necessary traffic control.	Wear reflective traffic vests.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	● Use buddy system for placing traffic control. Implement traffic control plan such as setting out cones and tape defining safety area.
Assist with set up of rig.	Wear reflective vest for traffic, steel toed and shank shoes, hard hat, safety glasses with side shields, leather gloves.	Vehicle accident during rig movement. Damage caused by rig while accessing set-up location. Contact with overhead installations. Soft terrain. Rig movement.	● All staff should know where the kill switch is for the drilling rig. ● Verify clear pathway to drilling location and clearance for raising mast. ● Provide as-needed hand signals and guidance to driver to place rig. ● Visually inspect rig (fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition pressurized hosed secured with whip-checks or adequate substitute, jacks in good conditon?). ● If necessary, use wooden blocks under jacks to spread load. Chock wheels.
Set up exclusion zone(s) and work stations (drilling and logging/sample collection).		Struck by vehicle during set up. Slip/fall hazards.	● Implement exclusion zone set-up. Set up work stations with clear walking paths to and from rig. Use safety tape and cone.
Clear upper few feet of direct push location using post-hole digger, hand auger or tile probe.	Don required PPE as appropriate: steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work. Wear chemical resistant gloves during handling of soil.	Back strain, exposure to chemical hazards, hitting an underground utility, repetitive motion.	● Have full-face respirator with organic vapor cartridges within 3-5 feet of work area, readily available. ● Initiate air quality monitoring in accordance with **Section 12**. ● Stand upwind to avoid exposure whenever possible. ● Use PID to track the airborne concentration of contaminants close to potential sources such as the core as it is being raised from the hole, the core is opened, etc. , if required ● Evaluate any soil samples inside a ziploc bag. ● Use proper lifting techniques and tools. ● Complete the Pre-Drilling section of the Borehole Clearance Review form.
Commence hand augering, post-hole digging or tile probing to 5'.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work. If you suspect that equipment is contaminated, wear chemical resistant gloves (Nitrile and latex gloves) during handling of soil.	Back strain, underground utilities.	● Avoid twisting back during the operation; Decontaminate equipment after use. A rinse water collection system will be constructed to collect the rinse water. The rinse water will be containerized and kept on-site in an isolated location util analytical results determine how it can be properly disposed of.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Commence drilling.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work.	Cross-contamination from previous hole. Back strain, heat or cold, eye injury, noise, exposure to chemical hazards, hitting an underground utility, trip and fall, equipment failure	• Decontaminate sampling after collecting a sample and decontaminate drilling equipment after each borehole. • Use proper lifting techniques. Monitor drilling progress. Keep work area clear of tripping or slipping hazards. Perform periodic visual inspections of drill rig.
Collect samples in accordance with sampling plan.	Wear full-face respirator with organic cartridges if needed. Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, chemical resistant gloves.	Cross-contamination, improper labeling or storage, exposure to site contaminants.	• Decontaminate sampling equipment between each sampling run. Label samples in accordance with sampling plan. • Evaluate any soil samples inside a Ziploc bag. DO NOT EVALUATE THE SAMPLE IN THE OPEN. THIS WILL AVOID UNNECESSARY EXPOSURE. • Keep samples stored in proper containers, at correct temperature, and away from work area. • Perform air monitoring as outlined in **Section 12**.
Store cuttings (if any) properly in accordance with site-specific requirements. The cuttings will be drummed or otherwise containerized and stored on-site in an isolated location until analytical results confirm whether or not they are hazardous. They will then be disposed of in an appropriate manner.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work. If you suspect contamination, wear chemical resistant gloves.	Exposure to public. Traffic hazard or obstruction/inconvenience to station operation. Improper storage or disposal.	• Have proper storage containment and labeling available onsite. Place materials in isolated location away from traffic and other site functions.
Backfill borehole.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work.	Improper grouting can lead to future vertical conduit for contaminant migration. Back strain, trip hazards, eye injury from splashing or release of pressurized grout. Unauthorized backfilling causes extra work.	• Mix grout to specification and completely fill the hole. In grassed areas, fill upper 3 feet with soil. • Use proper lifting techniques. • Keep work area clear of tripping hazards. • Verify presence or other authorization by required inspectors for grouting.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Develop well	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, chemical resistant gloves and apron.	Physical injury from mechanical failure or drill rig or air compressor. Trip hazard. Exposure to contaminants. Cross-contamination. Electric shock.	● Make sure equipment is in good working order and pressurized hoses are whip-checked. ● Have full face respirator with organic cartridges within 3-5 feet of working location for quick access. ● Keep work area orderly. ● Decontaminate all equipment going into well. ● Any generators must be equipped with GFCI circuit.
Gauge water levels and product thickness (where applicable) in wells.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, chemical resistant gloves and apron.	Back strain, inhalation or dermal exposure to chemical hazards, repetitive motion.	● Have full face respirator with organic cartridges within 3-5 feet of working location for quick access. ● Maintain safe distance from well head. ● Bend at knees, not at the waist.
Purge well(s) and collect purge water using disposable bailers. Dispose or store purge water (if any) onsite.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work. If you suspect that equipment is contaminated, wear chemical resistant gloves.	Cross-contamination. Back strain, inhalation or dermal exposure to chemical hazards, slip and fall. Spilling contaminated water. Improper storage or disposal.	● Decontaminate purging equipment between each sampling location ● Use proper lifting techniques. ● Use PPE and monitoring. ● Keep work area clear of tripping or slipping hazards. ● Store purge water in appropriate containers. ● Use proper equipment to transport water (pumps, drum dollies, etc.). ● Label storage containers properly, and locate in isolated area away from traffic and other site functions.
Collect groundwater samples in accordance with sampling plan.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, chemical resistant gloves and apron.	Cross-contamination. Back strain, inhalation or dermal exposure to chemical hazards, slip and fall. Improper labeling or storage, injury from broken sample bottle (cuts or acid burn).	● Decontaminate sampling equipment between each well (unless disposable). ● Use proper lifting techniques. ● Have full face respirator with organic cartridges within 3-5 feet of working location for quick access. ● Label samples in accordance with sampling plan. ● Keep samples stored in proper containers, at correct temperature, and away from work area. Handle bottles carefully.
Clean site/demobilize.	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work.	Traffic. Safety hazard left on site. Lifting hazards.	● Use buddy system as necessary to remove traffic control. Leave site clean of refuse and debris. Clearly mark/barricade any borings that need later topping off or curing. Notify site personnel of departure, final well locations and any cuttings/purge water left onsite. Use proper lifting techniques

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Package and deliver samples to lab.		Bottle breakage, back strain.	● Handle and pack bottle carefully (bubble wrap bags are helpful). Use proper lifting techniques.
General			
Keep SPSA card on you at all times. Use it frequently. *What can happen? What is the worst thing that can happen? Plan for it and carry out your plan.*			
Typical work	Steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, leather gloves for the non-chemical aspects of work. If you suspect that chemical exposure is possible, wear chemical resistant gloves, aprons, etc.	Weather related incidents: automobile accidents, slips and falls.	● Check weather reports daily. Project visits will not be performed during inclement weather. Sampling may be performed during light rain mist. Wear raincoats. ● Drive at speed limit or less as needed to keep safe distance from vehicle in front, avoid short stops.
Typical work.		Cold Stress.	● For temperatures below 40 ^{0}F, adequate insulating clothing must be worn. If the temperature is below 20 ^{0}F, workers will be allowed to enter a heated shelter at regular intervals. Warm, sweet drinks should be available. Coffee intake should be limited. ● No one should begin work or return to work from a heated shelter with wet clothes. Workers should be aware of signs of cold stress, such as heavy shivering, pain in fingers or toes, drowsiness or irritability. Onset of any of these signs are indications for immediate return to a heated shelter. ● Refer to ACGIH TLV Booklet for section on Cold Stress.
Typical work.		Heat Stress	● Discuss health effects and symptoms during daily production meetings. ● Drink water regularly, i.e., at least one cup every 20-30 minutes depending upon level of effort and PPE worn. ● Refer to ACGIH TLV booklet for heat stress guidance, especially regarding PPE, type of work and frequency of breaks. ● Breaks should be taken in an area cooler than the work area.
No eating, drinking, or smoking on-site. No contact lenses on-site. No facial hair that would interfere with respirator fit.			

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.			
❶ **Job Steps**	❷ **Personal Protective Equipment**	❸ **Potential Hazard**	❹ **Critical Actions**
A safety meeting will be held each day.			• Topics will always include the work scheduled for the day and restatement of the hazards and means to avoid them. Other topics may include sampling in general and advances in technology and how it may be applied to the project. Use **Attachment 5** for logging the topics discussed.

Task 2. The following table addresses the concerns of SVE Pilot Testing.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
Mobilize with proper equipment/supplies for drilling.	Gather necessary PPE. Reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, ear plugs/muffs, and leather gloves for the non-chemical aspects of work as necessary; Wear an air purifying respirator with combination organic vapor/HEPA P-100 cartridges, and other PPE as needed. (*Use a North 7600 series full face respirator or its equivalent. Best brand nitrile gloves or their equivalent. Howard Leight Max foam earplugs with an NRR of 33or their equivalent. Tyvek, poly coated chemical resistant suit or it's equivalent).*	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment onsite.	• Start project with Production Safety Meeting (**Attachment 5**). • Follow safe driving procedures. • Employ safe lifting procedures. • Make sure sub-contractors are aware of their responsibilities for labor, equipment and supplies. • Review permit conditions. • Develop a traffic control plan with the client and local agencies as applicable. Plan may include use of cones, barrier tape, jersey barriers, etc.
Set up necessary traffic control.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	• Use buddy system for placing traffic control. Implement traffic control plan such as setting out cones and tape defining safety area. • Adhere to approved Traffic Control Plans when working in roadways. • **It is the responsibility of the SHSO to annotate the Site Plan with the Traffic Control configuration if a separate plan is not available.**
Unload and set up test equipment.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Struck by vehicle. Trip hazards. Accident when maneuvering equipment. Lifting hazard. Electrical hazard. Adverse impacts to station sales.	• Place equipment away from pump islands or other high traffic areas. • Store hoses, electrical cords neatly and protect with traffic control equipment (cones, barricades, etc). • Provide as-needed hand signals and guidance to driver when placing testing equipment trailers or other large equipment. • Visually inspect equipment (fire extinguisher on board/available on site, no damaged hoses or electrical lines, pressurized hoses secured with whip-checks or adequate substitute, all vapor and/or water hoses firmly connected, equipment grounded). • Use proper lifting techniques. • Use GFCI on generators or other electrical equipment and inspect cords.
Set up exclusion zone(s) and workstations.	Wear reflective vest for traffic, steel toed and shank shoes, hardhat, safety glasses with side shields, and leather gloves as necessary.	Struck by vehicle during set up. Slip/fall hazards.	• Implement exclusion zone set-up. • **It is the responsibility of the SHSO to annotate the Site Plan with the exclusion zone configuration.** • Set up workstations with clear walking paths to and from rig.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Personal Protective Equipment	❸ Potential Hazard	❹ Critical Actions
			• Use safety tape and cones.
Gauge water levels and product thickness (where applicable).	Don required PPE as appropriate for this step: steel toed and shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary. Wear chemical resistant gloves during handling of soil. Wear an air-purifying respirator combination organic vapor/HEPA P-100 cartridges if necessary.	Back strain, inhalation or dermal exposure to chemical hazards. Repetitive motion. Traffic hazards.	• Conduct air quality monitoring. • Have appropriate respirator with combination organic vapor/HEPA P-100 cartridges within 3 – 5 feet of working location, readily available. • Maintain safe distance from wellhead. • Bend at the knees, not at the waist. • Decontaminate equipment between each measurement. Decontamination will be accomplished by an Alconox wash with tap water rinse followed by a second distilled or de-ionized water rinse. Collect rinse water in 5 gallon buckets and transfer to 55-gallon drums and stage drums
Commence testing.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary. Wear appropriate respirator with combination organic vapor/HEPAP-100 cartridges if needed. Wear chemical resistant gloves and suit as needed.	Explosion or fire. Trip hazards. Unauthorized release of contaminants. Exposure to contaminants (inhalation, dermal contact). Noise. Electrical hazards.	• Follow equipment-specific operation instructions. • Monitor influent vapor and oxygen • Have appropriate respirator with combination organic vapor/HEPA P-100 cartridges within 3 – 5 feet of working location, readily available. • Keep work area tidy and free of loose equipment. • Monitor treatment system and collect data to ensure discharge is within permit parameters and capacity of any storage containers (concentrations and flow rates). • Use GFCI and inspect cords.
Collect samples in accordance with sampling plan	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary. If you suspect that equipment is contaminated, wear chemical resistant gloves. Wear appropriate respirator with combination organic vapor/HEPA P-100 cartridges if needed.	Cross-contamination, improper sample labeling or storage, exposure to site contaminants. Repetitive motion. Body position.	• Label samples in accordance with sampling plan. • Keep samples stored in proper containers, at correct temperature, and away from work area. • Perform air monitoring in accordance with **Attachment 4**. • Have appropriate respirator with combination organic vapor/HEPA P-100 cartridges within 3 – 5 feet of working location, readily available.

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.			
❶ Job Steps	**❷ Personal Protective Equipment**	**❸ Potential Hazard**	**❹ Critical Actions**
Store waste (water, carbon canisters, etc.) in accordance with site-specific requirements.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary.	Back strain. Traffic hazard. Improper storage or disposal. If disposing through onsite treatment system, damage or injury from improper use of equipment.	● Use proper equipment to transport waste containers (pumps, drum dollies, etc.). ● Have proper storage containment and labeling available onsite. Label waste in accordance with local, county, state, and federal regulations. ● Place materials in isolated location away from traffic and other site functions. . ● Coordinate proper disposal offsite (where applicable). ● Review instructions for use of onsite treatment systems.
Clean site/demobilize.	Steel toed and shank shoes, hardhat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for the non-chemical aspects of work as necessary.	Traffic. Safety hazard left on site. Lifting hazards.	● Use buddy system as necessary to remove traffic control. ● Leave site clean of refuse and debris. ● Clearly mark/barricade any borings that need later topping off or curing. ● Notify site personnel of departure, final well locations and any cuttings/purge water left onsite. ● Use proper lifting techniques
Supervisor/HSC must confirm all boreholes are closed, filled in and/or capped.		Possible injuries and damage to property due to stepping into or driving over the well.	● Visually inspect each and every borehole.
Package and deliver samples to lab.		Bottle breakage, back strain.	● Handle and pack bottle carefully (bubble wrap bags are helpful). Use proper lifting techniques.

14.0 Waste Characteristics

A. Waste Generation (Type(s)/Quantities Expected):

Anticipated (YES/NO): YES

Types: Liquid X Solid X Sludge _____ Other (describe)

Quantity (Expected Volume): +500 gallons liquids; +10 tons soil

B. Characteristics (Expected):

Corrosive _____ Flammable/Ignitable _____ Radioactive _____ Toxic X

Reactive _____ Unknown

Other (specify) non-hazardous

C. Packaging requirements for waste material (Expected):

- DOT-approved drums
- Lined roll-off container(s)
- Plastic tote tank(s)

D. Disposal and/or Treatment Methods Proposed:

All wastes will be sampled and analyzed. Results of the analysis will determine how and where impacted materials may be disposed of. All materials will be disposed of or treated in accordance with federal, state and local regulations as selected and arranged by **SECOR**/client. The client will be responsible for signing the manifest. Solids (soil) and liquids (water and decontamination fluids) are anticipated to be managed as non-hazardous special wastes.

Attachment 1

SITE LOCATION MAP

Attachment 2

PROPOSED BORING / MONITORING WELL MAP

Attachment 3

Incident Investigation / Near-Miss Investigation Report

Consider using the Root Cause Analysis PROACTIVELY to avoid incidents and near misses.

INCIDENT TYPE (To be filled in by Human Resources Department) | **Date of Incident:**

☐ Fatality	☐ Industrial Non-Recordable	☐ Spill/Leak	☐ General Liability
☐ Lost Workday	☐ Non-Industrial	☐ Product Integrity	☐ Criminal Activity
☐ LW Restricted Duty	☐ Off-the-Job Injury	☐ Equipment	☐ Notice of Violation
☐ OSHA Medical or Illness w/o LW	☐ MVA	☐ Business Interruption	☐ Near Miss
☐ First Aid	☐ Fire		

The investigation of the incident by the employee's supervisor or Site Health and Safety Officer must begin immediately. Human Resources and Corporate Health & Safety must be informed immediately and in no case longer than 24 hours after the incident. This report must be completed as soon as possible. It must be reviewed and signed by the Principal and e-mailed or faxed to the Vice President of Human Resources, and Corporate Health and Safety (contact info. at end), even if employee is not available to review and sign. Employee or employee's doctor must submit a copy of the doctor's report to Human Resources within 24 hours of the initial exam and any subsequent exams. Contact information at end of report.

EMPLOYER (Include sub-contractors, or other employers on our sites)

Company Name:

Work Location Address where incident occurred: | Project Name:

EMPLOYEE

Name: | Birthdate:

Employment Status: ☐ Full-Time ☐ Part-Time ☐ Hourly-As-Needed | How long in present job?

INJURY OR ILLNESS INFO

Where did incident / near miss occur? (number, street, city, state, zip):

County: | On Employer's premises? ☐ Yes ☐ No

Specific activity the employee was engaged in when the incident / near miss occurred:

All equipment, materials, or chemicals the employee was using when the incident / near miss occurred (e.g., the machine employee struck against or which struck employee; the vapor inhaled or material swallowed; what the employee was lifting, pulling, etc.):

Describe the specific injury or illness (e.g., cut, strain, fracture, skin rash, etc.):

Body part(s) affected (e.g., back, left wrist, right eye, etc.):

Name and address of Health Care Provider (e.g., physician or clinic): | Phone No.:

If hospitalized, name and address of hospital: | Phone No.:

Date of injury or onset of illness(MM/DD/YYYY) / / | Time of event or exposure: ☐ AM ☐ PM

Time employee began work: ☐ AM ☐ PM | Did employee lose at least one full shift's work? ☐ No ☐ Yes, 1st date absent (MM/DD/YYYY) / /

Has employee returned to work? ☐ Regular work ☐ Restricted work ☐ No, still off work ☐ Yes, date returned (MM/DD/YYYY) / /

Did employee die? ☐ No ☐ Yes, date (MM/DD/YYYY) / /

Date employer notified of incident / near miss: (MM/DD/YYYY) / /

To whom reported:

Other workers injured/made ill in this event? ☐ Yes ☐ No

Description of Incident / Near Miss: (Describe fully the incident / near miss events. Tell exactly what happened and how it happened so that someone could recreate the incident or near miss. Use extra paper if you need.)

Motor Vehicle Accident (MVA) - ***You may also have to fill out an insurance form-Call Corporate Contracts Dept. (425) 372-1600***			Professional Driver? ☐ Yes ☐ No
Total Years Driving:	Company Vehicle? ☐ Yes ☐ No	Operation Type:	Accident Situation:
Truck Transportation:	Years with Carrier:	Vehicle Type:	Equipment #:
Accident Location (street, city, state):			
Hazardous Material? ☐ Yes ☐ No	Reportable? ☐ Yes ☐ No	No. of Vehicles Towed	No. of Injuries: / No. of Fatalities:

Spill/Leak/Product Quality

Product Name		Quantity		Product 2 Name		Quantity		Product 3 Name		Quantity	
Agency Notifications											
Estimated Cost of Incident	$										

Third Party Incidents

Name of Owner		Address		Telephone	
Description of Damage:					
Witness Name		Address		Telephone	
Witness Name		Address		Telephone	

 # Root Cause and Contributing Factors: Conclusion (Describe in Detail Why Incident / Near Miss Occurred)

1	
2	
3	
4	
5	

Root Cause(s) Analysis (RCA) - Use proactively to avoid Incidents and Near Misses.

1. Lack of skill or knowledge
2. Lack of or inadequate operational procedures or work standards
3. Inadequate communication of expectations regarding procedures or work standards
4. Inadequate tools or equipment
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks there is no personal benefit to always doing the job according to standards
8. Uncontrollable

#	RCA #	Solution(s): How to Prevent Incident / Near Miss From Reoccurring	Person Responsible	Due Date	Closure Date

Investigation Team Members

Name	Job Title	Date

Results of Solution Verification and Validation - after implementing solutions to make sure they work.

Reviewed By

Name	Job Title	Date
	First Line Supervisor	
	Other (name)	

Acknowledgment Signatures for Injuries/Illnesses Only		
Title	**Signature**	**Date**
Director of HR: Marguerite Shuffelton		
Director of IH/H&S: Philip Platcow		
NAM:		
Regional Managers:		
Frank Aceto		
Oren Gottlieb		
Jim Grasty		
Russ Hamblin		
Sr. Vice President: David Childs		
Chief Operating Officer: Steve Locke		
CEO SEACOR Canada: Faramarz Bogzaran		
Chief Executive Officer: Jim Vais		

Contact information.

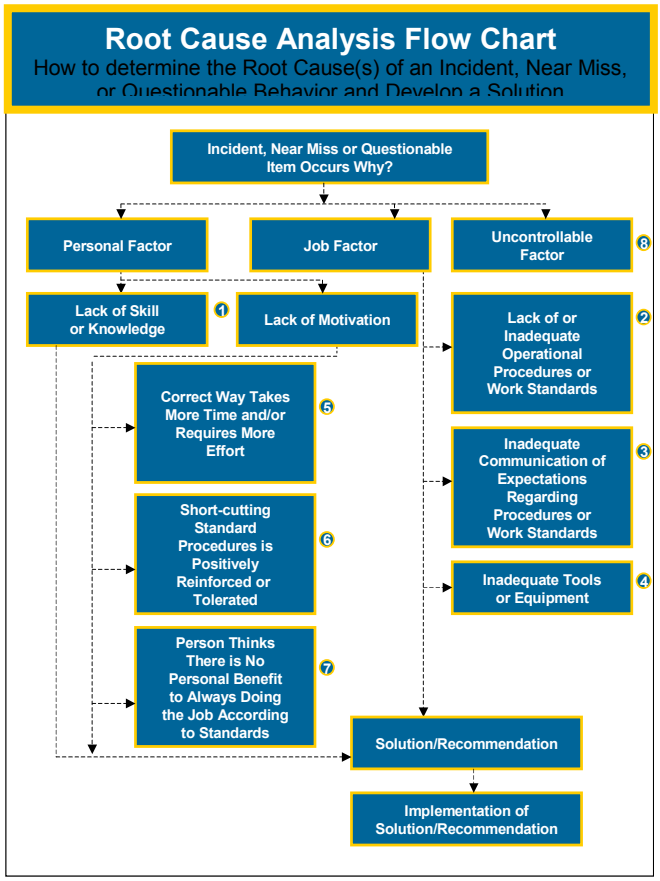
Call Human Resources and Corporate H&S Immediately.

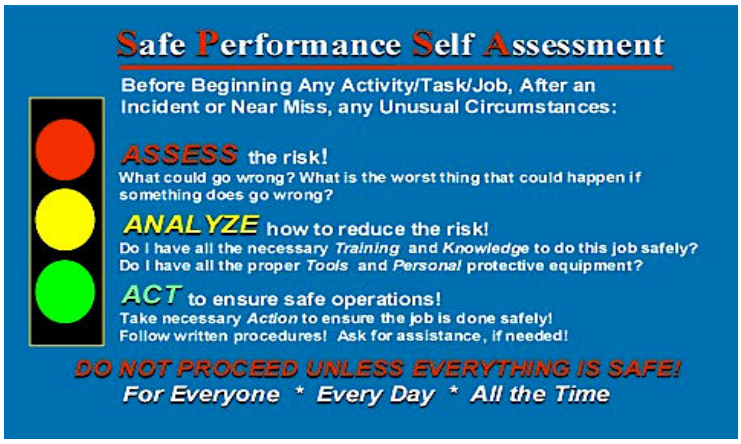
1. HR: Mary Harris Phone: 619-718-9429, Fax: 619-296-2006, E-Mail: mharris@secor.com. After hours or weekends, please call Marguerite Shuffelton Cell: 619-925-8365 or Home 760-749-9603.

2. Health & Safety: Call Philip Platcow and Michael Philipp
   Philip Platcow: 617-232-7355; fax 801-340-8657 Email: pplatcow@secor.com. After hours or weekends, cell: 617-899-5403 or Home 617-739-1224

3. and Mike Philipp 619-296-6195; fax 619-296-6199 Email: mphilipp@secor.com.

C***ontact and fax report to all three above.***


Root Cause Analysis Flow Chart
How to determine the Root Cause(s) of an Incident, Near Miss, or Questionable Behavior and Develop a Solution
Incident, Near Miss or Questionable Item Occurs Why?
Personal Factor
Job Factor
Uncontrollable Factor
8
Lack of Skill or Knowledge
1
Lack of Motivation
Lack of or Inadequate Operational Procedures or Work Standards
2
Correct Way Takes More Time and/or Requires More Effort
5
Inadequate Communication of Expectations Regarding Procedures or Work Standards
3
Short-cutting Standard Procedures is Positively Reinforced or Tolerated
6
Inadequate Tools or Equipment
4
Person Thinks There is No Personal Benefit to Always Doing the Job According to Standards
7
Solution/Recommendation
Implementation of Solution/Recommendation


Safe Performance Self Assessment
Before Beginning Any Activity/Task/Job, After an Incident or Near Miss, any Unusual Circumstances:
ASSESS the risk!
What could go wrong? What is the worst thing that could happen if something does go wrong?
ANALYZE how to reduce the risk!
Do I have all the necessary Training and Knowledge to do this job safely?
Do I have all the proper Tools and Personal protective equipment?
ACT to ensure safe operations!
Take necessary Action to ensure the job is done safely!
Follow written procedures! Ask for assistance, if needed!
DO NOT PROCEED UNLESS EVERYTHING IS SAFE!
For Everyone * Every Day * All the Time

Attachment 4a
SECOR
Action Level Table For Chemical Monitoring

(Add or delete contaminant from the following table as appropriate for the site).

- ***The level for respirator use indicated below is that concentration at which a respirator must be put on. It does not require the job to stop. The respirator is a tool to be used while determining why the exposure has reached that concentration. Take action to reduce the concentration by engineering controls such as water mist, spray foam, plastic cover, etc.***
- ***The level for work stoppage indicated below is that concentration at which work on the job must stop. Determine why exposures have reached that concentration and how they can be reduced. Site evacuation is not necessary at this level. It does not mean that stopping operations should reduce the likelihood that the concentration will continue to rise. Implement engineering controls to reduce the concentration, then resume work.***
- ***These values can be modified with particular knowledge of contaminants and site conditions. Contact Director of Industrial Hygiene & Health and Safety, Philip Platcow to discuss (617) 232-7355.***

CHEMICAL (OR CLASS)	MONITORING EQUIPMENT	TASK	MONITORING FREQUENCY/ LOCATION	LEVEL FOR RESPIRATOR USE	LEVEL FOR WORK STOPPAGE
Volatile Organic Vapors	FID/PID as appropriate for chemicals of concern. Read manual to determine.	From start of mobilization to completion and demobilization	Sampling should be continuous during the project while disturbing contaminated soil. At least every 15 minutes in the breathing zone. Sample in at the exclusion zone boundaries every 30 minutes.	20 ppm above background sustained in breathing zone for 2 minuteson FID/PID, don respirator.	50 ppm above background in breathing zone.

Attachment 4b
AIR MONITORING EQUIPMENT CALIBRATION/CHECK LOG

DATE	INSTRUMENT/ MODEL NO.	SERIAL NO.	BATTERY CHECK OK?	ZERO ADJUST OK?	CALIBRATION GAS (PPM)	READING (PPM)	LEAK CHECK	PERFORMED BY	COMMENTS

Attachment 4c
AIR MONITORING LOG

DATE	TIME	LOCATION	SOURCE/AREA/ BREATHING ZONE	INSTRUMENT	CONCENTRATION/UNITS	SAMPLED BY

* Submit copies of logs to Director of Industrial Hygiene & Health and Safety, Philip A. Platcow, CIH within 24 hours, if a PEL is exceeded, or personal protective equipment level is upgraded at (617) 232-7355 or via email at pplatcow@secor.com

Attachment 5

DAILY PRODUCTION HEALTH AND SAFETY BRIEFING LOG

Date:	
Start Time:	
Issues Discussed:	
1.	
2.	
3.	
4.	
5.	
Attendees	
Print Name	**Signature**
Meeting Conducted by:	
Name (Site Health and Safety Coordinator)	**Signature**

TOPICS WHICH MAY BE DISCUSSED DURING A DAILY PRODUCTION H&S MEETING

- ❑ Emergency response plan, emergency vehicle (full of fuel) and muster point
- ❑ Route to medical aid (hospital or other facility)
- ❑ Work hours, is night work planned?
- ❑ Hand signals around heavy equipment
- ❑ Traffic control
- ❑ Pertinent Legislation and Regulations
- ❑ Above and below ground utilities (energized or de-energized)
- ❑ Material Data Sheets (MSDS)
- ❑ To who, what, why, and when to report an incident
- ❑ Fire extinguisher and first aid kit locations
- ❑ Excavations, trenching sloping and shoring
- ❑ Personal protective equipment (PPE) and training
- ❑ Safety equipment and training
- ❑ Emergency telephone and telephone numbers (may not be 911)
- ❑ Eye wash stations and washroom locations
- ❑ Energy lock-out/tag-out procedures. Location of “kill Switches” etc.
- ❑ Weather restrictions
- ❑ Site security. Site hazards. Is special waste present.
- ❑ Traffic and people movements
- ❑ Working around machinery (both static and mobile)
- ❑ Sources of ignition, static electricity etc.
- ❑ Stings, bites, large animals and other naturally related injuries
- ❑ Working above grade
- ❑ Working at isolated sites
- ❑ Decontamination procedures (both personnel and equipment)
- ❑ Falls, trips, sprains and lifting injuries (how to prevent)
- ❑ Right to refuse unsafe work
- ❑ Adjacent property issues (residence, business, school, day care center)

Attachment 6

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All *SECOR* and subcontractor personnel must sign.)

"Zero Tolerance for Incident of ANY Kind. Work Together to Ensure A SAFE and High Quality Project

This Health and Safety Plan has been developed for the purpose of informing SECOR employees of the hazards they are likely to encounter on the project site, and the precautions they should take to avoid those hazards. Sub-contractors and other contractors at the site must develop their own Health and Safety Plan to address the hazards faced by their own employees. SECOR has provided a copy of this Plan to contractors in the interest of full disclosure of hazards of which we may be aware, and to satisfy SECOR's responsibilities under the OSHA Hazard Communication standard. Similarly, contractors are required to inform SECOR of any hazards of which they are aware or that the contractor's work on site might possibly pose to SECOR employees, including (but not limited to) the Material Safety Data Sheets for chemicals the contractor may bring onsite. This plan should NOT be understood by contractors to provide information on all of the hazards to which a contractor's employees may be exposed as a result of their work.

I further certify that I have received training and medical surveillance according to the Health and Safety Plan and the Occupational Safety and Health Administration Standard on Hazardous Waste Operations and Emergency Response (29 CFR 1910.120):

All parties conducting site activities are required to coordinate their activities and practices with the project Site Health and Safety Officer. Your signature below confirms that you have read and understand the hazards discussed in this Plan, and understand that sub-contractors and contractors must develop their own Health and Safety Plan for their employees. You also understand you could be prohibited by the Site Health and Safety Officer or other *SECOR* personnel from working on this project for not complying with any aspect of this Health and Safety Plan.

Name	Title	Signature	Company	Date

Attachment 7
UTILITY CLEARANCE LOGS

Project: _____

Location: _____ Date: _____

Instructions. This checklist has to be completed by *a SECOR* staff member as a safety measure to insure that all underground utility lines, other underground structures as well as above-ground power lines are clearly marked out in the area selected for boring or excavation. **DRILLING OR EXCAVATION WORK MAY NOT PROCEED UNTIL J.U.L.I.E. HAS BEEN CONTACTED, FACILITY OPERATORS HAVE LOCATED UTILITIES WITHIN THE FACILITY, UTILITIES AND STRUCTURES ARE MARKED, AND THIS CHECKLIST HAS BEEN COMPLETED**. As a final measure to prevent hitting buried utilities during drilling, field personnel must clear the potential drilling location with a hand auger or field tile probe before commencing drilling.

Assignment of Responsibility. *SECOR* is responsible for having underground utilities and structures located and marked. The utility companies themselves should mark out the utility lines.

Drilling or Excavation Sites. Have available onsite a map of the property showing the drilling or excavation sites. If sites are widely separated, attach several map(s) indicating the area(s) checked for underground utilities or underground structures and the location of above-ground power lines.

Utilities and Structures

TYPE	NOT PRESENT	PRESENT	HOW MARKED[1]
Petroleum products line			
Natural gas line			
Water line			
Sewer line			
Storm drain			
Telephone cable			
Electric power line			
Product tank			
Septic tank/drain field			
Other			

[1]Flags, paint on pavement, wooden stakes, etc.

Client Approval _____
(with attached map) NAME COMPANY PHONE

Name and affiliation of person who marked out underground lines or structures.

_____
NAME COMPANY PHONE

SECOR International Incorporated (SECOR)

Field Team Leader _____ Date Completed _____

SUBSURFACE CLEARANCE REVIEW
(To Be Used For Invasive Work)

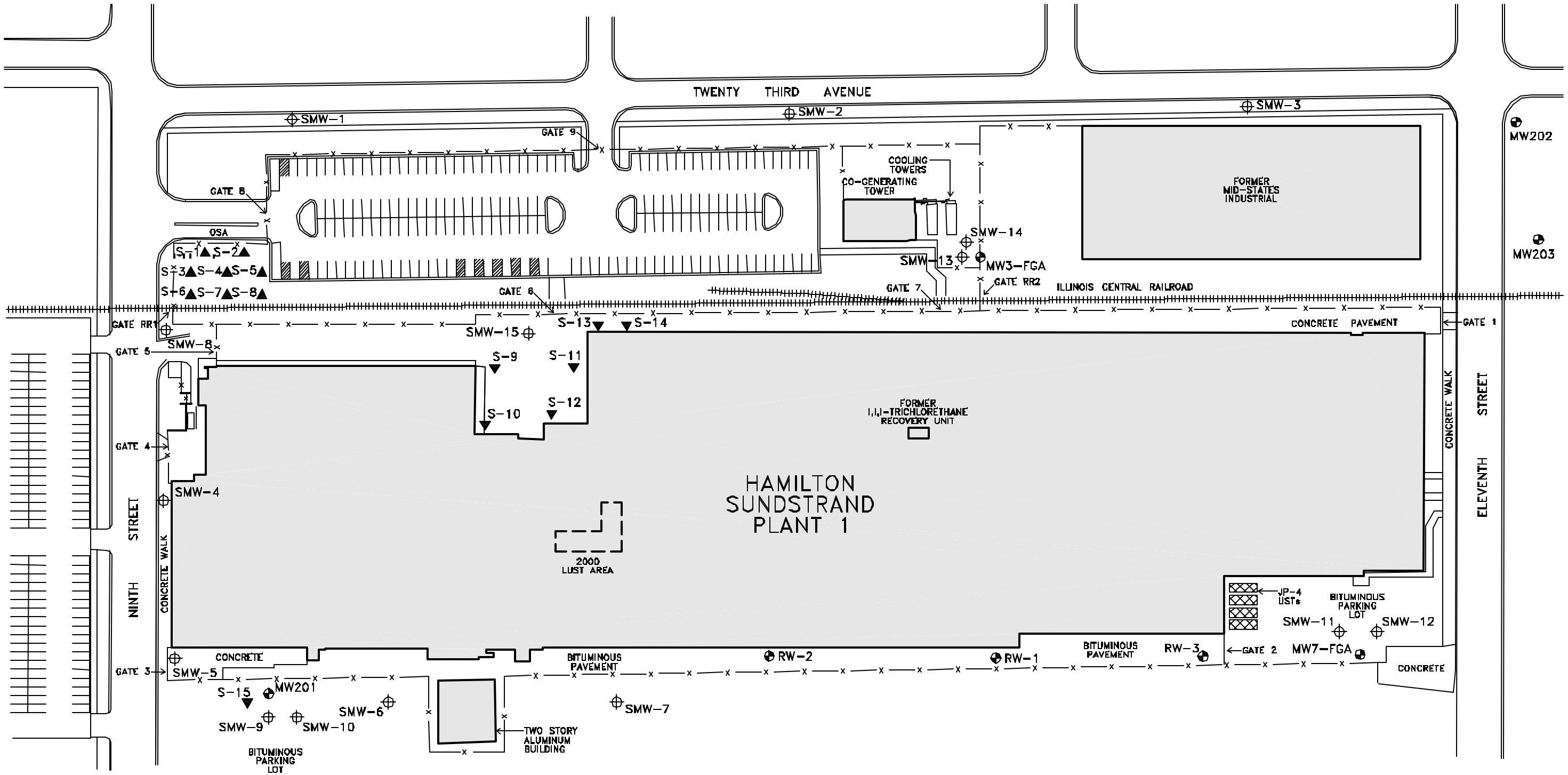
Client Site #: _____ Consultant Project #: _____ Date: _____

Borehole #s Reviewed: _____ Clearance Performed by: _____
(Consultant Rep)

Yes	No	Pre-Mobilization
❑	❑	1. Is a scaled site plan, map or drawing showing the proposed borehole locations attached to this form?
❑	❑	2. Does each borehole location allow for clear entry and exit, adequate workspace, and a clear path for raising the mast and operating the drill rig and all support equipment?
❑	❑	3. Are all of the proposed borehole locations and associated areas of pavement cutting at least 3 feet from any subsurface utilities shown on client's building plans? PM check here ❑ if plans not provided by client (therefore not applicable to this job).
❑	❑	4. Are all of the proposed borehole locations and associated areas of pavement cutting at least 3 feet from any subsurface utilities shown on public right-of-way street improvement or other public property plan or site map? PM check here ❑ if not applicable to this job.
❑	❑	5. Has the Facility Manager indicated no knowledge of any subsurface utilities within 3 feet of the proposed borehole locations? (Review locations with the Facility Manager).
❑	❑	6. Are all of the proposed borehole locations and associated areas of pavement cutting at least 3 feet from any subsurface utilities identified during a geophysical survey? PM to check here ☑ if not applicable to this job.
❑	❑	7. Have all Utility Locating Service providers notified by the public line locator marked out their facilities in the vicinity of the borehole locations or otherwise notified us that they do not have any facilities near the proposed borehole locations?
❑	❑	8. Are all proposed borehole locations and associated areas of pavement cutting at least 3 feet from a visual line connecting two similar looking manhole covers?
❑	❑	9. Are all proposed borehole locations and associated areas of pavement cutting at least 3 feet from a visual line perpendicular to the street from the water, gas, and electrical meters?
❑	❑	10. Are all proposed boring locations and associated areas of pavement cutting clear of pavement joints, curbs, crash posts, or other engineered structures?
❑	❑	11. Does the pavement lack signs of previous excavation (e.g. no pavement subsidence, no differences in pavement texture or relief, no pavement patching)? If there are signs, determine the purpose of the previous excavation and act accordingly.
❑	❑	12. Before drilling have you hand dug a hole to 5 feet below grade, if possible, or cleared the hole with a tile probe or magnetometer?
❑	❑	13. Does the soil you encountered in the hand-dug hole appear to be native material (i.e. free of clean gravel, clean sand, aggregate base [gravelly sand with ~10% fines], or other non-native looking material)?

DO NOT DRILL if you answered "NO" to any of the above questions.

- Document the reason for a "NO" answer on the back of this form.
- Contact your supervisor for instructions and document instructed actions and results of actions on the back of this form.



LEGEND:

- EXISTING MONITORING WELL
- FENCELINE
- PROPOSED SOIL BORING
- PROPOSED SOIL BORING/MONITORING WELL

NORTH

0 20 50 100
SCALE IN FEET

DESIGNED BY:	MGD
DRAWN BY:	GLH
APPROVED BY:	MGD
DATE:	2-12-03

SECOR

SITE CONFIGURATION MAP
HAMILTON SUNDSTRAND
AREA 9/10
ROCKFORD, ILLINOIS

JOB NO. 13UN.03001.00 ATTACHMENT 2

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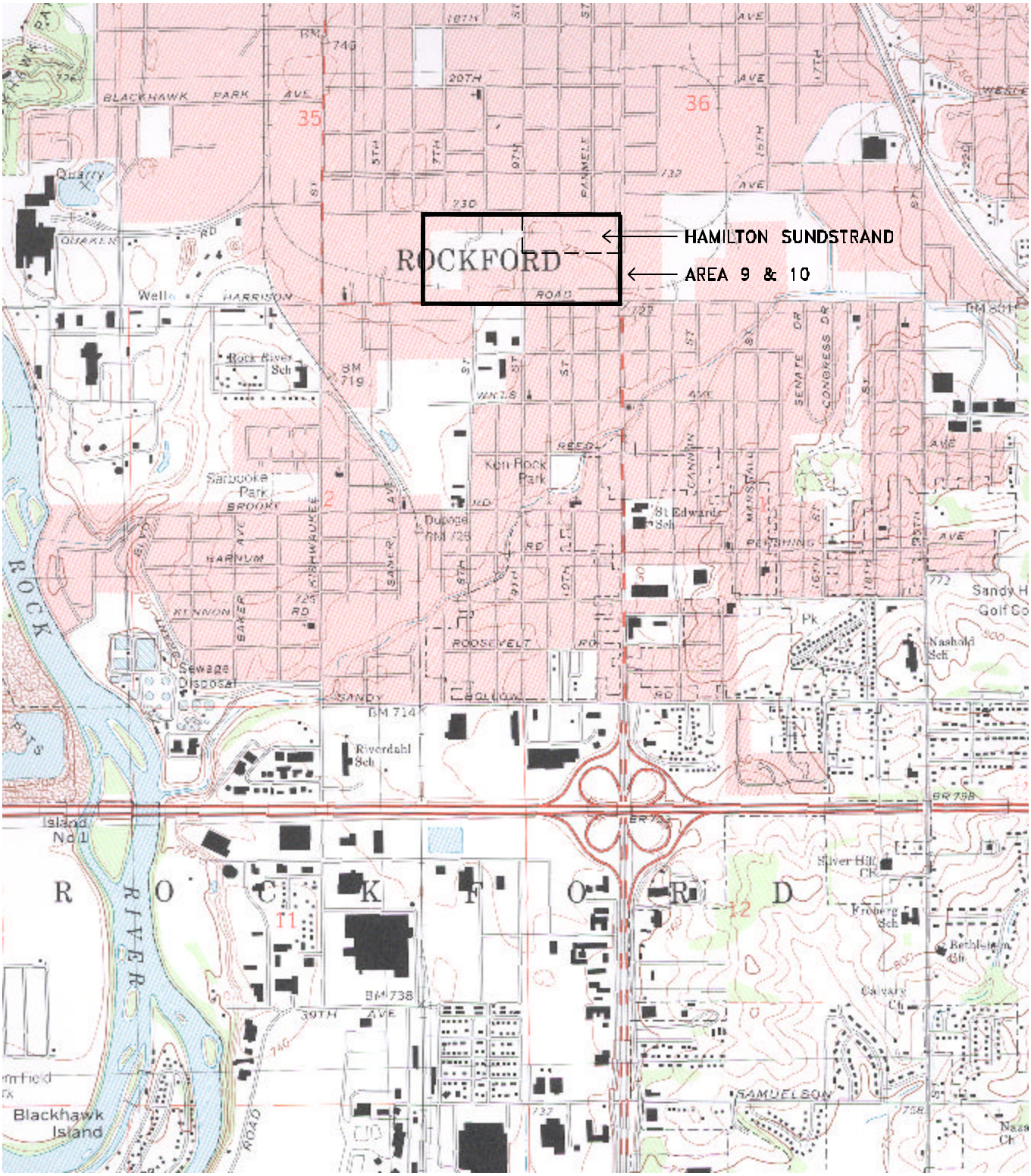

0 1000 2000 3000 4000 5000

SCALE IN FEET

NORTH

REFERENCE: USGS 7.5 MINUTE QUADRANGLE: ROCKFORD SOUTH, IL

DESIGNED BY: GLH	SECOR	SITE LOCATION MAP
DRAWN BY: GLH		HAMILTON SUNDSTRAND AREA 9/10 ROCKFORD, ILLINOIS
APPROVED BY:		
DATE: 3-18-03		JOB NO. 13UN.03001.00 ATTACHMENT 1

S:\PROJECTS\013 lombard projects\13UN.03072.00 Rockford\secor rd\rd healthsafety plan 2\061 attachment 1.dwg ch 1-28-03