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# Sanborn, Head & Associates

Consulting Engineers & Scientists

# HEALTH AND SAFETY PLAN REMEDIAL INVESTIGATION Beede Waste Oil / Cash Energy Site Plaistow, New Hampshire

Prepared for New Hampshire Department of Environmental Services

> Prepared by Sanborn, Head & Associates, Inc.

> > File 1371 June 1997

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#### **1.0 INTRODUCTION AND REGULATORY REQUIREMENTS**

#### 1.1 Introduction, Applicability, and Site Entry Requirements

This Site-Specific Health and Safety Plan (HASP) has been developed to guide health and safety practices of Sanborn, Head & Associates, Inc. (SHA) personnel and SHA subcontractor personnel conducting Remedial Investigation (RI) field activities at the Beede Waste Oil/Cash Energy Site (site) in Plaistow, New Hampshire. This HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) Regulations 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response, Final Rule - March 6, 1989). The RI work is being conducted under the United States Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Program. The implementation of the RI activities will be conducted under the direction of the New Hampshire Department of Environmental Services (NHDES) and USEPA.

This HASP identifies possible hazards and describes precautions to be taken to limit the potentially negative effects of these possible hazards. The procedures and guidelines contained herein are based upon results of previous site characterization work conducted by SHA and others. If during the course of the RI work, new information is obtained or site conditions change which may affect health and safety practices, revisions to this HASP will be made in the form of amendments. Any amendments to this plan will be incorporated into the text and documented in Appendix A. Where applicable, specific OSHA standards or other guidance will be cited and employed.

It is important to note, other non-SHA personnel are currently conducting field activities at the site associated with a CERCLA removal action. We understand personnel involved in the removal action are working under a separate HASP.<sup>1</sup> During preparation of this HASP we have reviewed the removal action HASP, and have organized this HASP in a generally similar manner, as well as incorporated components of the removal HASP into this HASP where applicable. However, this HASP is only intended to address health and safety issues for SHA and SHA subcontractor personnel performing RI activities at the site, and is not intended to cover other personnel conducting removal action activities. Other personnel entering the site will be allowed to review this HASP upon request.

It is also noted that all SHA and SHA subcontractor project personnel with access to the work area have ultimate responsibility for their own health and safety, including use of common sense to recognize unsafe working conditions or other hazards. Furthermore, all project personnel involved in intrusive site activities must be trained in health and safety matters according to OSHA standards prior to engaging in work at the site and, as such, have the ability to recognize environmental health and safety issues of concern. **ANY PERSON WHO DOES NOT FEEL PREPARED FOR A** 

<sup>&</sup>lt;sup>1</sup>Roy F. Weston, Inc., "Health and Safety Plan For the Beede Waste Oil Site, Plaistow, New Hampshire," prepared for: U.S. Environmental Protection Agency, Region I, John F. Kennedy Federal Building, Boston, Massachusetts, dated July 18, 1996.

#### GIVEN JOB ASSIGNMENT, OR RECOGNIZES AN UNSAFE WORKING CONDITION, HAS THE AUTHORITY TO STOP WORK WITHOUT PERSONAL REPERCUSSION AND REQUEST ASSISTANCE FROM THE SITE SUPERVISOR/SITE SAFETY AND HEALTH OFFICER (SSHO) OR OTHER SENIOR PROJECT PERSONNEL.

All project team personnel involved in site activities associated with the project must read the HASP provided herein prior to conducting field activities at the site. In addition, each such person must complete and sign the Health and Safety Compliance Agreement included as Appendix B.

#### 1.2 Project Team Organization and Responsibilities

The personnel and their organizations as indicated below will be performing various on-site or offsite RI activities. A listing of key project contacts and their telephone numbers is provided as Table 1.

# **1.2.1 Regulatory Contacts**

#### U.S. Environmental Protection Agency

#### Remedial Project Manager: Mr. James M. DiLorenzo

#### Region I Office of Site Remediation and Restoration Safety Officer: Mr. Robert Hinten

#### New Hampshire Department of Environmental Services, Waste Management Division

#### Project Manager: Mr. Paul M. Currier, P.E.

In general, the above-mentioned regulatory contacts are responsible for overall review of this HASP and the associated RI scope of work referenced in this HASP. In aggregate, they are responsible to assess that the scope of work is commensurate with the overall objectives of the project and that this HASP adequately addresses the on-site field elements of the work plan.

# 1.2.2 Sanborn, Head & Associates, Inc.

#### Principal-in-Charge (PIC): Mr. Paul M. Sanborn (Principal)

- C Holds ultimate responsibility for satisfactory completion of all tasks for this project.
- C Provides overall project management and control; acts as project liaison between SHA and NHDES/USEPA.

# **Project Manager (PM) and Corporate Health and Safety Officer:** Mr. Charles A. Crocetti, Ph.D., C.G. (Principal)

- C Consults with the Principal-in-Charge.
- C Day-to-day liaison with NHDES and USEPA.
- C Reviews and approves the HASP and any modifications/addenda to the HASP.
- C Directs fieldwork consistent with HASP requirements.
- C Designates field personnel who meet qualification requirements of the HASP.
- C Gives final authority on health and safety issues, concerns, or conflicts that impact the project.

#### Project Hydrogeologist: Mr. James Z. Taylor (Hydrogeologist I)

- C Reports to the Project Manager.
- C Day-to-day liaison with SHA subcontractor personnel.
- C Provides technical support to the Site Safety and Health Officer and other SHA field personnel to facilitate compliance with safety and health requirements.

#### Site Supervisor/Site Safety and Health Officer (SSHO): Mr. Scott R. Nerney (Engineer I)

- C Conducts on-site safety briefings for SHA and SHA subcontractor personnel.
- C Provides health and safety equipment (respirators, instruments, boots, gloves, tyveks, etc.).
- C Performs monitoring as specified in this HASP.
- C Maintains safety notes along with a log of monitoring results, the field personnel present, safety problems, and other required documentation.
- C Reports incidents or accidents to the SHA PM and NHDES/USEPA.
- C Stops work if conditions are deemed unsafe and promptly confers with the SHA PM and NHDES/USEPA to address the unsafe conditions.

#### Project Geologist/Engineer/Environmental Technician: to be determined on an as-needed basis

- C Performs field work in accordance with HASP requirements.
- C Reports unsafe conditions or accidents to the SHA SSHO or SHA PM.
- C Serves as Alternate Site Safety and Health Officer in the absence of the SSHO.

#### **1.2.3 SHA Subcontractors**

All SHA subcontractors are ultimately responsible for their own health and safety, and are therefore responsible for using good judgement and recognizing unsafe working conditions or the potential for unsafe working conditions. At a minimum, they are responsible to comply with the elements

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included in this HASP. All SHA subcontractors are responsible to notify the SHA SSHO or PM of any unsafe site conditions observed/encountered or accidents. They are also responsible for providing their own safety equipment and for ensuring a safe work place for their employees. Information, such as results of air monitoring and/or laboratory analyses obtained by SHA will be provided, as appropriate, by the SHA PM or SSHO. A list of anticipated SHA subcontractors, along with a brief description of their respective field activities is provided, as follows:

SHA SUBCONTRACTOR	CONTACT	FIELD ACTIVITIES
Surveyor (to be determined)	to be determined	Location and elevation survey services
Total Waste Management Corp. Newington, NH	Mr. Darryl Verville	Test pit explorations/soil pile sampling
MyKroWaters, Inc Concord, MA.	Ms. Deborah Farnsworth	Direct push method small diameter well installations
Capital Environmental Drilling Services, Inc. Dunbarton, NH	Mr. Terry Swain	Sampling surface and subsurface soils; drilling of overburden and bedrock test borings and monitoring well installations
Menzie-Cura & Associates, Inc. Westford, MA	Dr. Jerome Cura	Sampling of various media to support risk assessment

#### 1.3 Site Safety Plan Acceptance Acknowledgment

The SSHO or designated representative shall be responsible for informing all individuals entering the Exclusion Zone or Contamination Reduction Zone of the contents of this plan and ensuring that each person signs the Health & Safety Compliance Agreement form attached as Appendix B. By signing the compliance form, individuals are recognizing the hazards present on-site, and the policies and procedures required to minimize exposure or adverse effects of these hazards. The Agreement form will be kept on file.

#### **1.4 Daily Safety Meetings**

Daily safety meetings will be held at the start of each day to facilitate understanding of site conditions and operating procedures, to provide instruction on the proper use of personal protective equipment, if applicable, and to address worker health and safety concerns. If work conditions should change during the course of a work day, work will be stopped and all personnel informed of the change in site conditions.

# **1.5** Training Requirements

All personnel (including visitors) entering the Exclusion Zone or Contamination Reduction Zone must have completed training requirements for hazardous waste site work in accordance with OSHA 29 CFR 1910.120, or be qualified by previous training or "experience" as prescribed in OSHA 29 CFR 1910.120 (e) (9). Compliance and documentation of training requirements are the responsibility of each employer.

#### **1.6 Medical Monitoring Requirements**

All personnel (including visitors) entering the Exclusion Zone or Contamination Reduction Zone must have completed appropriate medical monitoring requirements required under OSHA 29 CFR 1910.120(f). Compliance and documentation of medical monitoring is the responsibility of each employer.

#### **1.7** Fit Testing Requirements

All personnel (including visitors) entering the Exclusion Zone or Contamination Reduction Zone using a full-face negative pressure respirator must have successfully passed a qualitative respirator fit test in accordance with OSHA 29 CFR 1910.134 within the last 12 months. Compliance and documentation of fit testing requirements are the responsibility of each employer.

#### **1.8 Hazard Communication Program Requirements**

Each employer and its subcontractors that have employees reporting to the site shall inform the SSHO or designated representative of all hazardous substances or materials brought to the site and provide Material Safety Data Sheets (MSDSs) to the SSHO. The SSHO or designated representative shall be responsible for informing all SHA and SHA subcontractor personnel of potential hazards. Each employer shall be responsible for providing other employers with information about labeling systems and precautionary measures. MSDSs from all employers shall be stored in one conspicuous location accessible to all site personnel.

#### 2.0 GENERAL OPERATIONS

#### 2.1 Site Description and History

The Beede Waste Oil/Cash Energy Site is located at 7 Kelley Road in Plaistow, New Hampshire. A Locus Plan showing the location of the site is provided as Figure 1. The site covers approximately 39 acres and is comprised of two parcels. Parcel 1 (22 acres) has been the site of petroleum and waste storage/handling since the 1920s. Parcel 2 (17 acres) has been used largely for commercial

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sand and gravel operations. A Site Plan showing prominent site features and proposed field exploration locations is provided as Figure 2.

Significant environmental issues at the site include approximately 100 ASTs totalling approximately three million gallons of capacity used for storing both virgin and waste oil, numerous underground storage tanks (USTs) including a former 140,000-gallon waste oil UST, approximately 800 drums of waste material stored on-site, the potential for buried drums of waste, numerous stockpiles of contaminated soil, and extensive subsurface contamination including petroleum hydrocarbons (PHCs), polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs). Furthermore, the subsurface contamination has apparently migrated off-site and impacted several water supply wells and Kelley Brook.

Beede Waste Oil was formerly a permitted transporter of hazardous waste. Most recently, activities at the site included the sale and distribution of diesel, heating oil and kerosene by Tri-State Resources, Inc. The site has been inactive since about August 1994. Key aspects of site environmental conditions identified by previous site work include:

- C The principal contaminants observed at the site are VOCs, PHCs, PCBs, and metals.
- C Approximately 90 ASTs of various capacities, totalling approximately one and one-half million gallons of capacity, are used to store waste oils at the site. The volume of liquid contained in these ASTs, consisting of waste oil, water, and sludge, is approximately one million gallons. Current EPA removal actions are characterizing the wastes in the ASTs, and sending off-site for disposal RCRA hazardous materials and materials with \$2 ppm PCBs.
- C Leakage of waste oil from several of these ASTs has been observed during the course of site investigation activities. An extensive area of stained soils surrounds many of the ASTs. Soils from around these ASTs have been determined to be contaminated with PCBs, typically at concentrations of #5 ppm; however, in the vicinity of AST No. 22, PCBs at concentrations of up to 1,500 ppm have been detected.
- C A former 140,000-gallon waste oil UST which apparently leaked considerable quantities of waste oil into the subsurface was located near the older Site building and approximately 200 feet from Kelley Brook.
- C Approximately 800 drums of waste material are stored at the site. This material was, at least in part, generated by remedial activities conducted on- and off-site by prior operators. Drummed wastes include PCB-contaminated soil, waste oil, and contaminated protective

clothing. Current EPA removal actions are characterizing wastes in the drums, and sending off-site for disposal RCRA hazardous materials and materials with \$2 ppm PCBs.

- C Numerous contaminated soil and debris piles totalling approximately 40,000 cubic yards are present at the site. These include two piles of virgin petroleum contaminated soil approved for asphalt processing and two piles of associated debris; three piles of contaminated soil and rock from removal of the 140,000-gallon UST; one pile of cold patch asphalt material; one pile of soil from the free product interceptor trench and recovery wells; one pile of soil reportedly excavated from a diesel fuel spill; three piles of reportedly uncontaminated soil (and debris) to be used as fill at the site; the vehicle parts storage area; one pile of sand blast grit; and a rubble pile.
- <sup>C</sup> Surface petroleum releases have been documented in the spill containment structure which contains three approximate 250,000-gallon and five approximate 30,000-gallon ASTs reportedly formerly used for storage of No. 2 fuel oil, diesel, and kerosene by Tri-State Resources, Inc.
- C Two product recovery wells and a product recovery trench are present to the east of the former 140,000-gallon waste oil UST. Recovered oil was reportedly stored in two 20,000-gallon ASTs. Buried solid waste and approximately 15 drums of liquid waste containing high levels of chlorinated and other VOCs were encountered during the excavation of the recovery trench.
- C Several apparently extensive areas of vadose zone soil contamination are present in Parcel 1, including the former lagoon area, the former 140,000-gallon used oil UST and former AST storage (UST/AST) area, and the SWRP No. 1 and adjacent ASTs (SWRP No. 1) area.
- C Several other areas of vadose zone soil contamination in Parcel 1 are either apparently less extensive, or have insufficient data to be adequately characterized. These areas include SWRP No. 2, the stained soil area near monitoring well AE-12, the landfill area near the oil interceptor trench, and the areas of stained surficial soils (e.g., near waste oil ASTs).
- C Contaminant concentrations in vadose zone soils as high as approximately 200 mg/kg total non-chlorinated aromatic VOCs (AVOCs), approximately 50 mg/kg total chlorinated VOCs (CVOCs), approximately 30,000 mg/kg PHCs, approximately 1.3 mg/kg PCBs, and approximately 10 mg/l (TCLP) barium and 79 mg/l lead, were detected during the 1995 SHA study.
- C Floating free product has been observed in ten monitoring wells, and is estimated to cover a total of approximately two acres. Four areas (bodies) of free product have been identified; namely, the lagoon, the UST/AST, SWRP No. 1, and SWRP No. 2 areas.

- C Available data suggest DNAPL is not significant at the site.
- C Observed free product thickness in monitoring wells is typically one to five feet. The free product is composed largely of PHCs which include lubricating oil, fuel oil No. 2/diesel, kerosene and/or gasoline.
- C Free product contains variable VOC concentrations, observed by SHA (1995) to range from approximately 1,400 to 17,000 mg/kg AVOCs, and below detection limits to 2,600 mg/kg CVOCs.
- C Observed PCB concentrations (SHA, 1995) in free product range from approximately 11 to 80 mg/kg.
- C An apparently broad zone of groundwater contamination extends from the areas of soil and free product contamination discussed above, east onto Parcel 2. The zone of groundwater contamination extends onto off-site properties to the north of Parcel 1 and south of Parcel 2.
- C The highest concentrations of contaminants detected in groundwater including AVOCs (up to approximately 9 mg/l), CVOCs (up to approximately 7 mg/l), PHCs (up to approximately 2,000 mg/l), and metals (e.g., up to 0.09 mg/l arsenic, 0.027 mg/l cadmium, and 2.6 mg/l lead), are typically detected in groundwater samples collected from monitoring wells which also contain free product. The elevated concentrations of these contaminants in these groundwater samples likely reflects, at least in part, the presence of small quantities of entrained free product.
- CVOCs at concentrations ranging from approximately 0.4 to 1.2 mg/l were also detected in more downgradient monitoring wells (AE-11D, AE-17D, AE-18S).
- C Based on data collected during the current and previous site investigations, site contaminants including AVOCs, CVOCs, PHCs, PCBs, and metals have been detected in surface water and/or sediment of Kelley Brook and the adjacent wetlands.
- C Typically, the highest concentrations of contaminants in surface water and sediment are detected in the vicinity and immediately downgradient of the area of free product discharge (i.e., the SW-2 to SW-4 area), with lesser to non-detected levels of contaminants further downstream. Low concentrations of CVOCs were detected in the most downgradient surface water sample (location SW-8) collected as part of the current and previous (NHDES, 1995) studies.

#### 2.2 Project Work Scope

The scope of work covered by this HASP includes field activities to be conducted by SHA and SHA subcontractor personnel as part of the remedial investigation of the site. The principal components of the field program are outlined below. More detailed descriptions and Standard Operating Procedures (SOPs) for the field activities planned are provided in the Field Sampling Plan (FSP). Specific hazards which may be encountered during this work are discussed in Section 3.0 of this HASP. Locations of proposed field explorations are shown on Figure 2.

#### 2.2.1 Mapping/Surveying of the Site

A field mapping/location and elevation survey of the site will be performed by an OSHA HAZWOPER trained survey crew. The work will include surveying location/elevations of field explorations such as test pits, soil borings, monitoring well installations, and surface water/sediment sampling locations conducted as part of this RI or during previous investigations.

#### 2.2.2 Characterization of Wastes and Areas of Potential Waste Disposal

This task is intended to evaluate the location, quantity, and physical and chemical characteristics of wastes remaining at the site after the current USEPA removal action is complete. Specifically, as part of the RI activities the following types of wastes or potential waste disposal areas may be evaluated.

- C Eleven soil piles designated Pile Nos. 3, 4, 5A, 5B, 6, 8, 9, 10, 11, 12, and 13;
- C former landfilled area near the older site building;
- C potential waste disposal area beneath newer site building;
- C the septic system/leachfield area adjacent to the newer site building;
- C the sand blast grit pile; and
- C cold patch material present at various locations at the site.

The field methodologies planned to be employed include:

C hand augering or grab sampling of soil, sand blast grit, and cold patch materials;

- C soil gas surveys of the potential areas of waste disposal beneath the new site building and the adjacent leachfield area; and
- C test pit excavations of portions of some soil piles, the former landfilled area near the older site building, and potential waste disposal at the septic system/leachfield adjacent to the newer site building.

# 2.2.3 Characterization of Surface and Subsurface Soils

This task is intended to evaluate the vertical and horizontal extent of contamination in site soils. This work is planned to be conducted in two phases: evaluation of the limits of contamination where it is currently presumed to be relatively shallow (surface soil in the upper few feet), and evaluation for contamination which may extend to greater depths (subsurface soils). Surface or near surface soils may be collected using hand auger sampling techniques while deeper soils are planned to be sampled using a drill rig employing standard hollow-stem auger/split spoon sampling techniques.

# 2.2.4 Surface Water and Sediment Characterization

This task includes an evaluation of groundwater/surface water discharge/recharge at Kelley Brook and characterization of surface water and sediment within Kelley Brook and the associated wetland for the potential presence of contamination. Field activities associated with this task are planned to include temperature profiling during summer months, stream flow gaging of Kelley Brook and an unnamed tributary to Kelley Brook; establishment of surface water staff gauges; measurement of water levels at staff gauge locations; and sampling of surface water and sediment within Kelley Brook and associated wetland.

#### 2.2.5 Overburden Hydrogeologic Evaluation

This task is directed at further characterizing site overburden hydrogeology, and the presence, sources, and extent of groundwater contamination in the overburden. Field activities planned as part of this task include:

- C a program of explorations consisting of approximately 62 conventionally installed and/or direct push method small diameter wells;
- c installation of approximately 10 hand driven well points at locations near Kelley Brook;
- c well development of the newly installed monitoring wells and well points listed above;

- C groundwater sampling of previously installed monitoring wells (32 assumed), and newly installed monitoring wells (62 assumed) and well points (10 assumed), using "Low-Flow" (minimal drawdown) sampling techniques. A portion of these wells are planned to be sampled by NHDES personnel.
- C aquifer permeability testing at a select number of drilling/well installation locations. Field permeability test procedures will include open borehole permeability testing during cased-hole drilling and slug tests conducted in completed monitoring wells.

# 2.2.6 Bedrock Hydrogeologic Evaluation

Field activities presently planned as part of this task consist of installation of three bedrock monitoring wells using standard water-well air-rotary drilling techniques, and development and sampling of these newly installed wells.

# 2.2.7 Baseline Human Health and Ecological Risk Assessment

Additional biological sampling and/or sampling of other site media may be conducted at the site to supplement previously collected data and data collected as part of other RI elements described above. If conducted, the sampling is anticipated to be performed using relatively non-intrusive type (grab sampling using various types of hand tools) methods.

# 3.0 SITE HAZARD ANALYSIS

This Site Hazard Analysis identifies the general and task-specific hazards associated with specific site operations and presents an analysis of documented or potential chemical hazards that exist at the site. Efforts will be made to reduce or eliminate these hazards. Those which cannot be eliminated will be addressed by use of engineering controls and/or personal protective equipment. Task-specific personal protection levels can be found in Section 4.3.

If the presence of a hazard not discussed in the following subsections is established at the site, then the risks involved with that particular hazard will be identified and assessed. If an additional hazard is identified, all personnel involved in on-site activities will be informed at the site, as appropriate, and in writing through an addendum to this HASP.

#### 3.1 General Hazards

General hazards with the potential to be present at the site are subdivided into three areas: physical, biological, and chemical hazards. Based on available data on site conditions, and the proposed RI work scope, the principal potential hazards at the site are physical, including typical issues related

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to use of and proximity to heavy equipment, heat and cold stress, moving vehicles, underground and overhead utilities, etc. The potential for significant chemical exposure is considered relatively limited. No significant biological hazards specific to the site have been identified.

#### **3.1.1 Physical Hazards and Related Concerns**

**Confined Space Entry** - Confined space entry means the potentially hazardous entry into any space which, by design, has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, and which is not intended for continuous site personnel occupancy. Confined spaces include but are not limited to storage tanks, process vessels, pits, silos, vats, ventilation and exhaust ducts, sewers, underground utility vaults, and pipelines. Other environments which must be treated as confined spaces include test pits, and basements or other indoor areas where mechanical (diesel, propane, gasoline, or similarly powered) equipment must be operated for drilling or test pitting purposes. **Confined Space Entry is not planned as part of any of the RI field activities at the site.** 

**Construction Hazards, Drill Rigs, Backhoes, etc.** - The use of drill rigs, backhoes and other heavy equipment represent potentially serious construction hazards. Whenever such equipment is used, personnel in the vicinity should be limited to those who must be there to complete their assigned duties. All personnel must avoid standing within the turning radius of the equipment or below any suspended load. Job sites must be kept clean, orderly, and sanitary. When water is used, care must be taken to avoid creating muddy or slippery conditions. Personnel should avoid turning their back to operating machinery. In addition, personnel should avoid wearing loose clothing, or other personal items around rotating equipment or other equipment that could catch or ensnare such items. Personnel should wear hard hats and always stand far enough away from operating machinery to prevent accidental contact which may result from mechanical or human error.

**Drums and Buried Drums** - As a precautionary measure, personnel must assume that labeled and unlabeled drums encountered during field activities contain hazardous materials until their contents can be confined and characterized. Personnel should recognize that drums are frequently mislabeled, particularly drums that are reused. Only trained and authorized personnel should be allowed to perform drum handling. In general, movement and opening of drums will be done in accordance with 29 CFR 1910.120 (j). Prior to handling, drums must be visually inspected to gain as much information as possible about their contents. Trained field personnel must look for signs of deterioration such as corrosion, rust or leaks, and for signs that the drum is under pressure such as swelling or bulging. Drum-type and drumhead configuration may provide the observer with information about the type of material inside (i.e. removable lid for solids versus bung type cover for liquids). The movement and handling of drums with unknown contents is not planned as part of any of the RI field activities at the site.

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Although not anticipated, buried drums could be encountered when digging test pits. Therefore, the following provisions must be observed if full or actively leaking drums with unknown contents are encountered. Machine excavation should cease immediately when a drum is encountered. All SHA and SHA subcontractor personnel should avoid exposure to the drum contents. The appropriate management personnel should be notified immediately. If it is determined that a drum removal action is warranted, personnel (non-SHA) trained in emergency response, and movement and handling of drums, will respond to the incident.

If drum contents are freely accessible (i.e., drums are crushed/damaged), and air-monitoring indicates no evidence of vapors above background levels in breathing zone air, samples of drum contents may be collected for waste characterization purposes.

**Electrical** - OSHA regulations require that employees who may be exposed to electrical equipment be trained to recognize the associated hazards and the appropriate control methods. All extension cords used for portable tools or other equipment must be designed for hard or extra usage and be (three-wire) grounded. All 120-volt, single phase 15- and 20-ampere receptacle outlets at locations where moisture/water contact may occur must be equipped with ground-fault circuit interrupters (GFCIs). (In general, personnel should avoid using electric power tools during wet conditions). GFCIs must be attached directly to or as close as possible to the receptacle. GFCI located away from the receptacle will not protect any wiring between the receptacle and the GFCI unit. Only the wiring plugged into the GFCI and outward will be protected by the GFCI. All electrical equipment must be suitable and approved for the class of hazard. Applicable OSHA standards for electrical safety, 29 CFR 1926, Subpart "K", shall apply.

**Eye Injury** - All operations involving the potential for eye injury, splash, etc., shall have approved eye wash units locally available as per 29 CFR 1910.151 (c).

**Fire and Explosion** - Due to the commonly low concentrations of the VOCs and PHCs, the limited availability of oxygen in the subsurface, and the lack of ignition source in the subsurface, the potential fire and/or explosion hazard posed by the planned activities in light of the observed contaminants is considered limited. However, the possibility of flammable materials being encountered during field activities must be recognized, and appropriate steps necessary to minimize fire and explosion will be observed. This includes situations where excessive organic vapors are encountered. When this occurs, monitoring with a combustible gas indicator (CGI) is required.

Excessive organic vapors, for the purpose of initiating the use of a CGI, are defined as sustained readings (i.e. continuous for at least 5 minutes) at or above 250 units or an instantaneous reading at or above 1,000 units on a photoionization detector, in breathing zone air or in locations where a potential ignition source exists. Alternatively, workers can discontinue work and leave area until elevated vapor levels subside.

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Non-sparking tools and fire extinguishers shall be used as appropriate. At least one 10-pound ABC U.L. approved fire extinguisher must be located within 100 feet of each (drill rig or backhoe/excavator) work area.

**Heat and Cold Stress** - Overexposure to temperature extremes can represent significant risks to personnel if simple precautions are not observed. Typical control measures designed to prevent **heat stress** include dressing properly, drinking plenty of fluids, and establishing an appropriate work/break regimen. When the ambient adjusted temperature exceeds 70°F and personnel are wearing non-permeable protective ensembles (e.g., coated tyvek), a heat stress monitoring program shall be implemented as appropriate. Details regarding the heat stress monitoring program such as rest period length and frequency and the consumption of fluids are described in Appendix C. Typical control measures designed to prevent **cold stress** also include dressing properly, and establishing an appropriate work break regimen. Details regarding the cold stress monitoring control program are also described in Appendix C. Heat or cold stress can be exacerbated by physical exertion, job clothing requirements (i.e., protective clothing), or dehydration.

**High or Elevated Work** - Elevated work where a fall potential exists will be performed using appropriate fall protection measures in accordance with 29 CFR 1926 Subpart M. Specifically, no person shall climb the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder which meets the requirements of OSHA standards.

**Lighting** - Work areas must have adequate lighting for employees to see to work and identify hazards (5-foot candles minimum comparable to a single 75-100 watt bulb). Applicable OSHA standards for lighting, 29 CFR 1910.120 (m), shall apply. All of the field activities planned are currently anticipated to be conducted outside during normal daylight hours, with the exception of soil gas sampling in the interior of the new site building.

**Moving Vehicles, Traffic Safety** - All on-site vehicular traffic routes which could impact worker safety must be identified and communicated. Whenever necessary, barriers or other methods must be established to prevent injury from moving vehicles. This is particularly important when activities are conducted in site parking areas or roadways.

**Noise** - Noise exposure can be affected by many factors including the number and types of noise sources (continuous vs. intermittent or impact), and the proximity to noise intensifying structures such as walls of buildings which cause noise to bounce back or echo. The single most important factor effecting total noise exposure is distance from the source. The closer one is to the source the louder the noise. The operation of a drill rig, backhoe/excavator or other mechanical equipment can be sources of significant noise exposure. In order to reduce the exposure to this noise, personnel working in high-noise areas should use hearing protectors (ear plugs or ear muffs). As a general rule

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of thumb for this project, if it is necessary to raise one's voice above a normal conversational level to communicate with others within three to five feet, hearing protection should be worn.

**Overhead Utilities and Hazards** - Overhead hazards can include low hanging structures which can cause injury due to bumping into them. Other overhead hazards include falling objects, suspended loads, swinging loads and rotating equipment. Hard hats must be worn by personnel in areas were these types of physical hazards may be encountered. Barriers or other methods must also be used to exclude personnel from these areas where appropriate. Electrical wires are another significant overhead hazard. According to OSHA [29 CFR 1926.550(a)(15)(ii)], the minimum clearance which must be maintained from overhead electrical wires is ten feet from an electrical source rated less than or equal to 50kV. Sources rated greater than 50 kV require a minimum clearance of ten feet plus 0.4 inch per kV above 50 kV.

**Steep Embankments** - If it is determined by the SHA SSHO and PM that work along the steep embankments at the site represent a fall hazard, all work will be performed using appropriate fall protection measures in accordance with 29 CFR 1926 Subpart M.

**Test pit and/or other Excavations** - All provisions of the OSHA trenching and excavation standard (29 CFR 1926.650-652) must be followed during test pit excavation and sampling activities. As a general rule no person should be allowed to enter an excavation greater than five feet in depth unless the walls of the excavation have been protected using an approved shield (trench box), an approved shoring system, or the walls have been sloped back to an angle of 34 degrees, the excavation is free of accumulated water, and the excavation has been tested for hazardous atmospheres. For this work no personnel should be allowed to enter an excavation. Personnel must also remain at least two feet away from the edge of the excavation at all times. Upon completion of a test pit exploration, the excavation should be backfilled and graded. Excavations should not be left open unless absolutely necessary, and then only with proper barricading and controls to prevent accidental injury.

**Underground Utilities and Hazards** - The identification of underground storage tanks (USTs), pipes, utilities and other underground hazards will be completed to the extent practicable prior to all drilling, test pit excavating and other intrusive activities. In accordance with OSHA 29 CFR 1926.650, the estimated location of utility installations, such as sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered during excavation work, must be determined prior to opening an excavation. The same requirements apply to drilling operations and soil gas probes. Specifically, it will be SHA's responsibility to make the appropriate notifications to the "Dig-Safe" underground utility protection service, NHDES and other entities, as required. Prior to initiation of these activities SHA will contact Dig Safe to mark the location of underground utilities. Encounter with unknown or unidentified underground hazards can lead to fire, explosion, flooding, electrocution or other life threatening accidents.

**Water Hazards and Surface Water/Sediment Sampling** - The collection of water or sediment samples on or immediately adjacent to a body of water can pose significant hazards. In addition to slip, trip and fall hazards associated with wet surfaces, the potential for drowning accidents must be recognized. The selection of appropriate levels of personal protective equipment (PPE) should be made with the understanding that the above-mentioned hazards may be intensified by the use of some PPE.

# **3.1.2 Chemical Hazards**

Chemical contaminants detected at significant concentrations in site groundwater, surface water, sediment, and/or soil include VOCs, PHCs, PCBs, and metals. Pertinent information regarding the NIOSH and OSHA exposure limits, chemical and physical properties, and health hazards of some of the more common chemical constituents identified during past investigations at the site is provided in Appendix D. References on the toxicology and chemistry of these compounds, including the "Handbook of Toxic and Hazardous Chemicals and Carcinogens" (Sittig, 1985), are available for review by project personnel.

As indicated above, the potential for significant chemical exposure is considered relatively limited. Based on the proposed scope of work, potential exposure to higher concentrations of site contaminants will likely be limited to a few tasks including sampling of free product oil, and possibly completion of test pits in potential source areas or soil piles. Further, based on prior completion of these same tasks in the same general areas as proposed for the RI, potential chemical exposure health and safety concerns were addressed with provisions for dermal protection (e.g., gloves, tyvek), and no indications of VOCs in breathing zone air above background were encountered.

#### Site Contaminants

**Volatile Organic Compounds (VOCs)** - Total VOC concentrations detected by laboratory analysis of groundwater samples have rarely exceeded five milligrams per liter (mg/l, equivalent to parts per million - ppm). VOCs detected in the groundwater at the site include acetone, benzene, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethyl benzene, methyl ethyl ketone (MEK, 2-butanone), methyl isobutyl ketone (MIBK, 4-methyl-2-pentanone), methyl tertiary butyl ether (MTBE), methylene chloride, naphthalene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, xylenes, and other various substituted benzenes (n-butylbenzene, sec-butylbenzene, isopropylbenzene, p-isopropyltoluene, n-propylbenzene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene).

Only limited analysis of site soils for VOCs has been completed to date. Based on these analyses, and soil gas sampling and analysis, the list of VOCs detected in site soils is shorter than that detected in groundwater, but includes the same general types of compounds. Detected concentrations are typically relatively low (i.e., less than approximately 100 ppm), except in the soils in the vicinity of the buried drums of liquid waste which were removed as part of the excavation of the floating product recovery trench (which contained approximately 1,000 ppm total VOCs).

Due to volatilization, concentrations of VOCs at the ground surface are expected to be limited, with contaminants likely residing largely at depth, except in the immediate vicinity of the borehole or excavation as they are brought to the surface during drilling, test pitting, or sampling of soil piles. Inhalation of contaminant vapors is not considered to be a major exposure pathway; however, air monitoring will be conducted as indicated in Section 6.0.

**Petroleum Hydrocarbons (PHCs)** - PHCs have been detected in site soils and groundwater (i.e. as free product). PHC concentrations detected in soils above the water table are typically relatively low (i.e., 1,000 ppm); however, PHC concentrations of up to approximately 90,000 ppm have been detected in soils at depth from near the water table and in source area soils. PHC types identified in site soil and groundwater include heavier lubricating/motor oil (i.e., as waste oil), kerosene, and No. 2/diesel fuel oil and, typically at much lower concentrations, gasoline.

PHCs, such as lubricating oil and lighter fuel oils, are generally considered to be of low toxicity. Recommended airborne limits for kerosene are 100 mg/m<sup>3</sup> (TLV/TWA-NIOSH) and 350 mg/m<sup>3</sup> (TLV/TWA-ACGIH), and for fuel oil No. 2/diesel are 350 mg/m<sup>3</sup> (TLV/TWA-ACGIH) (no OSHA limits are currently established). However, inhalation of low concentrations of fuel oil vapor may cause mucous membrane irritation. Inhalation of high concentrations of the vapor may cause pulmonary edema. Repeated or prolonged direct skin contact with the oil may produce skin irritation as a result of defatting. Protective measures, such as the wearing of chemically resistant gloves, to minimize contact are addressed in Section 4.0 of this HASP. Because of the relatively low vapor pressures associated with PHCs, an inhalation hazard in the outdoor environment is not likely.

**Polychlorinated Biphenyls (PCBs)** - PCBs including Arochlors 1232, 1242, 1248, 1254 and 1260 have been detected in site soils and floating free product. Concentrations detected are typically 5 ppm or less in soils; however, as much as 1,500 ppm of PCBs were detected in soils near leaking AST No. 22. PCB concentrations in free product have been detected in the 11 to 80 ppm range.

Prolonged skin contact with PCBs may cause the formation of comedones, sebaceous cysts, and/or pustules (a condition known as chloracne). PCBs are considered to be suspect carcinogens and may also cause reproductive damage. It should be noted that PCBs have extremely low vapor pressures (0.001 mm Hg @ 42% Chlorine and 0.00006 mm Hg @ 54% Chlorine). This makes it unlikely that any significant vapor concentration will be created in the ambient environment. This minimizes the

potential for any health hazards to arise due to inhalation unless the source is heated or generates an airborne mist. If generated, vapor or mists may cause irritation of the eyes, nose, and throat. As in the case of metals, proper dermal and respiratory protection should be used if the potential exists for direct contact with potentially PCB-contaminated soils and/or airborne dust is observed within the breathing zone (See Section 4.0).

**Metal Compounds** - Although not considered an acute exposure hazard based on available data, metals detected in site soil include lead (up to 250 ppm), zinc (up to 1,200 ppm), and chromium (up to 150 ppm). The exposure by dermal contact or inhalation of dust to higher levels of the above-listed metals is a potential hazard. Metals concentrations detected in groundwater were occasionally at or above AGQS, however these concentrations are not considered a health and safety hazard for site workers.

# **Chemicals Subject to OSHA Hazard Communication**

All chemicals used in field activities such as sample preservatives, decontamination solutions, or other hazardous chemicals must be accompanied by the required labels and Material Safety Data Sheets (MSDS), and employees shall receive training on proper use/handling as needed pursuant to OSHA 1910.1200.

#### **3.1.3 Biological Hazards**

Based on available data, no significant biological hazards specific to the site have been identified. As in much of New England, due to the wooded or grassy nature of portions of the site, some biological hazards of potential risk do exist. These potential hazards include, but are not limited to: insect bites and stings; ticks (including those carrying Lyme disease); larger animal bites (including potentially rabid animals); poison ivy, oak and sumac; hay fever and other vegetative allergies.

**Insects** - Insects represent significant sources (vectors) of disease transmission. Therefore, precautions to avoid or minimize potential contact should be considered prior to all field activities. Disease or harmful effects can be transmitted through bites, stings or through direct contact with insects or through ingestion of foods contaminated by certain insects. Stinging insects, such as bees and wasps, are prevalent throughout New England, particularly during the warmer months. The stings of these insects can be painful, and cause serious allergic reactions in some individuals.

**Ticks/Lyme Disease** - Lyme disease is an infection caused by the bite of certain ticks, primarily deer, dog, and wood ticks. The symptoms of Lyme disease usually start out as a skin rash, then progress to more serious symptoms. The more serious symptoms can include lesions, headaches, arthritis and permanent damage to the neurological system. If detected early the disease can be

treated successfully with antibiotics. The following steps are recommended for prevention of Lyme disease and other diseases transmitted by ticks:

- C Beware of tall grass, bushes, woods and other areas ticks may live;
- C Wear good shoes, long pants tucked into socks, a long-sleeved shirt with a snug collar, good cuffs around the wrists and shirt tails tucked into the pants. Insect/tick repellents may also be used;
- Carefully monitor for the presence of ticks. Carefully inspect clothes and skin when undressing.

If a tick is attached to the skin it should be removed. To remove the tick cover it with heavy oil (mineral, salad, or machine) to close its breathing pores. The tick may disengage at once, if not, allow the oil to remain in place for a half hour. Then carefully and slowly grasp it with fine-tipped tweezers close to the skin and gently pull upward. Be sure to remove all parts of the tick. Wash the bite area with soap and water, and with an antiseptic. If you have been bitten place the tick in a jar labeled with the date, location of the bite, and location acquired. Notify your supervisor, and be alert for symptoms over the next month or so. If any symptoms appear, such as an expanding red rash, contact a physician immediately.

**Rats, Snakes and Other Vermin** - Certain animals, particularly those that feed on garbage and other wastes, can represent significant sources (vectors) of disease transmission. Therefore, precautions should be taken to avoid or limit potential contact with (biting) animals or animal waste. Rats, snakes, and other wild animals can inflict painful bites. The bites can be poisonous (as in the case of some snakes), or disease causing (as in the case of rabid animals). Avoidance of these animals is the best protection.

**Poisonous Plants** - The possible presence of poisonous plants should be anticipated for field activities in wooded or heavily vegetated areas. Poison ivy is a climbing plant with alternate green to red leaves (arranged in threes) and white berries. Poison oak is similar to poison ivy and sumac but its leaves are oak-like in form. The leaves of these poisonous plants produce an irritating oil which causes an intensely itching skin rash and characteristic blister-like lesions. Some individuals may also develop a high fever and may become very ill. Ordinarily the rash begins within a few hours after exposure, but may be delayed for as long as 24 to 48 hours. Contact with these plants should be avoided. If you suspect you have been exposed the area exposed should be washed with soap and water, followed by rubbing alcohol. Apply calamine, cortisone or other soothing skin lotion if the rash is mild, however, if the rash is severe or if there is a known history of previous sensitivity, seek medical advice.

#### 3.2 Task-Specific Hazards and Control Measures

A listing of potential task-specific hazards along with hazard control measures is provided as Table 2.

#### 4.0 PERSONAL PROTECTIVE EQUIPMENT

The following is a brief description of the personal protective equipment (PPE) which may be required during various phases of the project. The U.S. EPA terminology for protective equipment will be used (i.e. Levels A through D).

Respiratory protective equipment shall be National Institute for Occupational Safety and Health (NIOSH) approved and use shall conform to OSHA 29 CFR Part 1910.134 Requirements. Each employer shall maintain a written respirator program detailing selection, use, cleaning, maintenance, and storage of respiratory protective equipment.

Based on available analytical data, the nature of the site (i.e., open), and proposed activities, SHA does not anticipate that personal protection requirements will exceed Level C, and that the majority, if not all, of the work will be conducted in Level D or Modified Level D PPE.

#### 4.1 Types of PPE

#### 4.1.1 Level D

#### Level D Personal Protective Equipment

- C Hard hat
- C Safety glasses, goggles, or face shield
- C Steel-toed and steel shank work boots
- C Nitrile rubber outer gloves (at discretion of SSHO)
- C Rubber overboots or disposal "booties" (at discretion of SSHO)
- C Cotton long sleeve shirt and pants (or coveralls, at discretion of SSHO)

#### Criteria for Use

- C No indication of airborne health hazards present.
- C Total vapor levels less than 1 ppm above background on the photoionization detector.
- C No indication of dermal contact hazards present.

#### 4.1.2 Modified Level D

#### Level D Modified Personal Protective Equipment

- C Hard hat
- C Safety glasses, goggles, or face shield
- C Steel-toed and steel shank work boots
- C Nitrile rubber outer gloves
- C Latex surgical inner gloves (to be worn underneath outer gloves)
- C Rubber overboots or disposal "booties"
- C Polyethylene-coated tyvek coverall taped at ankles/wrists (use and type at discretion of SSHO)

#### Criteria for Use

- C No indication of airborne health hazards present.
- C Total vapor levels less than 5 ppm above background on the photoionization detector.
- C A higher level of skin protection than standard work clothes is required.

#### 4.1.3 Level C

#### Level C Personal Protective Equipment

- C Hard hat
- C Full-face air purifying respirator with organic vapor GMC-H cartridges or equivalent
- C Steel-toed and steel shank work boots
- C Nitrile rubber outer gloves
- C Latex surgical inner gloves (to be worn underneath outer gloves)
- C Rubber overboots or disposal "booties"
- C Polyethylene-coated tyvek coveralls taped at ankles/wrists (type to be at discretion of SSHO)

#### **Criteria for Use**

- C Site known to contain potentially hazardous materials resulting in air concentration requiring a protective factor afforded by a full-face, air-purifying respirator (OSHA/NIOSH approved).
- C Total vapor levels within the limits of appropriate cartridges. Frequent air monitoring should be conducted while wearing Level C protection.
- C A higher level of skin protection than standard work clothes is required.

All personnel who will be required to don air purifying respirators must have been qualitatively or quantitatively fit-tested for the particular brand and size respirator he/she will be wearing on-site

within the last year. Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the face seal. For workers requiring corrective face piece lenses, special spectacles designed for use with respirators must be used.

# 4.1.4 Level B

#### Level B Personal Protective Equipment

No RI site activities requiring the use of Level B PPE are anticipated.

#### 4.1.5 Level A

#### Level A Personal Protective Equipment

No RI site activities requiring the use of Level A PPE are anticipated.

#### 4.2 Limitations of PPE

The PPE prescribed in this HASP has some limitations. These limitations are presented below:

#### Air Purifying Respirators

- C Cannot be used in an oxygen-deficient atmosphere (less than 19.5 percent oxygen)
- C Cannot be used in Immediately Dangerous to Life or Health (IDLH) atmospheres
- C Protect only against specific chemicals
- C Cartridges have a limited duration of protection
- C Contaminants must have warning properties
- C Atmosphere must be monitored for contaminant (and oxygen levels if a potential for oxygendeficient atmosphere exists)
- C Reduce peripheral vision and other perceptual abilities
- C Must have had medical clearance/training

#### **Chemical Resistant Coveralls**

- C Selection depends on type and physical state of contaminant
- C Permeation rates and breakthrough time vary depending on material type, thickness, concentration of contaminant, temperature, humidity, solubility of chemical, and coefficient of permeating chemical
- C Durability of types of suits may vary
- C Degradation of material may result in a loss or change of fabric's chemical resistance

- C Penetration of suit may allow movement of chemical through zippers, stitched seams, or imperfections
- C Dexterity may be compromised when flexibility of suit is limited
- C Suits may promote heat stress for the wearer

#### **Chemical Resistant Gloves**

- C Concerns with permeation, degradation, and penetration
- C Selection of glove material/type will depend upon chemical
- C Dexterity is reduced
- C Durability may not meet demands of activities performed
- C Can be slippery when wet

#### **Chemical Resistant Boots**

- C Selection of boot material/type depends upon chemical
- C Steel-toed boots may lose heat in cold weather
- C Boots may cause reduction in dexterity and present tripping hazard because of weight and improper sizing
- C Can be slippery when wet

#### **Eye Protection**

C May cause reduction of peripheral vision.

#### 4.3 Personal Protection Levels for Task-Specific Work Activities

A listing of anticipated PPE levels for specific RI work activities is provided in Table 2.

#### 5.0 MEDICAL MONITORING AND TRAINING REQUIREMENTS

All personnel performing intrusive activities on this site covered by this HASP must be active participants in a Medical Monitoring Program which complies with 29 CFR 1910.120. Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any intrusive work on this site covered by this HASP.

Additionally, all personnel covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response [HAZWOPER] Training). Each individual must have completed an annual 8-hour refresher training

course and/or initial 40-hour training course within the last year prior to performing work on this site covered by this HASP. Also, on-site managers and supervisors directly responsible for supervising individuals engaged in hazardous waste operations must have completed the specified 8-hour training course. Details describing SHA's medical monitoring and training programs are provided in the SHA Health and Safety Program Manual (available upon request).

A site safety meeting will be held at the beginning of the project to discuss pertinent health and safety issues. Additional site safety meetings/briefings will be held as needed or if changes in site conditions or project scope occur.

Please refer to Appendix C for a description of Heat and Cold Stress monitoring requirements.

# 6.0 AIR MONITORING

According to 29 CFR 1910.120 (h) Air Monitoring shall be used to identify and quantify airborne levels of hazardous substance and health hazards in order to determine the appropriate level of employee protection needed on site.

# 6.1 General Requirements

Air monitoring shall be performed during site intrusive activities such as test pit explorations and test borings. At the beginning of each day prior to conducting these activities, air monitoring shall be conducted at the upwind boundary of the site to establish a background reading. During the course of the day similar background readings may be taken at the discretion of the SSHO. The frequency of monitoring shall be sufficient to characterize employee exposure. All air monitoring data will be recorded onto appropriate field logs by the SSHO or other designee. Air monitoring instruments will be calibrated and maintained in accordance with the manufacturer's specifications.

#### 6.2 Site Specific Requirements

Based on the characteristics of the contaminants present at the site, ambient air quality will be periodically monitored for ionizable organic vapors using a photoionization detector (PID) similar or equivalent to a Photovac Micro Tip MP-1000 with a 10.6 eV lamp. Based on the available data that indicate that PHCs typically constitute the predominant contaminants at the site, with VOC concentrations typically minor by comparison, the following action levels have been set for the RI field activities planned at the site:

0-5 ppm Continue work in level D.

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- 5-25 ppm Discontinue work, monitor breathing zone to see if ambient VOC concentrations stabilize at < 5 ppm within 15 minutes; if so, resume operations in Level D and continue to monitor; if not, withdraw from area of exposure, and contact SHA PM or Project Principal, or proceed to Level C personal protective equipment.
- >25 ppm Discontinue work, monitor breathing zone to see if ambient VOC concentrations stabilize at <25 ppm within 15 minutes; if so, resume operations in appropriate level of personal protection and continue to monitor; if not, withdraw from area of exposure, close down operations in area of exposure, and contact the SHA PM or Project Principal.

The action levels given refer to sustained concentrations above background in breathing zone air. A sustained concentration is defined as a consistent reading for one minute or more. Air-borne dust levels will be monitored visually. If significant potentially contaminated air-borne dust is present in the breathing zone, measures will be taken to reduce dust generation and exposure, such as wetting down the work area. If these measures are not sufficient, the SHA PM or Project Principal will be contacted, or potentially exposed personnel will proceed to Level C personal protective equipment.

The characteristics of the contaminants present at the site are such that additional air monitoring is not warranted at this time. Oxygen deficiency is not considered a significant issue because the site characterization work will generally be conducted outside and not in confined spaces. Combustible gases (i.e., methane) beyond those detectable with a PID are not anticipated to be a significant concern at the site. Air monitoring for radiation is not warranted because the known contaminants at the site do not include radioactive materials and the radiation level in the work zone(s) is not anticipated to deviate from ambient background values for the area.

#### 7.0 SITE CONTROL

The primary purpose for site controls is to establish the hazardous area perimeter, to reduce migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons. At the end of each workday, the site entry gate will be secured or guarded against unauthorized entry. As currently planned, all intrusive RI field activities will be completed on the site, with the exception of surface water and sediment characterization work to be performed along Kelley Brook and an unnamed tributary to Kelley Brook.

#### 7.1 Site Access

Personnel present at the site will generally be limited to authorized personnel consisting of SHA, SHA's subcontractors, the site owner or his representatives, Town of Plaistow authorities, NHDES, and USEPA (and their contractors). Access to developed portions of the site is restricted by chainlink fencing which surrounds Parcel 1 except for a portion of its boundary with Parcel 2. Access through the fence can be obtained through one gate located at the entrance to the site along Kelley Road. The entrance to the site along Kelley Road is padlocked closed, and requires a key to unlock and open the gate. It is our understanding that during the current USEPA removal action twenty-four hour security is being maintained at the site by a guard service. The guard service controls access of unauthorized personnel, inspects the perimeter of the site, maintains a site entry/exit log of all personnel visiting the site, and will note observations that are out of the ordinary. After completion of the removal activities, anticipated to end in approximately September 1997, the Kelley Road gate will be closed and locked to limit access to the Site by unauthorized personnel. A key will be required to unlock the padlock which keeps this gate closed. The gate should be closed and locked with the padlock whenever possible except when authorized personnel are actively entering or leaving the site via the gate.

#### 7.2 Designation of Work Zones

Work areas or zones as defined in this HASP have been designated as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November, 1985. In accordance with this guidance document, work areas at the site will consist of the following three zones:

- C Exclusion Zone (EZ): the area which is known to be, or has the potential for becoming, contaminated by the work performed.
- Contamination Reduction Zone (CRZ): the area between the EZ and the Support Zone. A Contamination Reduction Corridor will be located within the CRZ and serve as the area within which personnel and equipment will be decontaminated. This corridor will be the normal entry and exit path for the EZ.
- C The Support Zone (SZ): the area which is not contaminated.

#### 7.2.1 Exclusion Zone (EZ)

The exclusion zone will consist of the active work area(s) where RI activities with a significant chance for exposure to hazards are taking place. As a general rule, the perimeter of the EZ will be defined as an approximately 25-foot radius from the location of the work activity. This perimeter

may be increased or decreased as necessary to guard unprotected personnel from potential hazards that may arise from these operations and/or accommodate site access/size constraints. Where the work area is confined to a particular location for an extended period of time (i.e., during drilling, soil pile sampling [with an excavator], test pitting), the perimeter of the zone will be marked with brightly colored hazard tape, traffic cones, or other similar markers. All personnel entering these areas must wear the prescribed level of personal protective equipment. At present, we envision delineating an exclusion zone during drilling, soil pile sampling (with an excavator), and test pitting activities.

During soil gas sampling/analysis, measuring of groundwater/product levels, stream gaging, sampling of groundwater/surface water/sediment and other similar activities, we do not plan to formally delineate the exclusion zone because of the numerous work locations involved across the site over a relatively short time span, and the limited likelihood of exposure to personnel other than those doing the actual work.

# 7.2.2 Contamination Reduction Zone (CRZ)

The CRZ will be located adjacent to the exclusion zone in a level debris-free, and upwind area; this is where personnel will begin the sequential decontamination process (if warranted) when exiting the exclusion zone. To prevent cross contamination and for accountability purposes, all personnel will enter and leave the exclusion zone through the CRZ. Separate heavy equipment decontamination zones will also be established at the site.

# 7.2.3 Support Zone

The support zone will include the project command post, and will consist of an area outside the exclusion zone and CRZ where support trailers and equipment will be staged. Eating, drinking and smoking will only be allowed in this area.

# 7.3 Communications

An office trailer will be present at the site for the duration of the removal action activities. We understand a telephone accessible to SHA and SHA subcontractor personnel will be installed at the trailer. The SSHO will be instructed to telephone the office at least once daily to update the PM and/or the Project Principal on the day's activities. During intrusive activities, such as soil pile sampling, test pitting, and drilling, in which there is a greater chance of exposure to potential hazards the SSHO will have a cellular phone to be used in the case of an emergency.

#### 7.4 Additional Safety Measures

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- C For at least a portion of the site characterization program a single SHA employee (field representative/SSHO) may be present at the site. During drilling, test pitting, soil pile sampling, and surveying operations, at least one non-SHA individual (employee of respective subcontractor) will be present at the work site and will serve as the "buddy" to the SHA personnel on-site. During groundwater/product sampling, liquid level measuring, stream gaging, and surface water and sediment sampling activities, two SHA employees (or more) will typically be at the site together and serve as each other's buddies.
- C Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or set equipment on the ground. Protect air monitoring equipment from water by bagging.
- C If potentially contaminated, hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- C Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination (if needed).
- C Beards or other facial hair that interfere with respirator fit are prohibited on personnel required to wear respirators.
- C All potentially contaminated equipment must be decontaminated or discarded before leaving the site.
- C At the end of the work day, or for any other extended break period when no authorized person is in attendance at the work site, equipment and other site conditions will be left in a condition so as to limit the potential for accidental injury to others.

#### 8.0 DECONTAMINATION PROCEDURES

In general, everything that enters a designated EZ at the site must either be decontaminated or properly discarded upon exit from the EZ. All personnel, must enter and exit the EZ through a

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designated CRZ. Prior to demobilization, contaminated equipment will be decontaminated and inspected by the SSHO or SSHO designee before it is moved into the SZ.

Decontamination of personnel is not anticipated to be a significant issue for personnel involved with RI work activities due to the anticipated lack of direct exposure to gross levels of contamination. Decontamination of equipment is not anticipated to be a substantial health and safety issue, and will be completed primarily for the purpose of limiting potential cross-contamination of samples of environmental media destined for laboratory analysis as part of the project. Dedicated equipment (e.g., bailers) will be used when practicable. Smaller pieces of re-usable equipment (e.g., oil/water interface probe, split spoon sampler) will be decontaminated with a scrub brush and non-phosphatic soap solution, followed by clean water rinse prior to re-use; the decontamination liquids will be contained in approximately five-gallon buckets. Larger pieces of equipment (e.g., backhoe/excavator, drilling rig) will be power washed when warranted based on visual observations, and prior to leaving the site.

Decontamination will be completed in the CRZ at selected locations near the perimeter of the exclusion zone. Spent decontamination liquids will be allowed to infiltrate into the subsurface unless visible signs of significant contamination (e.g., free product) are observed, in which case decontamination fluids will be containerized for later disposal with drummed wastes already present at the site.

During the course of RI field activities, when protective gloves or overalls are worn, they are to be removed and properly disposed of when significantly soiled, showing signs of loss of integrity, or at the end of a work shift. These disposable protective clothes are to be removed within the CRZ and placed in plastic trash bags. Personnel will wash face and hands thoroughly prior to eating, drinking, smoking, etc.

In the unlikely event that project personnel involved in the RI field activities appear to be exposed to more significant levels of contamination, decontamination will be conducted in accordance with the procedures outlined in the sections to follow.

#### 8.1 Procedures for Equipment Decontamination

- 1. Gross amounts of contamination will be removed using a non-phosphatic soap and clean water rinse.
- 2. Reusable equipment (e.g., respirators) will be examined to assess whether equipment can be properly decontaminated or should be disposed. If decontamination appears feasible, then this will be completed using a non-phosphatic soap and a water rinse. If not, then equipment will be disposed of properly.

#### **8.2** Procedures for Personnel Decontamination

The decontamination procedure outline below applies to personnel at this site wearing Level C or modified Level D personal protection. These are minimum acceptable requirements.

- 1. Equipment Drop Deposit equipment used on-site (tools, sampling devices and monitoring instruments, etc.) on polyethylene sheeting. These items must be decontaminated or disposed as waste prior to removal from the Exclusion Zone.
- 2. Outer Boot and Glove Removal Remove outer boots and gloves. If outer boots are disposable, deposit them in a plastic-lined container. If non-disposable, store the in a clean dry place.
- 3. Outer Garment Removal Remove chemical resistant outer garments and dispose of them in a plastic-lined container.
- 4. Respiratory Protection Removal Remove hard hat, facepiece, and, APR (Level C only) on a clean surface. APR cartridges will be discarded as appropriate. Wash and rinse hard hat, face piece, and respirator at least daily. Wipe off and store respiratory gear in a clean, dry location.
- 5. Inner Glove Removal Remove inner gloves and dispose of them in a plastic-liner container.
- 6. Field Wash Thoroughly wash hands and face with soap and water. If significant dermal exposure is indicated or suspected, the affected area will be thoroughly washed with soap and water at the nearby office trailer/wash area. If lingering effects of exposure are indicated or suspected, the affected personnel will seek prompt medical attention.

#### 9.0 EMERGENCY RESPONSE PLAN

Site personnel must be prepared for emergencies such as: illnesses or injuries, chemical exposure, fires, explosions, spill, leaks, releases of harmful contaminants, or sudden changes in the weather. The following sections outline the general procedures for emergencies. Emergency information, such as telephone number of emergency contacts, should be posted as appropriate.

#### **9.1 Emergency Information**

In the event of an emergency, the field team will immediately contact the appropriate emergency services. In the absence of a mobile cellular phone the nearest phone for field personnel is located within the on-site trailer. Emergency telephone numbers include:

•	Fire Department	(603) 382-8512 or 911
•	Ambulance	(603) 382-8512 or 911
•	Hospital (Hale Hospital)	(508) 374-2000
•	Police Department	(603) 382-1200 or 911
•	Paul M. Currier (NHDES)	(603) 271-4069

A map with directions to the hospital is provided as Figure 3. Hale Hospital is located at 140 Lincoln Avenue in Haverhill, Massachusetts.

#### **9.2 General Procedures**

A first aid kit, 15-minute emergency eye wash, and fire extinguisher rated for class A, B and C fires will be present adjacent to the Exclusion Zone during all subsurface explorations (test pits and test borings/well installations). It shall be the responsibility of the SSHO to make a determination as to the proper response to a particular emergency. As soon as practical after emergency response, the SSHO shall brief the SHA Project Manager as to the nature of the incident, and response actions taken. The SSHO, with the assistance of health and safety support staff, shall evaluate the site conditions and make a determination regarding any measures that could be taken to prevent incidents of this nature from being repeated. The SHA Project Manager shall notify the NHDES and USEPA regarding site emergencies.

In case of the need for evacuation from the work site, an alarm in the form of verbal instructions will be given by the SSHO. The evacuation route will be along the most direct open path to the site entrance gate. If personal safety permits, prior to site evacuation, equipment and other site conditions will be left in a condition so as to limit the potential for accidental injury to others, or otherwise exacerbate the emergency situation. Subsequent to evacuation from the area of danger, as soon as it is possible, the SSHO will make an accounting of all on-site project personnel, and the incident will be reported to NHDES and other appropriate governmental authorities (e.g., Fire Department, Police, etc.).

#### 9.3 Emergency Procedures - Specific Incidents

#### 9.3.1 Chemical Exposures

#### Inhalation

A. If site personnel experience symptoms suggesting overexposure to toxic chemicals (lightheadedness, dizziness, headache, nausea, shortness of breath, burning sensation in the mouth, throat or lungs), the person should be escorted from the contaminated environment to fresh air immediately. The designated SSHO will be responsible for monitoring personnel.

- B. If unconscious, the victim should be removed from the contaminated area immediately and brought to the nearest hospital. Rescuers shall wear personal protective equipment equivalent to one level of protection above that of the victim.
- C. If the victim is no longer breathing, he/she shall be moved away from the contaminated area. Mouth-to-mouth resuscitation or some alternate form of effective artificial respiration shall begin immediately.

Should any of the above scenarios be encountered, emergency medical attention/advice must be obtained immediately by contacting the Fire Department and/or transporting the victim to the hospital.

#### **Skin Exposure**

If there is skin contact with toxic or potentially toxic chemicals, the skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water.

All contaminated parts of the body, including the hair, should be thoroughly washed. It may be necessary to wash repeatedly.

#### Ingestion

If site personnel should ingest toxic or possibly toxic chemicals, obtain medical attention immediately.

#### Eyes

If a toxicant should get into the eyes, they should be washed with generous amounts of water. The eye should be flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least fifteen minutes. Medical attention should be obtained immediately.

#### 9.3.2 Personnel Injury

The SSHO will maintain a current certification in Standard First Aid. A first aid kit will be available on-site at all times. In the event of personnel injury, the SSHO, or the designated alternate, will administer appropriate first aid and arrange transportation for injured personnel to the designated medical facility (if necessary). If the personnel injury is a work related injury/illness (e.g., hit by falling piece of drilling equipment or backhoe/excavator), rather than a non-work related injury/illness (e.g., heart attack), the SSHO will evaluate the site conditions to determine if the

hazard still exists. Site personnel shall not re-enter the work zone until the cause of the injury/illness is determined, and the work zone is designated safe to re-enter by the SSHO.

## 9.3.3 Fire/Explosion

In the event of a fire or explosion, the Fire Department shall be alerted and all personnel shall move to a safe distance from the involved area. The SSHO shall make a determination regarding the severity of the fire, and whether site personnel shall attempt to extinguish it. Fires shall not be fought by site personnel if an explosion hazard is present. Personnel should not attempt to fight large fires on this site.

# 9.3.4 Chemical/Petroleum Spill (e.g., AST leak)

In the event of a significant spill (e.g., spill or release that results in a probable hazardous material release) the Fire Department and other appropriate governmental/regulatory agencies will be contacted immediately for proper spill response actions.

#### **10.0 STANDARD OPERATING PROCEDURES**

# **10.1 Compressed Gas Cylinders**

No activity of this nature is anticipated as part of RI field activities at this site.

# **10.2 Confined Space Entry**

No activity of this nature is anticipated as part of RI field activities at this site.

# **10.3 Cutting and Desludging Storage Tanks**

No activity of this nature is anticipated as part of RI field activities at this site.

#### **10.4 Demolition**

No activity of this nature is anticipated as part of RI field activities at this site.

# **10.5 Drill Rig Operation**

Potential hazards associated with drilling include: falling tools, hammers, and casing; frayed or snapped cables or ropes; the spinning "cat-head"; and the rotating drill head and attached casing or augers. All on-site personnel must exercise their judgement in maintaining a safe working distance

from boring and/or well installation activities as appropriate relative to their assigned duties. Care must also be taken to avoid overhead and underground utilities (e.g., electrical, natural gas, water, sewer, telephone, etc.).

As with many outdoor projects, other potential physical hazards include:

- C Slippery surfaces, uneven or rough surfaces, steep grades which can cause a slip, trip, or fall;
- C Attendance to good housekeeping (e.g., neat and orderly stacking of equipment) so as to avoid slip, trip, and fall hazards; and

Specific precautions for drilling activities will include:

- C All personnel in the vicinity of the operating machinery will wear steel-toed footwear and hard hats; and hearing protection and safety eyewear as needed. Personnel should not remain in the vicinity of operating equipment unless it is required for their work responsibilities.
- C Be particularly aware of overhead lines in the work area. Any vehicle or mechanical equipment capable of having parts of its structure elevated (drill rig, crane, etc.) near energized overhead lines shall be operated so that a minimum clearance of 10 feet is maintained.
- C All drill rigs and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and SHA's representative (inspector) must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter. The driller and helper shall not simultaneously handle augers or drill rods unless there is a standby person to activate the emergency stop.
- C The driller must never leave the controls while the tools are rotating unless all personnel are kept clear of rotating equipment.
- C A long-handled shovel or equivalent must be used to clear drill cuttings away from the hole and from rotating tools. Hands and/or feet are not to be used for this purpose.
- C A remote sampling device must be used to sample drill cuttings if the tools are rotating or if the tools are readily capable of rotating. Samplers must not reach into or near the rotating equipment. If personnel must work near any tools which could rotate, the driller must shut down the rig prior to initiating such work.
- C Drillers, helpers and inspectors must secure all loose clothing when in the vicinity of drilling operations.

C Only equipment which has been approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together. Pins that protrude excessively from augers shall not be allowed.

#### 10.6 Drum and Container (i.e., Containing Unknown Waste) Handling

No activity of this nature is anticipated as part of RI field activities at this site.

#### **10.7 Test Pit Excavations**

Potential physical hazards associated with test pit excavations include: slips, trips, falls, and the potential to be struck by the backhoe/excavator bucket. In addition, test pit excavations involve site intrusive procedures which can result in the exposure of site personnel to potentially contaminated subsurface soils and groundwater, and vapors potentially released from either media.

Specific precautions for test pitting activities will include:

- C All personnel must avoid standing within the turning radius of the equipment or below any suspended load.
- C All personnel must stand a minimum of two feet from the edges of the excavation.
- C Job sites must be kept clean, orderly, and sanitary.
- C Whenever groundwater is encountered, care must be taken to avoid creating muddy or slippery conditions.
- C Personnel should avoid turning their back to operating machinery. In addition, personnel should avoid wearing loose clothing, or other personal items around equipment that could catch or ensnare such items.
- C Personnel should wear hard hats and always stand far enough away from operating machinery to prevent accidental contact which may result from mechanical or human error.

#### **10.8 Laboratory Waste Packs**

No activity of this nature is anticipated as part of RI field activities at this site.

#### **10.9 Liquid Transfer**

No activity of this nature is anticipated as part of RI field activities at this site.

#### **10.10** Sampling Drums and Containers (i.e., waste containing)

No activity of this nature is anticipated as part of RI field activities at this site, beyond the limited potential for sampling contents of damaged/crushed drums as part of test pit excavations (see Section 10.7). If drum contents are freely accessible (i.e., drums are crushed/damaged), and air-monitoring indicates no evidence of vapors above background levels in breathing zone air, samples of drum contents may be collected for waste characterization purposes. Hazard control measures and protective equipment guidelines will be those described in Table 2 for test pit explorations.

#### **10.11** Shipping and Transport (i.e., of waste)

No activity of this nature is anticipated as part of RI field activities at this site.

#### **10.12** Shock Sensitive Materials

No activity of this nature is anticipated as part of RI field activities at this site.

#### **10.13** Tanks and Vaults

No activity of this nature is anticipated as part of RI field activities at this site.

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TABLES

#### TABLE 1 KEY PROJECT CONTACTS REMEDIAL INVESTIGATION - HEALTH AND SAFETY PLAN Beede Waste Oil/Cash Energy Site Plaistow, New Hampshire

	KEY PROJECT CONTACTS	TELEPHONE NUMBER
Emergency Cont	acts:	
Fire: Ambulance:	Plaistow Fire Department Plaistow Fire Department	911 or (603) 382-8512 911 or (603) 382-8512
Hospital:	Hale Hospital, 140 Lincoln Avenue Haverhill, MA (has chemical trauma capabilities)	(508) 374-2000
Poison Control Co	enter	(800) 562-8236 (NH) (800) 682-9211 (MA)
Police:	Plaistow Police Department	911 or (603) 382-1200
New Hampshire Waste Manageme 6 Hazen Drive Concord, NH 033 Mr. Pau	Department of Environmental Services nt Division, P.O. Box 95 302-0095	(603) 271-4069
United States En	risesmental Destation A gener	(003) 211-7007
JFK Federal Build Boston, MA 0220	ding (HBO) 03-2211	
Mr. Jam Mr. Rol Safety (	es M. DiLorenzo, Remedial Project Manager Sert Hinten, Region I Office of Site Remediation and Restoration Officer	(617) 223-5510 (617) 573-5728
Sanborn, Head & Associates, Inc. (SHA) 6 Garvins Falls Road Concord, NH 03301-5174		Office: (603) 229-1900 Field cellular phone:
Mr. Pau Dr. Cha Mr. Jan Mr. Sco Officer	I M. Sanborn (Principal), Project Principal rles A. Crocetti, C.G. (Principal), Project Manager nes Z. Taylor (Hydrogeologist I), Project Hydrogeologist ott R. Nerney (Engineer I), Site Supervisor/Site Safety and Health	(003) 473-9430
SHA Subcontrac	tor Contacts:	
Total Waste Mana Newington, NH	agement, Corp. (Test pit excavations) Contact: Mr. Darryl Verville	(603) 431-2420 (800) 932-5900
MyKroWaters, In Concord, MA	c. (Direct-push well installations) Contact: Ms. Deborah Farnsworth	(508) 369-3037
Capital Environm Dunbarton, NH	ental Drilling Services, Inc. (Drilling Explorations) Contact: Mr. Terry Swain	(603) 774-4920
Menzie-Cura & A Westford, MA	ssociates, Inc. (Risk Assessment Sampling Activites) Contact: Dr. Jerome Cura	(508) 453-4300
OSHA HAZWOP	'ER-trained survey crew - to be determined	

#### TABLE 2 SUMMARY OF TASK-SPECIFIC HAZARDS, CONTROL MEASURES, AND PERSONAL PROTECTIVE EQUIPMENT REMEDIAL INVESTIGATION - HEALTH AND SAFETY PLAN Beede Waste Oil/Cash Energy Site Plaistow, New Hampshire

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT	
Non-Intrusive Work (Site walkovers, field survey, site preparation for intrusive activities)	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> </ul>	Work in <b>Level D</b> (standard work clothes) personal protective equipment (PPE). Any changes in the level of PP	
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>	required based on site conditions, such as the potential for contact with visibly contaminated surface soils, will be the responsibility of the designated SSHO.	
Soil Gas Surveys, Installation of Driven Well Points	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> </ul>	Work in <b>Level D</b> PPE (standard work clothes). Any changes in the level of PPE required based on site conditions,	
	Handling heavy objects	<ul> <li>Observe proper lifting techniques</li> <li>Obey sensible lifting limits</li> <li>Use mechanical lifting equipment to move large, awkward loads</li> </ul>	such as the potential for contact with visibly contaminated surface soils/sediments, will be the responsibility of the designated SSHO.	
	Sharp objects	<ul> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury from sharp objects exists</li> <li>Maintain all hand and power tools in a safe condition</li> </ul>		
	High noise levels	• Use hearing protection when exposed to high noise levels (i.e., rule of thumb when necessary to raise one's voice to communicate with others three to five feet away).		
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>		
Near Surface Hand Augering and Grab Sampling of Waste and Soil	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> </ul>	Work in <b>Level D</b> PPE (standard work clothes). Any changes in the level of PPE required based on site conditions,	
	Dermal contact and inhalation of hazardous substances	<ul> <li>Work in well ventilated area</li> <li>Utilize Modified Level D PPE if dermal contact hazard (See Section 4.0 for description of PPE)</li> <li>Utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls if inhalation hazard (See Section 4.0 for description of PPE)</li> </ul>	such as the potential for dermal contact or inhalation of nuisance dust from visibly contaminated surface soils, will be the responsibility of the designated SSHO.	
	Sharp objects	<ul> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury from sharp objects exists</li> <li>Maintain all hand and power tools in a safe condition</li> </ul>		
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>		

#### TABLE 2 SUMMARY OF TASK-SPECIFIC HAZARDS, CONTROL MEASURES, AND PERSONAL PROTECTIVE EQUIPMENT REMEDIAL INVESTIGATION - HEALTH AND SAFETY PLAN Beede Waste Oil/Cash Energy Site Plaistow, New Hampshire

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT
Test Pit Explorations	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> <li>Stand at least two feet from the edge of the test pit excavation</li> <li>Backfill each test pit exploration before proceeding to the next location or use appropriate barricades</li> </ul>	Initiate work in <b>Level D</b> PPE (standard work clothes with mandatory use of hard hat) . Monitor for volatile organic compounds using a photoionization detector (PID). If visually contaminated soils are observed and dermal contact hazard is present, upgrade to <b>Modified Level D</b> PPE. If sustained PID readings in breathing zone are measured above 5 parts per million (ppm) but below 25 ppm, call the SHA PM and upgrade to <b>Level C</b> PPE. If sustained PID readings are greater than 25 ppm, discontinue work.
	Heavy machinery and rotating equipment	<ul> <li>Avoid standing within the turning radius of backhoe/excavator and bucket</li> <li>Avoid turning back on operating backhoe/excavator</li> <li>Stand far enough away from operating machinery to prevent accidental contact which could result from mechanical or human error</li> </ul>	
	Overhead and underground utilities	<ul> <li>Keep operating equipment clear of overhead utility lines or other overhead hazards</li> <li>Contact dig-safe and local/site utility representatives to locate/mark underground utilities prior to excavating</li> </ul>	
	Dermal contact and inhalation of hazardous substances	<ul> <li>Work in well ventilated area</li> <li>Monitor breathing zone of work area for volatile organic compounds using a photoionization detector (PID)</li> <li>Utilize Modified Level D PPE if dermal contact hazard (See Section 4.0 for description of PPE)</li> <li>If inhalation (based on PID or high levels of dust) and dermal hazard present, utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls (See Section 4.0 for description of PPE)</li> </ul>	
	Handling heavy objects	<ul> <li>Observe proper lifting techniques</li> <li>Obey sensible lifting limits</li> <li>Use mechanical lifting equipment to move large, awkward loads</li> </ul>	
	Sharp objects	<ul> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury from sharp objects exists</li> <li>Maintain all hand and power tools in a safe condition</li> </ul>	
	High noise levels	• Use hearing protection when exposed to high noise levels (i.e., rule of thumb when necessary to raise one's voice to communicate with others three to five feet away).	
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>	

#### TABLE 2 SUMMARY OF TASK-SPECIFIC HAZARDS, CONTROL MEASURES, AND PERSONAL PROTECTIVE EQUIPMENT REMEDIAL INVESTIGATION - HEALTH AND SAFETY PLAN Beede Waste Oil/Cash Energy Site

FIELD ACTIVITY	FIELD ACTIVITY POTENTIAL HAZARD HAZARD CONTROL MEASURES		PROTECTIVE EQUIPMENT
Drilling Explorations (direct-push, hollow-stem auger, cased wash and drive, or air rotary methods)	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> </ul>	Initiate work in <b>Level D</b> PPE (standard work clothes with mandatory use of hard hat) . Monitor for VOCs using a PID. If visually contaminated soils are observed and dermal contact hazard is present, upgrade to <b>Modified Level D</b> PPE. If sustained PID readings in breathing zone are measured above 5 parts per million (ppm) but below 25 ppm, call the SHA PM and upgrade to <b>Level</b> C PPE. If sustained PID readings are greater than 25 ppm, discontinue work.
	Heavy machinery and rotating equipment	<ul> <li>Avoid standing near operating/rotating drilling equipment</li> <li>Avoid turning back on operating drill rig</li> <li>Stand far enough away from operating machinery to prevent accidental contact which could result from mechanical or human error</li> </ul>	
	Overhead and underground utilities	<ul> <li>Keep operating equipment clear of overhead utility lines or other overhead hazards. For electrical wires less than or equal to 50 kV keep a minimum clearance of 10 feet. For electrical line greater than 50 kV, maintain a minimum clearance of 10 feet plus 0.4 inches per kV above 50 kV</li> <li>Contact dig-safe and local/site utility representatives to locate/mark underground utilities prior to excavating</li> </ul>	
	Dermal contact and inhalation of hazardous substances	<ul> <li>Work in well ventilated area</li> <li>Monitor breathing zone of work area for volatile organic compounds using a photoionization detector (PID)</li> <li>Utilize Modified Level D PPE if dermal contact hazard (See Section 4.0 for description of PPE)</li> <li>If inhalation (based on PID or high levels of dust) and dermal hazard present, utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls (See Section 4.0 for description of PPE)</li> </ul>	
	Handling heavy objects	<ul> <li>Observe proper lifting techniques</li> <li>Obey sensible lifting limits</li> <li>Use mechanical lifting equipment to move large, awkward loads</li> </ul>	
	Sharp objects	<ul> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury from sharp objects exists</li> <li>Maintain all hand and power tools in a safe condition</li> </ul>	
	High noise levels	• Use hearing protection when exposed to high noise levels (i.e., rule of thumb when necessary to raise one's voice to communicate with others three to five feet away).	
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>	

# TABLE 2 SUMMARY OF TASK-SPECIFIC HAZARDS, CONTROL MEASURES, AND PERSONAL PROTECTIVE EQUIPMENT REMEDIAL INVESTIGATION - HEALTH AND SAFETY PLAN Beede Waste Oil/Cash Energy Site

#### Plaistow, New Hampshire

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT
Well Development, Groundwater Sampling, and Field Permeability Testing	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> </ul>	Work in <b>Level D</b> PPE (standard work clothes). Any changes in the level of PPE required based on site conditions, such as the potential for contact with contaminated groundwater, will be the responsibility of the designated SSHO. If free product is encountered, upgrade to <b>Modified Level D</b> PPE and monitor for VOCs using a PID. If sustained PID readings are measured above 5 parts per million (ppm) in breathing zone but below 25 ppm, call the SHA PM and upgrade to <b>Level C</b> PPE. If sustained PID readings are greater than 25 ppm, discontinue work.
	Dermal contact and inhalation of hazardous substances	<ul> <li>Work in well ventilated area</li> <li>If free product observed during development or sampling, monitor breathing zone of work area for volatile organic compounds using a photoionization detector (PID)</li> <li>Utilize Modified Level D PPE if dermal contact hazard (See Section 4.0 for description of PPE)</li> <li>If inhalation (based on PID) and dermal hazard present, utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls (See Section 4.0 for description of PPE)</li> </ul>	
	Handling heavy objects	<ul> <li>Observe proper lifting techniques</li> <li>Obey sensible lifting limits</li> <li>Use mechanical lifting equipment to move large, awkward loads</li> </ul>	
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>	
Staff Gauge Installations, Stream Temperature Profiling, Stream Gaging, Surface Water and Sediment Sampling	Slips, trips, falls	<ul> <li>Watch where you are stepping</li> <li>Avoid areas of debris, thick vegetation</li> <li>Use caution when walking near steep slopes</li> </ul>	Work in <b>Level D</b> PPE (standard work clothes). Any changes in the level of PPE required based on site conditions, such as the potential for contact with visibly contaminated surface water or sediment, will be the responsibility of the designated SSHO.
	Drowning	<ul> <li>Utilize "buddy system" during work conducted in or near water where potential drowning hazard exists</li> <li>Wear life preserver if water level in Kelley Brook or unnamed tributary is high</li> </ul>	
	Dermal contact with hazardous substances	• Utilize Modified Level D PPE (See Section 4.0 for description of PPE)	
	Sharp objects	<ul> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury from sharp objects exists</li> <li>Maintain all hand tools in a safe condition</li> </ul>	
	High or low ambient temperature	<ul> <li>Wear proper work clothes</li> <li>Monitor for heat (if wearing impermeable protective ensemble) or cold stress as outlined in Appendix C</li> </ul>	

# **FIGURES**

The on-line Report Figures for this report are provided as separate Adobe Acrobat <sup>©</sup> files via links. To access a figure, click on the name of the figure below.

Figure 1	Locus Plan
Figure 2	<b>Proposed Exploration Location Plan</b>
Figure 3	Route from Site to Hale Hospital

**APPENDIX A** 

# HEALTH AND SAFETY PLAN AMENDMENT FORM

All amendments to the Safety Plan will be incorporated into the text and documented below.

SITE SAFETY PLAN AMENDMENT #:			
DATE:			
REASON FOR AMENDMENT:			
ALTERNATE SAFEGUARD PRO	CEDURES	S:	
REQUIRED CHANGES IN PPE: _			
SHA Project Manager	(Date)	SHA Site Safety and Health Officer	(Date)
NHDES Project Manager	(Date)	USEPA Safety Officer	(Date)
USEPA Remedial Project Manager	Date		

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# **APPENDIX B**

# HEALTH AND SAFETY COMPLIANCE AGREEMENT

# HEALTH AND SAFETY COMPLIANCE AGREEMENT REMEDIAL INVESTIGATION BEEDE WASTE OIL/CASH ENERGY SITE PLAISTOW, NEW HAMPSHIRE

All project team personnel, including but not limited to Sanborn, Head & Associates, Inc., Total Waste Management Corporation (TWM), Capital Environmental Drilling Services, Inc., Mykro Waters, Inc., and Menzie-Cura & Associates, Inc., must complete and sign this form prior to the commencement of site activities.

I have read and understand the contents of the site specific Health and Safety Plan and have had all relevant questions answered to my satisfaction. In addition, I agree to comply with the conditions and provisions outlined therein.

Name	Company	Signature	Date

**APPENDIX C** 

# HEAT AND COLD STRESS MONITORING PROGRAM

Appendix C is not included in this on-line version. Please contact the USEPA Region 1 Superfund Records Center for further information about this material. **APPENDIX D** 

# INFORMATION REGARDING SELECTED CHEMICALS IDENTIFIED BY PREVIOUS SITE INVESTIGATION

Appendix D is not included in this on-line version. Please contact the USEPA Region 1 Superfund Records Center for further information about this material. **APPENDIX E** 

ADDITIONAL EMERGENCY PHONE NUMBERS

# **APPENDIX E**

# ADDITIONAL EMERGENCY NUMBERS

Agency for Toxic Substances and Disease Registry (ATSDR)	404-639-0615 (24 hr)
Association of American Railroads, Bureau of Explosives	202-639-2222
Center for Disease Control	404-639-3535
Chemical Transportation Emergency Center	800-424-9300
Compressed Gas Association	703-412-0900
EPA Environmental Response Team	201-321-6660
Local Emergency Planning Committee (LEPC) Coordinator: <u>Town does not have an LEPC</u>	Not Applicable
National Response Center	800-424-8802
NIOSH Technical Information Line	800-356-4674
OSHA - Region I Boston, MA	617-565-7164
Poison Control Center	800-562-8236 (NH) 800-682-9211 (MA)
State Emergency Response Commissioner: Edward Schmidt	603-271-3503
State Environmental Agency: New Hampshire Department of Environmental Services	603-271-3503 (Day) 603-271-2231 (Night)
USEPA Region I New England Regional Laboratory Emergency Line	617-223-7265 (24 hr)
U.S. Department of Transportation (CFR 49 information)	202-366-4488
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