Terracon

SAFETY AND HEALTH PLAN

ELGIN SALVAGE YARD JEFFERSON STREET SITE
ELGIN, ILLINOIS
Terracon Project # 11077052
July 10, 2009

1.0 APPLICABILITY

This Safety and Health (SHP) will govern the activities of Terracon personnel and subcontractors engaged in site investigation and remedial observation activities at the Elgin Salvage Jefferson Street site in Elgin, Illinois. The purpose of this SHP is to inform site personnel of chemical and physical hazards present at the project site and to establish work practices which will be used to control exposure to site contaminants or personal injuries during the project. All Terracon personnel are expected to abide by the safety and health protocols and procedures contained in this document, and to sign the Acknowledgment of Instruction page prior to beginning site activities.

2.0 SAFETY AND HEALTH ADMINISTRATION

The Project Manager will be responsible for instructing field personnel that work be performed in accordance with the safety and health provisions contained in this safety and health plan (SHP). The designated Site Safety and Health Officer (SSO) will monitor compliance with this SHP during field activities. All field team members engaged in project activities will be required to sign the SHP "Acknowledgment of Instruction" form. The forms will be maintained on site by the SSO. The SSO will ensure that a copy of this SHP is available on site for the duration of project activities. The SSO will maintain the SHP in the support vehicle or the project command center.

The following individuals will be responsible for implementation and enforcement of the SHP:

TITLE	NAME	PHONE
Project Manager:	John M. Nardozzi, P.E.	630-717-4263
Project Safety and Health Manager:	Garett Hintz	630-717-4263
Site Safety and Health Officer:	Mark Wilson	630-717-4263
Terracon Task Leader(s):	Mark Wilson	630-717-4263

If hazardous conditions develop during the course of project activity, the SSO in conjunction with the Terracon Safety and Health Manager, will coordinate actions required to safeguard site personnel and members of the general public. Additional safety measures will be verbally communicated to all project personnel, recorded in writing and appended to this SHP.

Terracon and task leaders of sub-contractors to Terracon (if any) will be responsible for:

- Providing subordinate personnel a copy of this Plan, and briefing them on its content.
- Enforcing the applicable provisions of this Plan.
- Inspecting and maintaining equipment in compliance with applicable federal, state or local safety regulations.
- Enforcement of corrective actions.
- Investigation of accidents or injuries.
- Properly covering or barricading trenches/excavations which must remain open overnight or during prolonged absences of work crews.

3.0 MEDICAL SURVEILLANCE REQUIREMENTS

All Terracon personnel and subcontractors participating in this project shall be enrolled in a health monitoring program in accordance with the provisions of OSHA 29 CFR 1910.120 and 1910.134. Each project participant shall be certified by a Doctor of Medicine as fit for respirator and semi-permeable/impermeable protective equipment use. All personnel shall have received an environmental physical examination within one year prior to the start of project activities. Physical examinations will consist of the following services:

--Comprehensive personal, family and environmental exposure history.
--Physical exam by an M.D. Board Certified in Occupational Medicine.
--Chest X-ray (P/A only).
--Pulmonary Function (FVC, FEV1, other as needed).
--Resting EKG.
--CBC with differential and general urinalysis with microscopic.
--Visual acuity and audiometry per OSHA 29 CFR 1910.95.
--Blood Chemistry (SMAC 24).

A report of all medical findings will be provided to the employee. Medical surveillance records will be maintained by the Terracon Corporate Safety and Health Manager. Certificates of Medical Examination for all project personnel will be maintained by the S&H Manager in the Terracon Corporate Office and/or by the SSO in the project command center or support vehicle.

At the discretion of the Terracon consulting physician, an "exit" physical examination consisting of the above services will be conducted at the completion of project activities or upon termination of a project participant. Follow-up medical examinations will also be provided in the event of job site injury or unprotected exposure to contaminants in excess of eight-hour time weighted average permissible exposure limits.

4.0 EMPLOYEE TRAINING REQUIREMENTS

All Terracon personnel and subcontractors must have completed 40-hour Hazardous Waste Operations Training and at least three days of supervised field activity per requirements of OSHA 29 CFR 1910.120. In addition, a current 8-hour annual refresher training certificate will be required for all personnel. Supervisory personnel will have completed 8 hours of specialized

supervisory training. Training certificates for all project personnel will be maintained by the Corporate Safety and Health Manager and/or the SSO at the project command center.

Prior to the start of site activities, all project personnel will participate in a pre-project safety and health briefing outlining the contents of this SHP. The personnel responsible for project safety and health will be addressed, as will site history, scope of work, site control measures, emergency procedures and site communications. In addition, a detailed discussion of site hazardous materials, air monitoring protocols, action levels for upgrade/downgrade of personal protective equipment and level of protection to be employed for each project task will be addressed. Daily "tailgate" safety and health briefings will be presented by the SSO at the start of each work day. In addition to a general review of the proposed daily activity and safety requirements, the results of previous air monitoring and any procedural changes will be addressed.

5.0 RESPIRATORY PROTECTION PROGRAM

Wherever air monitoring reveals sustained (> 5 minutes continuous) breathing zone contamination exceeding one-half of the current OSHA permissible exposure limits for benzene or other petroleum compounds as appropriate, full face air purifying respirators will be required. All respirators employed on site will be MSHA/NIOSH approved. Cartridges and filters for air purifying respirators will be appropriate for the contaminant(s) of concern. Cartridge/filter selection will be made by the Terracon Safety and Health Manager. Project personnel required to wear respiratory protection will be medically cleared for respirator use, trained and successfully fit tested in accordance with OSHA 29 CFR 1910.134. Personnel required to wear supplied air respirators will demonstrate competence in donning/doffing and inspecting the equipment prior to job assignment. All project tasks requiring the use of supplied air respirators will require properly equipped backup personnel ("buddy system").

At a minimum, air purifying respirator cartridges will be changed daily prior to use. More frequent change of respirator cartridges will be based on the results of site air monitoring. Under no circumstances will air purifying respirators be used in areas deficient in oxygen (<19.5%), in areas classified as immediately dangerous to life and health (IDLH) or in areas where contaminants have not been characterized.

The air purifying respirator inspection checklist provided to each project participant will be used in inspecting respirators. Respirators will be inspected and required fit checks will be performed prior to use. Any necessary repairs will be made before proceeding to the project site. Respirators will be cleaned and sanitized daily after use.

6.0 SITE HISTORY/SCOPE OF SERVICES

6.1 Soil and Groundwater

The Elgin Salvage Yard Jefferson Street site was previously operated as an automotive/equipment salvage yard. Information obtained from previous environmental assessments conducted on the property have indicated soils impacted by Polychlorinated Biphenyls (PCBs), dioxins/furans, petroleum hydrocarbons, and various inorganic constituents. Volatile organic constituents (VOCs) and lead have also been detected in site groundwater.

The concentration of these constituents in soil samples collected from the Yard Area (see Figure 1) are below IEPA TACO Tier 1 construction worker objectives.

6.2 Residual Solids and Soil in Shed Area

Laboratory data generated from assessment of residual solids and soil collected from surface of the concrete floor in the Shed Area indicates elevated concentrations of PCBs, dioxins/furans, PNAs, and various inorganic constituents (Al, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Ni, and Zn). The personal protective equipment requirements for the interim remedial activities performed in the Shed Area are designed to control personnel exposure to site contaminants in excess of permissible exposure limits.

6.3 Drums and Cylinders

Various drums of unknown contents and gas cylinders are remnant materials from the former Elgin Salvage Yard. These materials will be identified on-site prior to removal and disposal at a licensed facility. Staging and testing of drums and cylinders will be conducted by a qualified contractor with current OSHA 1910.120 40 Hour Hazwoper training.

The Elgin Fire Department will be notified of the staging and testing activities prior to commencement of work. Terracon will oversee identification, segregation, sampling and staging of the drums and cylinders in preparation for a removal action.

7.0 HAZARD ASSESSMENT

7.1 Chemical Hazards

As indicated above, some soils at this project site are contaminated with PCBs, dioxin/furans, PNAs, metals, and petroleum constituents. The concentrations of these contaminants vary significantly throughout the site. Assessment data generated from soil in the Yard Area indicate contaminants in soil at concentrations below IEPA TACO construction worker objectives. Assessment data generated from residual solids and soil within the Shed Area indicate contaminant levels above IEPA construction worker objectives (see Figure 2). The SSO will conduct a post interim remedial action hazard assessment and will communicate changes in hazard levels to site personnel. Specific health hazard information regarding lead, PCBs, dioxins/furans, PNAs and the most health-significant volatile fractions of petroleum compounds are provided below.

BENZENE
Permissible Exposure Limit
1 ppm OSHA PEL
0.5 ppm OSHA Action Level

Benzene is a central nervous system depressant and an eye and skin irritant. Poisoning may cause hemorrhages and immunosuppression. A relationship has been discovered between benzene exposure and leukemia. Benzene is regulated as an occupational carcinogen. Acute exposure may cause dizziness, excitation, weakness, headache, and breathlessness.

TOLUENE
Permissible Exposure Limit
200 ppm OSHA PEL
300 ppm OSHA CEILING

Toluene is an eye, skin and mucous membrane irritant and a central nervous system depressant. Poisoning may affect the liver and kidneys. Prolonged exposure may affect the heart and blood. The ingestion of alcoholic beverages may enhance the toxic effects of toluene. Symptoms of exposure include respiratory tract irritation, headache, dizziness and eye irritation.

ETHYL BENZENE
Permissible Exposure Limit
100 ppm OSHA PEL

Ethyl benzene is a skin, eye and mucous membrane irritant. It is moderately toxic by ingestion and slightly toxic by skin absorption. Ethyl benzene is a central nervous system depressant. Poisoning may affect the liver. Symptoms of exposure may include a sense of chest constriction and nervous disorders. Skin contact may result in first and second degree burns. The odor can be detected at 140 ppm ant irritation occurs at 200 ppm.

XYLENE
Permissible Exposure Limit
100 ppm OSHA PEL

Xylene is a mild eye and mucous membrane irritant, primary skin irritant and a central nervous system depressant. Ingestion causes severe gastrointestinal upset and creates an aspiration hazard. Chronic inhalation results in symptoms that resemble acute poisoning, but are more severe systemically.

LEAD
Permissible Exposure Limit
0.05 mg/m^3 OSHA PEL
0.03 mg/m^3 OSHA Action Level

Exposure to airborne dusts or fumes of inorganic lead causes central nervous system effects, gastrointestinal disturbances and anemia. Kidney damage has also been reported among exposed workers. Symptoms of exposure include weakness, pallor, anorexia, weight loss, malnutrition, abdominal pain, hypotension tremors, and paralysis of the wrist.

POLYCHLORINATED BIPHENYLS (PCB)
Permissible Exposure Limit
0.5 mg/m^3 OSHA PEL

PCB is a pale yell viscous liquid with a mild hydrocarbon odor. PCB is toxic to the liver of animals and severe exposure may have a similar effect in humans. Eye and skin irritation and acne-like dermatitis may also result from PCB exposure. A possible link between PCB exposure and cancer has been reported. NIOSH recognizes all PCBs as potential human carcinogens.

2,3,7,8-TETRACHLORO-DIBENZO-P-DIOXIN (TCDD or Dioxin)
Permissible Exposure Limit
None

Dioxin is a colorless to white, crystalline solid. Symptoms of exposure may include irritation of the eyes, allergic dermatitis, chlorachne, porphyria, and gastrointestinal disturbance. NIOSH recognizes dioxin as a potential occupational carcinogen.

7.2 Physical Hazards

Activities to be performed on site will involve heavy earth moving equipment. Terracon personnel will be on site to observe excavation activities and to collect periodic soil and/or groundwater samples. Personnel should be aware that as personal protective equipment increases, dexterity and visibility may be impacted and performing some tasks may be more difficult. Tape all loose protective clothing to avoid tripping and entanglement in machinery. Personnel will remain outside the swing radius of excavating equipment and will NOT enter any excavations to obtain soil samples. Soil samples will be collected from the backhoe bucket in an effort coordinated with the backhoe operator. Terracon site personnel will remain to the UPWIND side of the project site during soil excavation and removal.

8.0 ACCIDENT PREVENTION

- The Site Safety Officer has administrative responsibilities for enforcing the provisions of this Safety and Health Plan on all Terracon and sub-contract employees.
- The Site Safety Officer will hold daily safety briefings at the beginning of each day of site activity.
- Safety orange work vests will be worn by Terracon personnel working within 10 feet of any active roadway.
- The Site Safety Officer will continually inspect the work area for infractions of Safety and Health plan requirements.
- The Site Safety Officer will investigate and immediately report all accidents occuring within Terracon's scope of responsibility to the Corporate Safety and Health Manager.
- Site activities will be conducted only during daylight hours unless adequate portable lighting is mobilized to the project site.

9.0 SITE CONTROL

Terracon is responsible for control of the remedial activities (unless otherwise subcontracted to other parties) to be conducted at this project site and is responsible for preparing or securing project work zones. Terracon site personnel will coordinate activities with the excavation contractor conducting contaminant removal operations and will communicate personal protective equipment requirements to the excavation contractor prior to providing access to the

project Exclusion Zone. As previously indicated, Terracon personnel are instructed to remain outside the site Exclusion Zone and observe activities from the UPWIND side of the project site. Personnel will enter the Exclusion Zones for the purpose of sample collection after coordinating with the excavation contractor. Terracon personnel will remain outside the swing radius of backhoes at all times.

10.0 AIR MONITORING AND SITE ACTION LEVELS

This air monitoring protocol is designed to prevent personnel exposure to airborne contaminants in excess of published permissible exposure limits. The results of field monitoring will be used to determine the adequacy of personal protective equipment.

Personnel are instructed to remain on the upwind side of the project site during contaminated soil excavation activities to avoid inhalation or accidental ingestion of contaminated dusts.

Photoionization Detector

Site personnel must be knowledgeable in the operation, calibration and troubleshooting of the PID. The operators manual and the appropriate calibration kit will be mobilized to the site. Photoionization detectors will be calibrated under field conditions each day prior to use. Task Leaders are instructed to consult the manufacturer's specifications for appropriate calibration gas and calibration techniques.

The photoionization detector will be used to measure hydrocarbon vapor concentrations in the BREATHING ZONE of site personnel during approach into the potentially contaminated excavation areas. If sustained PID readings exceed 25 ppm, Terracon personnel will upgrade to a full face respirator equipped with combination Organic Vapor/HEPA cartridges.

10.1 Site Action Levels

Instrument	Level D/D Mod	Level C	Site Evacuation
PID	**< 25 ppm**	**> 25 ppm**	**> 300 ppm**

The Action Level specified above is applicable to air in the breathing zone and NOT applicable to vapor above containerized soil samples. This Action Level is established to control exposure to airborne petroleum hydrocarbon vapors in excess of current OSHA permissible exposure limits. Although the Action Level indicated for Site Evacuation is within the protective capacity of the respirator cartridges specified, personnel will evacuate to the UPWIND side of the site if the continuous breathing zone vapor concentrations exceed this limit. The SSO will contact the Safety and Health Manager for discussion and re-evaluation of personal protective equipment and air monitoring requirements if airborne contamination exceeds Site Evacuation Action Levels. In the event that Site Evacuation is affected, a modification of this safety and health plan will be issued with contingencies for combustible gas monitoring and upgrading to Level B personal protective equipment.

THIS SHP IS NOT VALID FOR LEVEL B SITE ACTIVITIES.

11.0 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

Excavation observation will be conducted outside of site Exclusion Zones wherever possible. Terracon personnel conducting excavation observation activities outside of the exclusion zone may remain in **LEVEL D** personal protective equipment to include:

- **Hard Hat**
- **Chemically Protective Safety Boots (Hazmax, other as approved by S&H Mgr.)**
- **Nitrile, Neoprene Rubber or Silver Shield Outer Gloves**
- **Safety Eye Wear (ANSI Z-87 approved)**

Personnel entering the excavation Exclusion Zones will abide by the personal protective equipment requirements of the excavation or general contractor. Personnel entering the shed area during interim remedial action activities shall upgrade to **LEVEL C** personal protective equipment. Personnel will don the above Level D equipment plus:

- **Full Face Air Purifying Respirator**
- **Equipped with Combination Organic Vapor/HEPA Cartridges**

If air monitoring exceeds the Action Level specified for upgrade to **LEVEL C** personal protective equipment, personnel will don the above Level D equipment plus:

- **Full Face Air Purifying Respirator**
- **Equipped with Combination Organic Vapor/HEPA Cartridges**

All Terracon personnel will mobilize their company issued response bag to this project site. Each Terracon employee is responsible for periodically inventorying the bag and ensuring that the full complement of personal protective equipment is maintained. Chemical cartridges will be changed daily prior to start of site activity.

12.0 DECONTAMINATION

Equipment decontamination is necessary on this petroleum hydrocarbon sites. Personnel decontamination when below personal protective Level C will consist of washing off safety footwear, proper cleaning or disposal of outer and inner gloves and thorough washing of face, arms and hands. A full body shower is required as soon as possible upon leaving the project site.

Expendable personal protective equipment will be placed in plastic trash bags, sealed and disposed of per client agreement.

12.1 Equipment Decontamination

Decontamination of sampling equipment used on site will be performed at a site designated by the SSO. Decontamination of such equipment will consist of detergent solution wash and clean water rinse.

13.0 SITE COMMUNICATIONS

Terracon personnel will remain to the upwind side of the project site outside the path of heavy equipment. When Terracon personnel must enter the Exclusion Zone to collect soil/groundwater samples, they will ensure that heavy equipment operators are aware of their presence and remain within line-of site communication with the operator at all times. Visual contact between members of task teams should be possible throughout the course of project activities. Contact with the SSO will be through direct verbal communication. The following hand signals will be used by personnel wherever respiratory protection and/or equipment noise limit verbal communication.

Signal	Meaning
Thumbs Up	OK, all is well
Grab throat with both hands	Can't breathe
Shake head, thumbs down	NO, negative
Point right	Move/steer left
Point left	Move/steer right
Grab partner's wrist	Leave area immediately

14.0 EMERGENCY RESPONSE PROCEDURES

The Project Manager is responsible for obtaining and recording the following emergency information prior to site mobilization:

Location of Nearest Telephone: Cell 630-770-9538

Nearest Hospital/Clinic:__Sherman Hospital Phone: 847-742-9800
Estimated Drive Time: 5 Minutes
Directions From Site: (ATTACH SITE DIAGRAM)_____
_____
_____
_____

Ambulance:	**911**
Fire Department:	**911**
Police:	**911**
Poison Control Center:	**847-931-5500**
Project Manager:	**(630) 717-4263**
Safety and Health Manager:	**(630) 717-4263**

14.1 Personal Injury

The SSO and at least one other individual on site will be appropriately trained to administer first aid and CPR. A certificate issued by the American Red Cross, National Safety Council or equivalent will be considered appropriate.

For minor injuries, such as cuts, burns, exhaustion, heat cramps, insect stings, etc., the affected employee will be removed to an uncontaminated area. The SSO or other designated employee trained in first aid procedures will administer appropriate first aid. If the injury warrants additional medical attention, the affected employee will be properly decontaminated and transported to the nearest hospital or emergency medical facility. The SSO or designee will accompany the ambulance to the medical facility, and provide guidance concerning additional decontamination which may be required for the injured employee, ambulance or attendants.

15.0 HEAT STRESS

Temperatures during this project are expected to be moderate to low. However, because impermeable personal protective equipment may be required on the project site, the following heat stress monitoring and preventive measures will be implemented.

At least one gallon of water will be available for each field employee during each day of site activity. The designated Site Safety Officer and one designee will observe personnel for signs of heat stress (excessive perspiration, flushed skin, nausea, etc.).

If such signs are observed, affected workers will be required to leave the contaminant zone, loosen protective clothing and rest. During the rest period affected personnel will drink at least one 8 oz. glass of cool water. Pulse will be checked at the beginning of the rest period. Personnel will not return to work until pulse rate is less than 90.

16.0 COLD STRESS

Persons working outdoors in low temperatures, especially at or below freezing are subject to cold stress. Exposure to extreme cold for a short time can cause severe injury to the surface of the body or result in profound generalized cooling which, in extreme cases, can lead to coma and death. Areas of the body which have high surface area, such as fingers, toes and ears are most susceptible.

Protective clothing generally does not provide protection against cold stress. In many instances it may increase susceptibility due to excessive perspiration which can rapidly cool the body when exposed to cold, windy conditions. The greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. And, because water conducts heat approximately 240 times faster than air, the body will cool rapidly when chemical protective equipment is removed if undergarments are saturated with perspiration.

Whenever ambient temperatures are expected to be below freezing, Terracon personnel will consult the cold stress section of the Terracon Safety and Health Policy and Procedures Manual to re-familiarize themselves with signs, symptoms and treatment of cold injuries.

Thermal boot, glove and hard hat liners will be mandatory for all personnel conducting field activities in ambient temperatures below freezing.

ACKNOWLEDGMENT OF INSTRUCTION

All Terracon personnel are required to sign the following acknowledgment of instruction form prior to conducting project activities. This acknowledgment is not a waiver. It is the primary method used in compiling environmental experience and contaminant exposure records for Terracon personnel. Upon written request, a copy of your environmental work record will be provided by the Corporate Safety and Health Manager.

PROJECT NAME: **Elgin Salvage Jefferson Street Site Excavation Observation**

TERRACON JOB #: 11077052

Name (Please Print)	Signature	Date	Hr. On Site

I understand that this project involves the investigation of a project site with potential petroleum hydrocarbon contamination. PCBs (to previously identified maximum concentration 548 ppm) have been identified in near surface soils and residual solids in the shed area. Priority Pollutant Metals (to previously identified maximum concentration 48,400) have been identified in near surface soils and residual solids in the shed area. PNAs (to previously identified maximum concentration 2,720 ppm) have been identified in near surface soils and residual solids in the shed area. Terracon personnel will remain at the upwind of the project site during excavation of lead and PCB contaminated soils. I have read this Safety and Health Plan and have received instructions for safe work practices, personal protective equipment and air monitoring requirements. I further understand that if I encounter unanticipated contamination I am to leave the site and immediately notify the Project Manager and Corporate Safety and Health Manager of conditions discovered.

PERSONAL PROTECTIVE EQUIPMENT UTILIZED:

X LEVEL D _____ **LEVEL D MOD.** ____ **LEVEL C**

Safety briefing performed by: _____ Date:_____
CONTAMINANT(S):_____ _____ _____

AIR MONITORING RESULTS (Attach separate page if required.)