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FINAL ACCIDENT PREVENTION PLAN REMEDIATION OF QUARRY BUILDING 7/10 SITE 1/3 LANDFILL AND RADIOLOGICAL REMEDIATION ASSESSMENT FORMER NAS BRUNSWICK ME

08/01/2014

TETRA TECH EC INC

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION CONTRACT (RAC)
CONTRACT NO. N62470-13-D-8007
CONTRACT TASK ORDER NO. WE09

FINAL
ACCIDENT PREVENTION PLAN

REMEDIATION OF QUARRY, BUILDING 7/10, SITE 1/3 LANDFILL AND RADIOLOGICAL REMEDIATION/ASSESSMENT AT FORMER NAVAL AIR STATION BRUNSWICK CUMBERLAND COUNTY, MAINE

August 2014

Prepared for

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ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
AED	automatic external defibrillator
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
APP	Accident Prevention Plan
APR	air purifying respirator
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
CHMM	Certified Hazardous Materials Manager
CIH	Certified Industrial Hygienist
CIRS	Contractor Incident Reporting System
CPR	cardiopulmonary resuscitation
CSIR	Contractor Significant Incident Report
CSO	Caretaker Site Office
CSP	Certified Safety Professional
DGM	Digital Geophysical Mapping
EC	Emergency Coordinator
EHS	Environmental Health and Safety
EM	Engineer Manual
ESS	Explosives Safety Submission
EWP	Elevated Work Platform
EZ	exclusion zone
°F	degrees Fahrenheit
FCR	Field Change Request
HAZCOM	hazard communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
HRA	Historical Radiological Assessment
HTRW	hazardous, toxic, or radioactive waste
LLRW	low level radioactive waste
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MSDS	Material Safety Data Sheet
MIDLANT	Mid Atlantic
MRRA	Midcoast Redevelopment Reuse Authority
NAVFAC	Naval Facilities Engineering Command
Navy	U.S. Navy
NAS	Naval Air Station
NOSSA	Naval Ordnance Safety and Security Activity
NTR	Navy Technical Representative
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbons

PCB	polychlorinated biphenyls
PEL	permissible exposure limit
PID	photoionization detector
PM	Project Manager (Tetra Tech)
PPE	personal protective equipment
PQCM	Project Quality Control Manager
QC	quality control
RCRA	Resource Conservation and Recovery Act
ROC	Radionuclides of Concern
RPM	Remedial Project Manager
RQ	reportable quantity
RSOR	Radiation Safety Officer Representative
SDS	Safety Data Sheet
SHM	Safety and Health Manager
SS	Site Superintendent
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Supervisor
SZ	support zone
TSP	Task Specific Plan
TtEC	Tetra Tech EC, Inc.
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
UXOSO	UXO Safety Officer
VOC	volatile organic compound
VP	Vice President
ZIP	Zero Incident Performance

1.0 APPROVALS

By their signatures, the undersigned hereby certify that this Accident Prevention Plan (APP) has been prepared in accordance with the requirements of EM 385 1-1 (current version including revisions) and has been reviewed and approved for use during field operations to perform the Remediation of the Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation and Assessment at the Naval Air Station (NAS) Brunswick in Brunswick, Maine.

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2.0 BACKGROUND INFORMATION

a. **Contractor:** Tetra Tech EC, Inc. (TtEC)

b. **Contract Number:** N62470-13-D-8007, Task Order WE09.

c. **Project Name:** Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at Former Naval Air Station (NAS) Brunswick.

d. Project Description:

NAS Brunswick (Base) is located in Cumberland County, Maine, approximately 25 miles north of Portland and 31 miles south of Augusta, Maine (Figure 2-1). The Main Station lies between the Androscoggin River to the north and Casco Bay to the south and at one time encompassed approximately 3,200 acres. The Base was officially closed in 2011 in accordance with 2005 Base Realignment and Closure Law. As of May 2013, approximately 80 percent of the Base property has been transferred out of Navy control. All sites being addressed by this scope of work (Figure 2-2) are currently on Navy-owned property. The Base no longer maintains a security presence, but has a Caretaker Site Office (CSO) presence through designation of a Caretaker Site Officer.

During this Task Order, Tetra Tech EC, Inc. (TtEC) will perform a variety of project tasks at several sites at NAS Brunswick as described in the following sections, which involve, radiological-,munitions-, and chemical-related investigation and remediation work tasks. One additional site, the Picnic Pond, will also undergo remediation; however the Picnic Pond is being addressed under separate plans.

The Historical Radiological Assessment (HRA) was revised in 2013, and is close to finalization. Sites described below that are listed as HRA sites, as well as several other areas identified in the HRA will require further radiological surveys as well as some degree of radiological materials removal to be performed, in addition to the chemical- or munitions-related remedial actions being performed at the sites as summarized below. The radiological work elements for the HRA sites are addressed in the Basewide Radiological Management Plan as well as individual Task Specific Plans (TSPs)/Work Plans (as appropriate) for each site. Each TSP will identify the type (scoping/characterization) and what class of survey to be performed, survey boundaries, scanning methodologies and sampling frequencies for each of the radionuclides of concern (ROCs).

Quarry Munitions Site

The quarry is located southwest of the runways at the western boundary and is approximately four acres in size (Figure 2-3). Site investigations have discovered significant amounts of debris at the site, including munitions. It is suspected that the area was used as a dump site. During the site inspection performed in 2008, a rocket motor tail fin assembly was discovered on the surface of the Quarry Area. In 2009, the Naval Ordnance Safety and Security Activity (NOSSA) made a determination that there was at least a medium likelihood of encountering munitions-related

items in the subsurface. Based on this determination, the Navy has included this area in the Military Munitions Response Program. A surface clearance of the site (within the fenced area) has already been performed. Part of this site was also used for permitted petroleum sludge spreading/treatment in accordance with State of Maine requirements. Investigations accomplished to date have uncovered numerous Munitions and Explosives of Concern (MEC) items and debris (see Section 9.37). The quarry is also designated as a Historical Radiological Assessment (HRA) site and the ROCs for the site are Cesium-137, Radium-226, Strontium-90, and Uranium-238. The goal of this site is to minimize the radiological restricted release area. The site will not be free-released for radiological concerns. Chemical contaminants at this site include low level exceedances of screening criteria for semi-volatile organics, primarily polycyclic aromatic hydrocarbons (PAHs), and diesel-range organics that were detected in shallow subsurface and surface soil samples during the 2011 investigation performed by Tetra Tech NUS. During this investigation, low-level and sporadic exceedances of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), target analyte metals, and pesticides were detected in the Quarry Area soil.

At this site, TtEC will perform the following tasks (at the present time):

- Vegetation removal (clearing to approximately 3-4 inches above ground surface, not grubbed) will be performed as necessary to facilitate performance of digital geophysical mapping (DGM) surveys.
- DGM surveys will be conducted over the area to identify subsurface metallic anomalies that may be MEC or Material Potentially Presenting an Explosive Hazard (MPPEH). A MEC surface clearance has already been performed at this site.
- The results of the DGM surveys will help dictate the remedial action to be performed to address MEC hazards at this site. The MEC related remedial actions as well as additional radiological survey tasks, and chemical sampling tasks will be defined at a later date.

Building 7/10 Groundwater Site

As part of a Resource Conservation Recovery Act (RCRA) closure action, a small parking lot area was evaluated for past contaminant releases. The parking lot area (Figure 2-4) previously had several small buildings on it that were used for industrial operations. As a result of these operations, the solvent tetrachloroethene was found to be as high as 19 parts per billion (ppb) in one groundwater monitoring well at the site. Benzene is also present in levels between 0 and 7.4 micrograms per liter ppb. Based on discussions with the regulatory agencies, the Navy will initiate a cleanup effort to treat these low level volatile organic contaminants using an injection technology since the groundwater is shallow (less than 15 feet below ground surface) and the site is fairly small.

At this site, TtEC will perform the following tasks:

- Several shallow injection points and monitoring wells will be installed by drilling rig.
- Groundwater sampling via new and existing monitoring wells will be done to establish baseline groundwater contaminant levels prior to injection.

- Direct push soil samples will be collected in various locations using split spoon sampler and soil samples will be analyzed for volatile organic compounds.
- Ethyl lactate solution will be injected into the groundwater via the new injection points to treat the groundwater. The ethyl lactate will be injected under slight pressure. One or more injections are possible.
- Several groundwater sampling events will be done after injection to assess treatment progress.
- Asphalt will be restored around the well sites as required.

Site 07 Old Acid/Caustic Pit

Site 07 is a flat open clearing that is approximately 1.4 acres in size located in the northeast portion of the Base (Figure 2-5). The site is believed to have been used historically for disposal of acidic and caustic liquids, transformer oils, solvents, and miscellaneous liquids and was used more recently by the DRMO facility as an outdoor storage and equipment laydown area. The site was remediated in 2002 and approximately 400 cubic yards of soil was removed (one third was disposed of off-site and the remainder was spread across the remainder of the site in six inch lifts). Cadmium-contaminated soils (ranging from 2.5 to 16.3 milligrams per kilogram (mg/kg)) still exist in several areas. The soils also contain elevated levels of manganese. The site has shallow groundwater depth (4 to 7 feet). Groundwater is also contaminated with cadmium ranging from 1 to 50 µg/L and the goal of soil removal is to try to eliminate the continued source of groundwater cadmium contamination. There is no human health risk at the site due to chemical contamination, including cadmium. The site currently has land use controls that pertain to soil and groundwater use. Site 07 is also designated as an HRA site and the ROCs include Cobalt-60, Cesium-137, Tritium, Radium-226, Strontium-90, Thorium-232, and Uranium-238.

At this site, TtEC will perform the following tasks:

- Vegetation removal (clearing and grubbing) will be performed as necessary to facilitate radiological surveys.
- A walk-over radiological survey will be conducted prior to start of soil removal activities.
- Excavation and removal of approximately 1,200 cubic yards of low level cadmium-contaminated soil will be performed. The removed soil will be transported to and placed under the Site 1/3 cap extension. Soil will be radiologically screened during the removal process and remediation of radiologically impacted soil will continue until soil is below the release criteria.
- Radiological surveys will be accomplished utilizing a towed array system (where possible) and/or handheld instrumentation and sampling of the ground surface area and remediation of radiologically impacted soil will continue until all samples are below the release criteria.
- Soil that does not meet the radiological free release criteria will be containerized and turned over to the Navy's low-level radioactive waste (LLRW) waste contractor for management and disposal.

- Soil samples will be collected and analyzed for target analyte metals (as required) post removal to confirm remaining concentrations in soil.
- The remaining area will be smoothed and graded to match existing contours and will be seeded.

Site 09 Neptune Drive Disposal Area

Site 09 is a partially remediated hazardous waste disposal area occupying approximately 20 acres in the central portion of the Base (Figure 2-6). The site contains hazardous waste incinerator ash. Wastes reportedly dumped at this location include solvents that were burned on the ground, paint sludge, and wastes from the metal shop. Previous remedial actions for non-radiological contamination removed approximately 50,000 tons of contaminated soil. Clean fill was used to create a temporary cap (polyethylene liner, fill, and vegetation) over most of the remediated areas. However, remediation did not address waste material located under the roads or around the utilities and site investigations have confirmed that the boundary of the disposal area is larger than previously remediated though the extents are not fully known. Based on recent data gap investigations, the soils at various depths may contain low level concentrations of metals such as arsenic (up to 19.9 mg/kg) and chromium (up to 35.5 mg/kg) as well as PAHs, including carcinogenic PAHs such as benzo(a)anthracene (up to 19.9 mg/kg) , benzo(a)pyrene (up to 15.8 mg/kg), benzo(b)fluoranthene (up to 21.2 mg/kg) and low levels of other PAHs above EPA regional screening criteria. In addition, low-level VOCs such as tetrachloroethene may be present in some soil as a recent field screening using a photoionization detector (PID) detected up to 19.5 parts per million during data gap sampling. Site 09 is designated as an HRA site and the ROCs include Cobalt 60, Cesium -137, Radium -226, Thorium-232, Uranium -238, Strontium -90, and Tritium.

At this site, TtEC will perform the following activities:

- Vegetation removal (clearing and grubbing) will be performed as necessary to facilitate performance of radiological surveys.
- A walk-over radiological survey will be conducted prior to start of investigation activities.
- Visual based investigation will be performed in areas outside of the current cap for potential signs of ash (e.g., discolored areas that are black in color consistent with the ash previously found) in order to determine extents of waste outside of the capped area. This investigation will be accomplished via test pits or direct push soil borings. Chemical sampling is not currently anticipated to be required.
- A radiological survey will be done of the approximately 20-acres to characterize the site for radiological concerns. The survey will require some test pits to be performed in addition to or concurrently with the waste evaluation test pitting or soil borings.
- Site restoration will consist of either asphalt paving or backfill and seeding as necessary.

Site 1/3 Landfill

Site 1 (Orion Street Landfill) and Site 3 (Hazardous Waste Burial Area) are co-located in the central portion of NAS Brunswick. The Site 1/3 Landfill is located immediately north of Building 642 (Figure 2-7) and is approximately 10 acres in size and contains an estimated 300,000 cubic yards of waste. Prior disposal included domestic waste and refuse and debris including aircraft parts and construction debris as well as asbestos-containing materials. The landfill also was used for disposal of waste oil, solvents, pesticides, herbicides, petroleum products, paints, and other various chemicals. Solvents were detected in soil jar headspace PID readings from waste zones within the landfill from 0.5 to 90 ppm. PAHs, the pesticide dieldrin, PCBs, dioxin, arsenic, and cadmium were also detected at low levels; but above EPA risk based cleanup levels. It is not anticipated that soils in the waste zone will be encountered during this work and that the new landfill cover will be able to be tied into the existing landfill cover. The landfill has a RCRA multilayer cap in place, which was constructed in 1995. Site 1/3 Landfill is designated as an HRA site and the ROCs include Co-60, Cs-137, H-3, Ra-226, Sr-90, Th-232, and U-238.

At this site, TtEC will perform the following tasks:

- Vegetation removal (clearing and grubbing) will be performed as necessary to facilitate performance of radiological surveys.
- A walkover radiological survey will be performed on the existing landfill prior to beginning transfer of soil from Site 07 into one corner of the landfill.
- Radiological surveys and sampling of the new cap area, subgrade surface, and main cap area will be done.
- One corner of the current landfill cap will be opened up to allow Site 07 soils to be placed within the landfill.
- After soils are placed in the landfill, a new multilayer cap consisting of approximately 0.5 acres will be placed on and connected to the existing landfill cap.
- The fence will be extended around the new boundary of the landfill.

Goldner Site (Undocumented Former Orion Street Disposal Area)
The Goldner Site is located at the corner of Orion Street and Merriconeag Drive (Figure 2-8). The exact size of the site is currently not known. The area was identified as an open disposal area where the Ground Electronics Division disposed of defective electronics components, including electron tubes. The Goldner Site is designated as an HRA site and the ROCs for the site include Cobalt-60, Radium-226, Strontium-90, and Thorium-232. No information was provided that documents any chemical contaminants of concern at this site.

At this site, TtEC will perform the following tasks:

- Vegetation clearing (not grubbing) will be performed to facilitate conducting of radiological surveys.
- A walkover radiological survey will be performed of the area prior to beginning additional surveys.
- Radiological surveys will be conducted. Test pits will be required for the surveys.

- Soil that does not meet the radiological free release criteria will be containerized and turned over to the Navy's LLRW waste contractor for management and disposal.

DRMO Site

The DRMO Site consists of Building 584 (approx. 7,200 square feet) and the adjacent DRMO yard (Figure 2-9). The yard is a paved, fenced enclosure that is approx. 84,000 square feet. The eastern portion of the Building 584 was built on top of the acid/caustic pit which is part of Site 07. The DRMO Site is designated as an HRA site and the ROCs include Cobalt-60, Cesium-137, Tritium, Radium-226, Strontium-90, Thorium-232, and Uranium-238. The site information does not indicate that any chemical contamination is present.

At this site, TtEC will perform the following tasks:

- A gamma survey will be conducted on the existing asphalt surface associated with the DRMO yard.
- Asphalt will be removed and disposed of or recycled based on survey results.
- Underlying soils where the asphalt has been removed will be radiologically surveyed and sampled and soil that exceeds the release criteria will be remediated as required.
- Chemical soil sampling will be performed if soils under the asphalt appear to be impacted from prior operations (visibly stained, etc.).
- Areas will be repaved with new asphalt or recycled asphalt.
- Equipment that is currently within Building 584 will be radiologically surveyed and removed from the building and temporarily staged in another building to facilitate building radiological surveys.
- This task could also include the removal of ACM qualified individuals, if suspected ACM is discovered (currently not known if ACM is present or will require removal).

Site 02 Orion Street Landfill (South).

Site 02 is located in the vicinity of the southern extent of the main runways within the restricted weapons compound area (Figure 2-10). The site is approximately 3-acres and was previously used as the primary landfill for the base between 1945 and 1955 for disposal of domestic waste, hazardous materials, aircraft parts, and construction debris. All prior boring log soil samples had levels of contaminants (VOCs, PAHs, metals, and pesticides) that were below EPA risk based cleanup levels. A portion of this site has been capped with 15-inches of topsoil. Reportedly, wastes were incinerated on-site and buried in a two-acre pit (formerly a borrow pit). Site 02 is designated as an HRA site and the ROC for the site is Radium-226.

For this site, TtEC will perform the following tasks:

- The area will be cleared of vegetation to the ground surface (not grubbed). The area is heavily vegetated, including trees, which will be removed to ground surface and removed from the site.
- A complete walk-over gamma survey will be conducted prior to conducting characterization activities

- Further characterization of the site to determine the extent of waste material will be performed. This includes visual inspection and test pitting of the area to identify extent of buried waste. Chemical sampling is not anticipated to be required at the present time.
- Radiological surveys will be done on the non-cap and soil cap areas at surface and at depth using test pits or soil borings.
- Clean soil will be placed over the area and a geotextile liner will be placed on top.

Building 9 MWR CPO Wardroom/VPU/Electronics and Ordnance Shop
Building 9 (Figure 2-11) is approximately 8,888 square feet in size and was constructed in 1943. The building had several uses, including a laundry facility, electronics and ordnance shop (1950s to 1960s), Patrol Squadron Special Unit (VPU) (1970s to 1980s), and the Morale, Welfare, and Recreation CPO Wardroom from 2006 to 2011. A radiological survey was completed that identified radiological contamination was present in the building. Building 9 is designated as an HRA site and the ROCs include Cesium-137, Tritium, Radium-226, Thorium-232, and Uranium-238.

At this site, TtEC will perform the following tasks:

- Known radiological contamination identified during prior surveys will be remediated.
- The building will be prepared for additional radiological surveying including removal of debris, desks, chairs, etc. This task could also include the removal of ACM qualified individuals, if suspected ACM is discovered (currently not known if ACM is present or will require removal).
- A radiological survey will be performed of the building and areas of contamination will be remediated where found above free release criteria. This will be accomplished through use of hand or power tools and concrete scabbling as required based on the surface of building material that is contaminated (to be determined based on survey results).

Site 06 (Sandy Road Rubble and Asbestos Disposal Site)
Site 06 is bordered by Sandy Road to the southeast and by a stream behind Building 516 to the north and is approximately 1 acre in size (Figure 2-12). At this site, a small depression was reportedly used for general disposal of construction debris, aircraft parts, and other non-putrescible wastes until the late 1970s. Site 06 is designated as an HRA site and the ROCs for the site include Radium-226, Strontium-90, and Thorium-232. There are no reported chemical contaminants of concern, though waste is known to be present.

At this site, TtEC will perform the following tasks:

- Clearing and grubbing will be done as necessary to facilitate a gamma walk survey prior to the start of activities.
- A gamma survey will be performed of the area prior to beginning additional surveys.
- Radiological surveys and sampling of the surface area will be done. Test pits will be excavated and radiologically surveyed to achieve free release criteria.

- Areas of the site may be sampled to determine if all waste has been removed from the site, though the waste characterization inspection is anticipated to be visual.
- Site restoration will consist of backfill and grading followed by seeding.

The remedial actions being performed at NAS Brunswick will be performed in accordance with the Comprehensive Environmental Restoration, Conservation, and Liability Act (CERCLA); Executive Order 12580; and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

2.1 Phases of Work Requiring Activity Hazard Analyses (AHAs):

The remedial action elements above will consist of the following primary work tasks, each of which is addressed in an Activity Hazard Analysis (AHA) included as Appendix A to this APP. At this stage, AHAs are general in nature because not all of the work tasks and site-specific hazards can be ascertained until site surveys and characterization is complete and because equipment and methodology may change. AHAs; however, are living documents and will be reviewed and updated or developed accordingly for the specific site hazards and tasks and when a process changes, new information is obtained, or when new tasks will be performed.

These activities present hazards to workers. Mitigations for the hazards associated with the work are presented in this APP and its Site Safety and Health Plan (SSHP), which is included as Attachment 1 to this APP. All personnel involved in the tasks listed above are required to review and be familiar with the requirements of the APP and specifically, to review and sign the AHA for the task elements they will be involved with during the fieldwork.

3.0 STATEMENT OF SAFETY AND HEALTH POLICY

TtEC is committed to providing our employees with a safe and healthful workplace. It is the goal of TtEC to continue excellent safety performance on all work that we undertake. TtEC will perform work in a manner that is consistent with our Zero Incident Performance® (ZIP) philosophy. We plan to perform the work in a manner that integrates safety and health considerations so that we eliminate risk of workers' injuries or illnesses, environmental releases/impacts, or property damage. In addition to the line and staff management functions described in this APP, each individual performing work under this contract is responsible for his/her own personal health and safety and for assisting in ensuring the health and safety of coworkers. This employee responsibility includes observing specified health and safety requirements and communicating with the designated Site Superintendent (SS) as appropriate, on matters such as the effectiveness of specified control measures, identification of new potential hazards, and other related issues.

An employee's failure to adhere to the requirements of this APP, observe specified safety requirements and restrictions, or to properly use identified protective equipment may lead to injury or illness. Accordingly, deviation from safety and health procedures is not tolerated. Failure to comply with health and safety procedures and requirements will lead to reprimand up to and including dismissal.

Health and safety-related information is communicated to employees through meetings, postings, written communications, and hazard reports.

Our Corporate Safety and Health Policy Statement is included as Appendix B to this APP.

3.1 Contractor Accident Experience

Table 3.1 presents safety statistics for TtEC for the last 3 calendar years, as compared to the national averages for our industry. This comparison uses data collected by the U.S. Department of Labor, Bureau of Labor Statistics (BLS) for different types of employers, segregated by North American Industry Classification System (NAICS) codes.

This data comparison illustrates that TtEC's performance is very good and that our rates are significantly lower than the most recent national averages for the heavy construction industry.

TtEC's Experience Modification Rates are as follows:

(Policy Year October 1–September 30):

2010–2011: 0.76
2011–2012: 0.78
2012–2013: 0.76

4.0 RESPONSIBILITIES AND LINES OF AUTHORITY

4.1 Statement of Responsibility

TtEC is ultimately responsible for the implementation of its Environmental Health and Safety (EHS) program. No person will be required or instructed to work in surroundings or under conditions that are unsafe or dangerous to his or her health. Each employee is responsible for complying with applicable safety and occupational health requirements, wearing prescribed safety and health equipment, reporting unsafe conditions/activities, preventing avoidable accidents, and working in a safe manner.

4.2 Identification and Accountability

This section identifies the roles and responsibilities of TtEC personnel and subcontractors, who are conducting field activities during the remedial actions at NAS Brunswick.

4.2.1 Project Management

Line management, managers, and supervisors ensure that the project activities are executed in accordance with TtEC's EHS programs, procedures, and applicable regulations. Line managers have primary EHS responsibility and have EHS personnel to support them in fulfilling this responsibility. Line managers have the responsibility to integrate loss-control principles into operations and to ensure:

- TtEC safety culture is preserved by demonstrating commitment and program involvement; safety remains a major project goal and is not subordinated to other demands.
- Project-specific continuous improvement goals and objectives are developed based on EHS events and issues and are communicated to TtEC's employees and subcontractors.
- Projects are implemented in compliance with environmental, safety, and health laws and regulations, as well as EHS program requirements.
- EHS plans are developed, approved, and implemented in accordance with TtEC's requirements.
- Personnel understand the requirements of the project's EHS plan(s) and that each individual understands his/her responsibility for plan implementation.
- Personnel have the required training and capabilities to perform the assigned tasks.
- Corporate professionals or external resources, such as private consultants, are available for project support as needed.
- Project staff members are aware of, and have access to, technical information that TtEC maintains, various EHS databases, and online regulatory subscription services.
- Additional EHS reference books and technical information are made available to project staff upon request.
- Facilities and equipment meet TtEC and government regulations.
- Work rules are enforced.
- Inspections and incident investigations are conducted per EHS program requirements.
- Effective corrective actions are implemented in a timely manner following inspections, audits, incident investigations, etc.
- Employees, including subcontractors, are not only encouraged but also required to notify their supervisor(s) of any actual or potential health and safety hazards in the workplace and to develop safe work methods and controls to be implemented in project AHAs.
- Employees and subcontractors are assured they will be rewarded for reporting health and safety concerns.
- Clients are notified of TtEC's incident reporting procedures.
- Appropriate disciplinary action is implemented by line supervision when necessary.

Management responsibilities necessary to maintain a safe, healthful, and environmentally compliant workplace are identified in each procedure of TtEC's EHS program.

4.2.2 Project Manager – Derek Pinkham

With respect to the EHS program, it is the responsibility of the PM to:

- Ensure implementation of this APP through coordination with the SS and Safety and Health Manager (SHM) as well as the UXO Safety Manager for MEC related safety
- Conduct quarterly inspections (when required) jointly with the SHM or UXO Safety Manager
- Participate in the incident investigations

- Ensure the APP has the required approvals before any site work is conducted
- Ensure the SHM, UXO Safety Manager, and Site Manager are informed of project scope changes that require modifications of the APP
- Assume overall project responsibility for health and safety
- Ensure adequate resources are provided to the field staff to carry out their responsibilities (as outlined in this APP)

4.2.3 Corporate SHM – Roger Margotto, CIH, CSP

The SHM will review and approve this APP and any amendments prior to their adoption. The SHM will assist with implementation of the APP and provide project support on health and safety issues. The SHM will verify field personnel training, medical surveillance, and respirator fit test requirements. The SHM will advise the Site Safety and Health Officer (SSHO) and Site Manager regarding industrial hygiene concerns, interpretation and evaluation of analytical exposure data, and other safety-related issues, as needed. Subcontractor EHS plans will be reviewed by the SHM. It is also the SHMs responsibility to:

- Provide for the development and approval of the APP
- Serve as the primary contact to review any health and safety matters that arise and consult with the UXO Safety Manager on matters related to MEC safety
- Approve revised or new safety protocols for field operations
- Approve individuals who are assigned SSHO responsibilities
- Approve the SSHO to fulfill other project roles
- Approve any revisions of this APP
- Approve upgrading or downgrading of PPE
- Assist in the investigation of incidents

4.2.4 UXO Safety Manager – Steve Neill

The UXO Safety Manager is responsible for overseeing MEC- related safety and health programs and approving of the procedures and AHAs. In addition, the UXO Safety Manager will:

- Assign all UXO technicians who support MEC avoidance during construction support or who conduct surface clearance activities. He will verify all training, certification and experience, medical surveillance, and other requirements.
- Report any MEC safety and health issues to the SHM.
- Advise the SHM and PM regarding any concerns and other safety related issues, as needed.
- Review subcontractor health and safety plans and submittals related to MEC safety.
- Have discretionary authority to shut down MEC related field operations.
- Projects may not start until the SHM, Senior UXO Supervisor (SUXOS) and the Navy Contracting Officer or other designated personnel have approved the project plans.

4.2.5 Corporate Health Physics Manager – Erik Abkemeier, CHP, CSP

The roles and responsibilities of the Corporate Health Physics Manager are discussed within the Basewide Radiological Protection Plan and individual TSPs. The Corporate Health Physics Manager is also referred to as the Radiation Safety Officer.

4.2.6 Radiation Safety Officer‘s Representative- TBD

The duties of the Radiation Safety Officer Representative (RSOR) are described in detail within the Basewide Radiological Protection Plan. The RSOR is responsible for implementation of radiological controls as specified in the Basewide Radiological Management Plan and to supervise the activities performed by onsite radiological control technician staff following all applicable procedures and requirements. The RSOR reports directly to the Corporate Health Physics Manager.

4.2.7 Senior UXO Supervisor - TBD

A SUXOS must be able to fully perform all the functions enumerated for the UXO Technicians I, II, and III whom he supervises. The SUXOS coordinates all MPPEH-related clearance activities. The SUXOS is responsible for ensuring that all work related to clearance and MEC-related construction support is performed in accordance with the contract requirements in a safe and healthful manner. As a line manager, the SUXOS has the same responsibilities for safety and health program implementation as the PM. With respect to the safety and health program for this project, it is the responsibility of the SUXOS to:

- Verify the identification of all MPPEH.
- Ensure site personnel comply with the APP and SSHP.
- Direct all MEC-related operations.
- Coordinate with the SSHO, UXO Safety Officer (UXOSO), and the UXO Safety Manager and/or SHM on matters regarding site safety and health.
- Maintain control of the work area and prevent any unauthorized persons from entering the exclusion zone (EZ). If the unauthorized persons refuse to leave, the field crew personnel shall cease operations and notify the local authorities who will remove these individuals.
- Halt or modify any work conditions or remove personnel from the task site if conditions are unsafe.
- Ensure all task site personnel understand and comply with all munitions response safety requirements.
- Monitor team member’s performance, including safety and quality control.
- Be responsible for overall direction of on-site surface clearance activities.
- Be responsible for the day-to-day munitions response-related work at the site.
- Be responsible for implementing and enforcing all work plans related to munitions response operations.

In addition, the SUXOS, as the senior on-site authority, will:

- Conduct daily activities such as: supervising employees in munitions response operations, overseeing the implementation of specified levels of personal protective equipment (PPE), identifying potential problem areas and making corrective action recommendations to the PM, implementing all corrective actions, and maintaining a daily log of work activities including noting any extraordinary occurrences.
- Conduct weekly safety inspections jointly with the SSHO and UXOSO.
- Conduct incident investigations and daily safety meetings.
- Initiate corrective actions for observed safety violations and notify the PM of any changed conditions.
- Act as the Emergency Coordinator (EC) for MEC-related emergencies.
- Ensure compliance with all environmental, health, and safety requirements, including corporate policies, programs, and procedures; OSHA construction management requirements; Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard; MEC-related procedures and requirements; EM 385-1-1 requirements; and any client-or facility-specific requirements included in this plan and the work plan.

4.2.8 UXO Safety Officer - TBD

The UXOSO supports MEC related site activities by advising the PM and SUXOS on all aspects of health and safety on site and by providing technical assistance. These duties may include, but are not limited to, the following:

- Coordinating on-site health and safety activities with the PM and SUXOS and SSHO through implementation of this SSHP and MEC related operating procedures
- Evaluating and communicating with the SHM and UXO Safety Manager concerning the selection, application, inspection, and maintenance of PPE, air monitoring instruments (where applicable), and other site equipment and materials

The purpose of this evaluation is to ensure these items are meeting the identified objectives:

- Confirming UXO site personnel meet appropriate training and medical clearance/surveillance requirements.
- Conducting site-specific training, periodic safety meetings, and periodic inspections.
- Implementing or supporting the SSHO for, appropriate safety and health programs including Hazard Communication and other associated health and safety programs applicable to site activities.
- Investigating accidents and injuries.
- Providing information to the SHM and UXO Safety Manager regarding the need to modify this SSHP or applicable associated health and safety documents per site-specific requirements.
- Observing and monitoring field team members for symptoms of exposure or stress and determining the use and application of PPE and associated safety equipment.

- Performing site surveys prior to committing personnel or resources. The objective of these surveys will be to identify hazards that may be presented to site personnel and then take measures to flag/identify, remove/mitigate, or barricade the hazards.
- Performing ongoing operational surveys to ensure the proper use of PPE, hazard monitoring, and site control boundaries, and assisting the SUXOS in Emergency Action Procedures should an incident occur.

The SUXOS and UXOSO will have a shared responsibility to periodically collaborate with the PM to:

- Discuss any anticipated changes to the scope of work or to site conditions that were not initially anticipated.
- Obtain and/or verify site-specific information (emergency contact numbers, site hours of operation, etc.).
- Discuss updates on area restrictions, practices, and procedures.

4.2.9 Site Manager –TBD

It is the Site Manger responsibility to:

- Act in the same capacity as the PM for field assignments.
- Ensure site personnel comply with the APP
- Coordinate with the SS, SSHO and SHM on matters regarding site safety and health.
- Monitor team member's performance, including safety and quality control.
- Be responsible for implementing and enforcing all work plans.
- Identifying potential problem areas and making corrective action recommendations to the PM
- Ensure completion of the project on schedule and within budget, in accordance with the permits and project plans.
- Ensure that appropriate change management procedures are in place.
- Ensure compliance with all environmental, health, and safety requirements, including corporate policies, programs, and procedures; OSHA construction management requirements; EM 385-1-1 requirements; and any client-specific requirements included in this plan.
- Ensure that adequate site security, appropriate for the activities being performed, is maintained.
- Implement material control requirements in accordance with Government Property Control Procedures.
- Ensure that an adequate labor force is assigned to the project with the proper training, education, experience, skills, tools, equipment, and materials to complete the tasks and minimize potential impacts to the environment.
- Prepare and submit (electronically) the Daily Contractor Production Report to the Navy Remedial Project Manager (RPM), Navy Technical Representative (NTR), and PM.

4.2.10 Site Superintendent – TBD

It is the Site Superintendent's responsibility to:

- Ensure site personnel comply with the APP
- Coordinate with the SSHO and SHM on matters regarding site safety and health.
- Maintain control of the work area and prevent any unauthorized persons from entering controlled work zones. If the unauthorized persons refuse to leave, the field crew personnel shall cease operations and notify the local authorities who will remove these individuals.
- Halt or modify any work conditions or remove personnel from the task site if conditions are unsafe.
- Ensure all task site personnel understand and comply with all safety requirements.
- Monitor team member's performance, including safety and quality control.
- Be responsible for overall direction of on-site intrusive activities.
- Be responsible for the day-to-day work at the site.
- Be responsible for implementing and enforcing all work plans.
- Supervising employees in daily operations
- Overseeing the implementation of specified levels of PPE
- Identifying potential problem areas and making corrective action recommendations to the Site Manager.
- Implementing all corrective actions, and maintaining a daily log of work activities including noting any extraordinary occurrences.
- Conduct weekly safety inspections jointly with the SSHO.
- Conduct incident investigations.
- Initiate corrective actions for observed safety violations.
- Conduct daily safety meetings.
- Ensure completion of the project on schedule and within budget, in accordance with the permits and project plans under direction of the Site Manager.
- Ensure that appropriate change management procedures are in place.
- Ensure compliance with all environmental, health, and safety requirements, including corporate policies, programs, and procedures; OSHA construction management requirements; EM 385-1-1 requirements; and any client-specific requirements included in this plan.
- Ensure that adequate site security, appropriate for the activities being performed, is maintained.
- Ensure that an adequate labor force is assigned to the project with the proper training, education, experience, skills, tools, equipment, and materials to complete the tasks and minimize potential impacts to the environment.
- Act as EC for all emergencies other than MEC related emergencies.

4.2.11 Site Safety and Health Officer - TBD

The designated SSHO may be the QC Engineer, the Site Manager, or the Field Engineer (*to be determined*). At the present time, a full time, separately designated SSHO is not anticipated. The SSHO who is designated will fulfill the duties and responsibilities as defined in corporate procedures. The designated SSHO will have completed the 30-hour OSHA construction safety class or equivalent. The SSHO has 5 years of construction experience and has had 24 hours of formal health and safety training in the last 4 years. The SSHO reports to the SHM and assists with the on-site implementation of TtEC EHS programs and procedures (presented in Appendix C). The SSHO helps to ensure that operations are performed in compliance with applicable client- and site-specific requirements and government regulations. The SSHO will be responsible for the following:

- Ensure that TtEC employees and subcontractors understand the requirements of the TtEC EHS program and procedures through training and communications.
- Assist the Site Manager and SS with implementation of the APP.
- Conduct daily EHS briefings in accordance with corporate procedures.
- Conduct daily informal inspections of the project site and recording observations in the logbook.
- Ensure that TtEC employees and subcontractors understand the requirements of the TtEC EHS program and procedures through training and communications.
- Conduct daily EHS briefings in accordance with corporate procedures.
- Conduct daily informal inspections of the project site and recording observations in the logbook.
- Update the Safety and Health Deficiency Log on a daily basis.
- Assist the SS with weekly health and safety inspections. Ensure corrective actions identified are being addressed and corrected.
- Exercise stop work authority when warranted by conditions, in accordance with the project plans.
- Ensure that TtEC site personnel have received required EHS regulatory and program training, in accordance with corporate procedure training.
- Support the Site Manager and SS in accident and incident investigations.
- Function as a technical resource for all environmental, safety, loss control, and industrial hygiene issues.
- Ensure that the specific responsibilities for EHS personnel identified in the TtEC EHS programs and the EHS plan(s) are fulfilled.
- Perform on-site monitoring to determine appropriate levels and use of personal protective equipment (PPE).
- Perform site surveillances, hazard identification, and health risk analysis.
- Implement procedures and programs to eliminate risk to site personnel, including initiating changes to the plan.
- Act as EC when the SS is not immediately available.
- Implement site control measures.

- Maintain the field health and safety logbook.
- Provide summaries of field operations and progress to the SHM.

4.2.12 Field Crew Personnel – Various (TtEC, craft, and subcontractors)

Field crew personnel include UXO technicians, radiological control technicians, TtEC or craft personnel, and subcontractor personnel as well as the other persons entering the work site for the purpose of assisting in the completion of the project. This includes, but is not limited to, engineers, surveyors, drillers, TtEC management personnel, subcontractors, regulatory personnel, and site workers. It is the responsibility of field crew personnel to:

- Report any unsafe or potentially hazardous conditions to their supervisor and the supervisor to the TtEC SS.
- Maintain knowledge of the information, instructions, and emergency actions contained in this APP
- Comply with rules, regulations, and procedures set forth in this APP and any instituted revisions
- Initiate the Incident Report when involved in an incident/accident (if able to do so)
- Prevent admittance to work sites by unauthorized personnel (If the unauthorized persons refuse to leave, the field crew personnel will cease operations and notify the Site Manager, who will notify the PM and CSO and NTR for guidance.)
- Perform daily inspections of tools and equipment, including PPE, prior to use
- Conduct daily operations check of electronic equipment and annotate in the team's logbook
- Assist the SS with implementation and compliance with the APP

4.2.13 Subcontractors and Suppliers/Vendors

TtEC directs the subcontractor's supervisor regarding the work and the manner in which the tasks are to be performed. Subcontractors are responsible for assigning specific tasks to their employees; ensuring their employees are properly trained and are in compliance with applicable regulations; and allocating sufficient time, materials, and equipment to safely complete activities in accordance with this APP and their individual EHS plans. Subcontractors will attend TtEC's daily health and safety meeting prior to starting fieldwork.

4.2.14 Competent Persons

Competent person(s) for anticipated health and safety-related issues that may arise on the project will be designated by the PM or SM and stated by name in the AHA or section of this APP where a competent person is specifically required by task. If the name of the competent person is not known after the APP and AHAs are finalized, the name of the competent person will be added to the plan by FCR when the person is designated. Subcontractor personnel will provide competent persons as required where their tasks require a competent person. The subcontractor competent persons must also be designated by name.

4.2.15 Pretask Safety and Health Analysis

This plan requires the preparation of an AHA for each task. This plan also requires that these task analyses are reviewed with all workers and that workers acknowledge their review of safety and health requirements for each task. Where subcontractors are used to perform certain work activities, the Site Manager will ask the subcontractor to provide an AHA for review or the SSHO will work with the subcontractor in the preparation of the AHA. The AHA must be reviewed by the Contracting Officer and the SHM. The UXO Safety Manager, Steve Neill will also review and approve of the MEC related AHAs. As new activities are identified or the work environment or the task changes, new or revised AHAs are prepared by TtEC. These revisions or new AHAs will be submitted to the SHM, UXO Safety Manager (as appropriate) and the Contracting Officer for review.

Each worker performing tasks described in an AHA must receive training in the AHA and be allowed to make comments and suggestions regarding the AHA to ensure that all hazards are properly identified and that control measures are in place to mitigate these hazards.

4.3 Lines of Authority

An organizational chart depicting the lines of authority is included as Figure 4-1. TtEC will require that the personnel and subcontractors follow the requirements in this APP and verify that this requirement is being met.

4.3.1 Policies Regarding Noncompliance

TtEC has a discipline program that is discussed in all new employee orientations and is also written in the TtEC Project Orientation, Rules and Safety Guidelines Handbook (TtEC 2009), a booklet that is given to every company employee. Briefly, the rules implement a progressive disciplinary program. However, if at any time there is a significant compromise of safety procedures; immediate termination of an employee is allowed by the procedure. The SSHO will immediately report to the PM and SHM, and UXO Safety Officer or RSOR (as required), observations of noncompliance in the performance of the subcontractor or workers.

4.3.2 Manager and Supervisor Accountability for Safety

TtEC EHS 1-1 of the Corporate Safety Program requires that:

> "Line Management, the Project Manager, and supervisors, ensure that all company activities are executed in accordance with TtEC EHS programs, procedures, and applicable regulations. Line managers have primary EHS responsibility and have EHS personnel support to help them fulfill this responsibility."

5.0 SUBCONTRACTORS AND SUPPLIERS/VENDORS

5.1 Identification of Subcontractors and Suppliers/Vendors

Subcontractors selected for this project are prequalified as required by EHS 1-4, Subcontractor Selection and Management. Subcontractors working on this project include:

- Driller - TBD
- Analytical laboratory – TBD
- Surveyors – TBD
- Private utility locates - TBD
- Transportation and disposal subcontractor(s) – TBD
- Radiological surveys- TBD
- Asphalt paving – TBD
- Asbestos abatement (if required) - TBD

5.2 Means for Controlling and Coordinating Subcontractors

TtEC directs the subcontractor's supervisor on the tasks to be performed and the manner in which tasks are performed. Subcontractors are responsible for assigning specific tasks to their employees; ensuring that their employees are properly trained/ qualified and are in compliance with applicable regulations; and allocating sufficient time, materials, PPE, and equipment to safely complete activities in accordance with this APP/SSHP, and their individual EHS plans. Subcontractors' EHS plans are reviewed by the SSHO or the SHM and as required, the UXO Safety Manager.

5.3 Safety Responsibilities of Subcontractors and Suppliers/Vendors

Individuals employed by subcontractors and suppliers/vendors will receive a site-specific briefing regarding the site specific physical, chemical, or biological hazards present on the work site; required safety activities; and their individual roles and responsibilities for safety practices. While on site, all subcontractor supervisors will ensure their crews perform tasks that they are contracted to perform and that they follow at a minimum this APP and SSHP. The Site Manager or Site Superintendent will observe their performance and have to contractor's supervisors ensure compliance.

Subcontractors are responsible for complying with this APP, the SSHP, and other applicable regulations. Subcontractor personnel must receive a briefing from the SSHO prior to accessing the project work site. They must fulfill the requirements established by this APP and must acknowledge receipt of the plan and the hazard communication briefing. On-site subcontractors are responsible for providing their personnel with appropriate PPE as specified by the plan. Prior to the commencement or continuation of work, subcontractor and third-party personnel have the authority to request a work area hazard assessment by the Site Manager. Any member of the work party observing an imminent safety hazard or potentially dangerous situation will immediately suspend field activities.

Most subcontractors have their own EHS plans and/or corporate policies that are specific to their specialty services. TtEC management is responsible for ensuring that subcontractor employees follow the policies and procedures of TtEC and this APP. If subcontractors' EHS plans are more restrictive, the subcontractor supervisors must ensure that their EHS plans are also followed.

Hazards not listed in this APP or its' SSHP, but known by the subcontractor or known to be associated with a subcontractor's specialty, must be identified and addressed prior to beginning work, both in the subcontractor's EHS plan and during the daily health and safety briefing. The contractor will inform the SSHO of these hazards and assist in the development and/or revision of AHAs.

6.0 TRAINING

The following training is required on all projects under this contract.

6.1 New Hire Training

All employees will be trained on the APP and SSHP requirements and specific work tasks they will be performing and supervised with on the job training as shown below.

6.2 On-the-Job Training

In addition to the required initial training, each employee will receive three days of directly supervised on-the-job training (i.e., close supervision during the first three days working in the field). This training will address the duties the employees are expected to perform.

6.3 Periodic Safety and Health Training

In order to remain current with respect to 30-hour Construction Safety training, the SSHO will receive 24 hours of formal health and safety training every 4 years. As mentioned, all project personnel will receive site orientation training, to include training in the APP, the SSHP and appropriate AHAs at the start of work. This training will be repeated as necessary whenever work activities and site conditions change.

6.4 Hazardous Waste Operations Training and Refresher

Because this project is being performed on CERCLA, including Installation Restoration sites, all site workers who work within an exclusion zone and may either be exposed to MEC related hazards or chemical related hazards are required by 29 CFR 1910.120/1926.65200 to have completed 40 hours of hazardous waste operations training. An 8-hour refresher course is also required on an annual basis. Supervisors such as the SS, SSHO, and SUXOS must have completed 8 hours of relevant supervisory health and safety training and first aid/cardiopulmonary resuscitation (CPR)/bloodborne pathogen training. Hazardous Waste Operations training is identified for all workers who enter an exclusion zone on this project.

6.5 Radiation Safety Training

Radiation safety training requirements for Radiological Control Technicians and the RSOR are addressed in the Basewide Radiological Management Plan.

6.6 Hazard Communication Training

In accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200 and 29 CFR 1926.59), copies of material safety data sheets (MSDS) for hazardous chemical materials that are used during site operations or that may be present on site will be available from the on-site SSHO. The SSHO will conduct hazard communication (HAZCOM) training in accordance with 29 CFR 1910.1200 and 29 CFR 1926.59, Engineer Manual (EM) 385-1-1 (current version), and the HAZCOM program. Training will include, but will not be limited to, all hazards or potential hazards associated with work activities and any hazardous chemical materials brought to or found on the site.

6.7 Site-Specific Training

Prior to commencement of field activities, the SSHO will provide site-specific orientation training on each element of this APP and its' SSHP to all personnel assigned to the site. Site-specific training will address the activities, hazards, procedures, monitoring, and equipment for the work operations. Training will include site layout, hazards, evacuation route(s), emergency services at the site, emergency procedures, and the HAZCOM program (see Section 6.3); and will highlight all provisions contained within the APP/SSHP. This training will also allow field workers to clarify anything they do not understand and to reinforce each individual's responsibilities regarding health and safety for his or her particular activity. Specific training using AHAs for each task to be performed will be done at the start of each activity. If additional training is required for completion of field tasks during the site work, then the SHM, UXO Safety Manager, SUXOS, UXOXO, or SSHO (as appropriate) will either conduct the training or manage site personnel to ensure that tasks are conducted by appropriately trained personnel.

Personnel will also be trained in the site-specific emergency response plan, including: employee alarm system; evacuation procedures, routes, meeting places, and accountability; control of fuel sources; fire extinguisher education, minor spill control and cleanup procedures; reporting requirements; and rescue operations as applicable.

6.8 First Aid and Cardiopulmonary Resuscitation

The SSHO will identify those individuals who have current first aid, automatic external defibrillator (AED), and cardiopulmonary resuscitation (CPR) training. At a minimum, two people (including the SSHO and Site Superintendent) at every work location will have current CPR/first aid certification. In addition, all UXO technicians are required to be CPR and first aid trained as well as additional training. The names of all CPR/first aid-qualified workers will be assembled by the SSHO and posted on the site bulletin board in the field office and at each work location.

A first-aid kit meeting the requirements of OSHA and EM 385-1-1, Section 03.B.01, will be readily available at each work site by having the kit visible and ready for use. The location of each first-aid kit will be clearly marked, and kits will be protected from the weather and maintained clean. The kit must contain all the items listed in Table 3.1 of the EM 385-1-1 manual and include one pocket mouthpiece or CPR barrier and latex gloves. The kit will be inspected weekly, and items will be replaced as they are used.

6.9 Bloodborne Pathogens Training

Individuals on site who have first aid and CPR certification and who may provide first aid and/or CPR will have completed training in accordance with the TtEC Bloodborne Pathogens Program and OSHA Bloodborne Pathogen Standard, 29 CFR 1910.1030.

6.10 UXO Technician Training and Qualification

All UXO technicians will have a Certificate of Training from one of the following: U.S. Naval School EOD, Elgin AFB, Florida; Indian Head, Maryland; Texas A&M University, College Station, Texas; or the U.S. Army Bomb Disposal School, Aberdeen, Maryland or be graduates of the EOD Assistant Course, Redstone Arsenal, Alabama. In addition, all UXO technicians have current First aid/CPR training and if available at the site, AED training.

6.11 MEC Awareness Training

All site workers assigned to work at the Quarry Munitions Site will have MEC awareness training to recognize and know how to properly avoid (do not handle) and report suspicious items that may be MEC upon discovery.

6.12 Use of Portable Fire Extinguishers

Project personnel will receive OSHA-compliant fire extinguisher education (29 CFR 1910.157[g]) for the use of portable fire extinguishers to respond to incipient stage fires. Typically this is given during site orientation.

6.13 Hearing Protection

Users of personal hearing protection will receive OSHA hearing conservation program and hearing protector use training (29 CFR 1910.95[i],[k]). Typically this is given during site orientation.

6.14 On-Site Health and Safety Briefings

Project personnel and visitors will participate in daily on-site health and safety briefings conducted by the Site Manager, Site Superintendent, SSHO, RSOR, or SUXOS or delegated subcontractor supervisors to assist site personnel in safely conducting their work activities. Health and safety briefings will be conducted at the start of new work activities using AHAs. The briefings will include information on new operations, changes in work practices, or changes

in the site's environmental conditions. The briefings will also provide a forum to facilitate conformance with safety requirements, identify performance deficiencies related to safety during daily activities or as a result of safety inspections, and review any events (near-misses, injuries, material release, etc.). Work will be stopped and a safety briefing will be conducted following any event that could compromise the safety of personnel or the environment.

6.15 Training Certificates

Copies of the required training certificates and licenses (as applicable) will be maintained on site and will be made available for government inspection upon request. Subcontractors will provide TtEC with copies upon request.

6.16 APP/SSHP Acceptance Form

The form on the next page is the APP/SSHP Acceptance Form to be signed by all workers entering the project site to document site specific training. Each AHA has a signature page as well.

7.0 SAFETY AND HEALTH INSPECTIONS

Vehicle inspections will be performed daily on all site vehicles and heavy equipment by the operator in accordance with TtEC Construction Procedure (CP)-7. Weekly site inspections will be completed by the SSHO and SS (including RSOR and UXOSO as appropriate) in accordance with TtEC Corporate Environmental, Health, and Safety (EHS) 3-3 EHS Inspection procedure. Subcontractor personnel may be asked to participate in inspections. Daily inspections on the day(s) of scheduled field activities will be performed by the Site Superintendent, SUXOS, RSOR, and SSHO and will be noted in the site activity logbook and TtEC Field Inspection Forms referenced above are included in Appendix A in the SSHP. If any deficiencies are identified during the inspections, they will be noted on a deficiencies log as required by EM 385-1-1, Section 01.A.12d and corrected. Deficiencies to safety devices or equipment will be corrected before use or removed from service until they are fixed.

TETRA TECH EC, Inc.	APP/SSHP ACCEPTANCE FORM	
I have read and understand the policies and procedures listed in the Accident Prevention Plan/Site Safety and Health Plan. I will comply with the provisions therein.		
Print Name	**Signature**	**Date**

The inspections will be tracked for follow-up action on each of the respective forms. After the performance of the quarterly SHM inspections (if required), the inspection reports are reviewed and action items are followed-up. The SHM, or his or her designee (e.g., the UXO Safety Manager or Corporate Health Physics Manager), may conduct an unannounced inspection of the project.

7.1 Specific Assignment of Responsibility for a Minimum Daily Job Site Safety and Health Inspection During Periods of Work Activity

Daily site safety inspections will be conducted by the SSHO during this field effort to ensure safe work areas and compliance with the APP, OSHA regulations, and EM 385-1-1 requirements.

7.2 Proof of Inspector's Training/Qualifications

The SSHO has completed the 30-hour OSHA Construction Safety Training and meets the requirements of EM 385 1-1 Section 01.A.17 in the role of Site Safety and Health Officer. Other inspectors such as SUXOS and RSOR are competent in performing inspections required for MEC or radiological related tasks respectively based on years of experience and training within their disciplines. Competent persons designated for excavation, hoisting and rigging, fall protection, and/or other areas of expertise will be responsible for inspections performed in their assigned roles as competent person for that task.

7.2.1 Documentation Procedures

The SSHO will record any deficiencies in the on-site field logbook or in a daily safety report that is submitted with a daily report to the NTR and a copy submitted daily to the SHM.

7.2.2 Deficiency Tracking System

Deficiencies will be logged as required by EM 385-1-1, Section 01.A.12d. The items noted during field audits will be communicated to the TtEC EHS managers who maintain a corrective/preventive action database. Responsibility for resolving each item noted during these audits is assigned and tracked through resolution. Results from field audits are also regularly communicated within TtEC through training and electronic means as a method of continuous program improvement.

8.0 ACCIDENT REPORTING

When an incident occurs, the SS will orally notify the Site Manager, NTR, and the SSHO immediately. The Site Manager will notify the PM and Remedial Project Manager (RPM). The SSHO will notify the SHM and UXO Safety Manager (where required). The RSOR will notify the Corporate Health Physics Manager. If the incident is an injury requiring more than first aid or government property damages exceeding $2,000, the PM will immediately notify the Contracting Officer.

8.1 Exposure Data

The SSHO calculates exposure data on a weekly basis. Labor-hours worked are obtained from hours charged to a project for payroll purposes. The SSHO also collects the number of subcontractor labor-hours worked by reviewing daily project production reports and recording the hours on those reports. The SSHO will forward the labor-hours along with the Weekly Safety Report to the SHM, who will compile the monthly total and report that to the Contracting Officer.

8.2 Accident Investigations, Reports, and Logs

After the oral report, the SS or SSHO must complete a written-event report form within 24 hours. This form can be either prepared manually using the form found in the corporate procedure or

electronically using the corporate database. Within 72 hours, a completed investigation report must be submitted. The investigation report is part of the initial written report form. These forms can be completed by persons involved in the incident, but the investigation must be completed by a supervisor and/or the SSHO. All reports will be reviewed by the PM and the SHM and/or UXO Safety Manager or Corporate Health Physics Manager upon submission. Within the reporting system, corrective actions and persons responsible for those corrective actions are identified. The system requires follow-up to ensure completion of corrective actions. In addition, the Site Manager or the SSHO will complete, within 48 hours, a Contractor Significant Incident Report (CSIR), as required for any injury beyond first aid or for any government property damages $2,000 or greater. The Site Manager or the SSHO will ensure that a report is prepared and the forms are completed as requested by the NTR and/or the PM and SHM or UXO Safety Manager. In addition, all recordable injuries, near-miss incidents, high loss potential incidents, property damage incidents costing more than $500, first aid cases, and environmental spills (greater than reportable quantity) will be entered on the Tetra Tech program incident safety database (Total). This database summarizes the accident/incident history of the program from the start of the contract and on a year-to-date basis.

8.3 Immediate Notification of Major Accidents

Immediate reporting of incidents is required within TtEC. In addition, the Contracting Officer will be immediately notified by the PM (or a designee) of an accident (see list below) that is required to be reported by EM 385-1-1. An accident that must be reported immediately to Mid Atlantic Naval Facilities Engineering Command (NAVFAC MIDLANT) is any injury requiring more than first aid or any government property damage in excess of $2,000. For each reportable mishap described above, a verbal report will be made to the NTR or RPM as soon as possible, followed by submission of a NAVFAC MIDLANT Mishap Heads-Up Initial Notification form (see Appendix D) to the NTR within 48 hours. The form will contain as much information as is currently available and the name and e-mail address of the PM.

The NTR will enter the information provided in the Mishap Heads-Up Initial Notification form into the Contractor Incident Reporting System (CIRS). The CIRS will send a link and a password to the PM via e-mail. The PM will be required to access the CIRS and complete the report with all available information and resubmit the updated report online to NAVFAC MIDLANT within 24 hours of receiving the link.

List of accidents or events to be immediately reported:

a. Fatal injury/illness;
b. Permanent totally disabling injury/illness;
c. Permanent partial disabling injury/illness;
d. Three or more persons hospitalized as inpatients as a result of a single occurrence; Note: it is TtEC practice to inform our clients of any accident requiring hospitalization of our employees or subcontractors;

e. $200,000 or greater accidental property damage or damage in an amount specified by USACE in current accident reporting regulations (currently we report government property damage $2,000 or greater);
f. Arc Flash Incident/Accident;
g. Three or more individuals become ill or have a medical condition which is suspected to be related to a site condition, or a hazardous or toxic agent on the site.

9.0 PLANS (PROGRAMS, PROCEDURES) REQUIRED BY EM 385-1-1, THE SAFETY MANUAL (AS APPLICABLE)

TtEC has established written requirements for complying with regulations and implementing TtEC policy to prevent accidents and injuries. This section describes how some of these programs are implemented specifically for this project.

9.1 Layout Plans

Approval to stage materials and equipment and set up work areas and access to these areas, including but not limited to private and work related contractor vehicle parking, office space and laydown areas, will be coordinated through the NTR and CSO Officer, and as required, the Midcoast Redevelopment Reuse Authority (MRRA) representative. Erosion controls and dust control measures will be established in construction areas as per the Stormwater Pollution Prevention Plan and maintained throughout the project as required to minimize erosion and runoff. Site dust control practices and monitoring will be in accordance with the Dust Control Plan.

Portable toilet and hand-washing facilities will be located at the field office and within easy access to each active work zone.

Utilities for the site trailer will be obtained and permitted (as required) through coordination with the Base CSO and NTR and local utility providers as necessary. All hookups will be by a qualified and licensed electrician. Utility locates will be performed in accordance with TtEC Corporate Procedure EHS 3-15. Utilities locations will be verified through DigSafe Systems, Inc., which is the underground facility damage prevention system in Maine and uses the 811 call before you dig system. In addition a private utility location company such as Digsmart of Maine, Inc., will be used to verify and mark utilities in all ground disturbing locations.

TtEC will install any required temporary facilities such as telephone and internet service and will have accessible and regularly serviced portable toilet and hand washing stations set up for the project.

Security of the Base is no longer provided by the Navy; however there is a CSO Officer and the sites being remediated and surveyed are on Navy controlled property. Any entry into fenced and gated areas requiring access will be coordinated through the CSO Officer.

TtEC personnel and any subcontractors will become familiar with and obey Base and local, requirements including safety, fire, traffic, and security procedures. TtEC and subcontractor

personnel will keep within the limits of the established work area and avenues of ingress and egress and will not enter any restricted areas (if any) unless required to do so and unless cleared for such entry. TtEC will conspicuously mark any equipment and materials in possession for identification.

9.2 Emergency Response Plans

Emergency situations that may be encountered during site activities will normally be recognized by visual observation, however due to the potential presence of MEC on the surface or in the subsurface of the ground in the quarry and the potential for buried debris or waste underneath the surface at some of the sites, visual indications may not be enough to prevent a hazard that could result in an emergency. Emergencies involving physical hazards, including fires and explosions are generally readily apparent visually. Injuries and medical emergencies, including exposure to hazardous materials or chemicals may not always be so apparent. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in this APP, SSHP, and associated AHAs. Early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The SS, with assistance from the SSHO, UXOSO, and RSOR, will be responsible for performing surveys and inspections of work areas prior to initiating site operations and periodically while operations are being conducted. In addition, UXO technicians will be assigned to the project to provide UXO clearance and help eliminate potential MEC related hazards in areas where MEC may be present (Quarry). Survey findings are documented by the SS and/or the SSHO, UXOSO, or RSOR (as appropriate) in the site health and safety logbook. Site personnel are responsible for reporting situations they perceive as hazardous.

The above actions will provide early recognition for potential emergency situations, and allow TtEC to instigate necessary control measures. However, if the SS and the SSHO, UXOSO, or RSOR providing support determine that control measures are not sufficient to eliminate the hazard, TtEC will withdraw from the site until the hazard can be effectively managed or eliminated and notify the appropriate response agencies whenever a hazard presents an emergency situation.

MEC-related finds and MEC related emergencies will follow the requirements and procedures in the Work Plan and ESS related to MEC safety. More information on MEC hazards is included in Section 9.37 of this APP.

In the event of an emergency during on-site work, the primary response action by on-site personnel will be to safely assemble and evacuate to an area unaffected by the emergency and notify the Site Manager, SS, and SSHO and render the appropriate level of response and support as is included in these plans.

Offsite emergency services are capable of providing the most effective response to site emergencies in the event of a fire or explosion, injury or medical emergency. The PM and SHM,

as well as the UXO Safety Manager or Corporate Health Physics Manager (as appropriate) will be notified as soon as possible after an emergency as well as the NTR and RPM as stated in this APP.

TtEC personnel will provide incipient emergency prevention activities such as:

- Initial (e.g., non-structural) fire-fighting support (fire extinguisher) and prevention
- Initial spill control and containment measures and prevention
- Evacuation of personnel from emergency situations
- Initial medical support for injury/illness requiring only first aid-level support

9.2.1 Procedures and Tests

9.2.1.1 Pre Emergency Planning

Based on the nature of the planned activities, emergencies resulting from physical (including MEC) or chemical hazards, fires, or explosions could result. To minimize or eliminate the potential for these emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the Site Manager and/or SSHO with participation by subcontractor personnel):

- Coordinating with the local emergency response personnel and local hospitals prior to the commencement of work to ensure that TtEC emergency action activities are compatible with existing emergency response procedures and Facility procedures.
- Establishing and maintaining information at the project staging areas (support zone [SZ]) for easy access in the event of an emergency.
- Creating and maintaining documents on site that can be important in the event of an emergency situation, including:
  - A chemical inventory of hazardous chemicals on site
  - Corresponding MSDS
  - Completed medical data sheets (Appendix E) for on-site personnel
  - An entry/exit log identifying personnel on site each day, including any entry into controlled work zones
  - Route to emergency evacuation area (field office) (Figure 9-1, to be provided in Final APP)
  - Hospital route maps with directions (Figure 9-2, to be provided in Final APP)
  - Emergency notification - phone numbers (Table 9.2)
- At the beginning of the field work, the EC will hold an emergency evacuation drill.

The drill requires evacuations of the site to a designated assembly area (to be identified for each of the sites) where accountability of personnel will be made, then proceeding to the evacuation area. At the present time, the evacuation area will be the field office (Figure 9-1), location TBD. From the evacuation area, the SSHO will brief the crew on the routes to reach the hospital (Figure 9-2). The SSHO and Site Manager will, after the drill, conduct a written debrief meeting

with all participants. The SSHO will prepare a short report with recommendations for improvement of the evacuation plan.

9.2.1.2 Personnel and Lines of Authority for Emergency Situations

The SS will serve as the primary EC until emergency response personnel arrive on site and take command. If the SS is not present or is involved in the incident, the SSHO is the alternate EC. For MEC related emergencies, the SUXOS is the immediate EC and will take all necessary precautions and measures to initiate the emergency response, including notification of emergency personnel, Site Manager, and SSHO. In the event of an emergency, personnel will evacuate and the EC will be in charge until emergency responders arrive and take command. TtEC will not provide emergency response support beyond their on-site capabilities and their training.

9.2.1.3 Emergency Signal, Assembly and Evacuation Procedures

In the event of an emergency situation such as fire or explosion, where TtEC is making the determination to evacuate the site, the EC will activate an air horn (or vehicle horn if available) indicating the initiation of evacuation procedures. The emergency signal will be:

- NOTIFICATION: Long steady beeps will be used to indicate emergency situations. As required, cellular telephone, handheld radio, and voice may be used if the horn is not heard.
- EVACUATION: Personnel will leave the site and assemble at the site assembly area for accountability and then proceed to the field office (shown on Figure 9-1). Supervisors will account for team members and initiate further response and notification.
- Once nonessential personnel are evacuated, appropriate response procedures will be enacted to control the situation. Notification will be made to the Navy NTR, RPM, CSO, and Fire Department or offsite Medical Services (as required) and TtEC internal points of contact.
- ALL CLEAR: Verbal notification by Site Manager must be given to all employees before they return to the site.
- Follow on reporting after emergency response is over.

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety, or welfare of site workers. Specific examples of conditions that may initiate an evacuation include, but are not limited to, the following: severe and sudden weather conditions, fire or explosion, evidence of acute or unusual signs or symptoms of personnel exposure to chemicals, discovery of unknown exposed waste materials within landfill or disposal areas, and could also occur due to activities of other contractors or conditions not directly related to site work (e.g., other tenant emergency).

Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given and the order to evacuate is issued. Once the alarm has been sounded, the EC must establish that access for emergency equipment is provided and

that the equipment that may cause combustion has been shut down. As soon as possible, and while the safety of the personnel is being confirmed, emergency agency notification will commence as appropriate.

The TtEC field office has been designated as the primary evacuation area for project work activities, however if the field office is not considered to be safe, an alternate evacuation area and route may be required, which will be designated upon project start and marked on a map.

The location of assembly and evacuation areas will be upwind of the site as determined by the wind direction whenever possible. Prior to the start of site activities, and as required thereafter, the SSHO will establish and verify safe egress routes from the site to the assembly and designated evacuation areas and will coordinate this procedure with the subcontractor personnel as required. The SSHO will prepare a drawing or a map that diagrams these safe egress routes and location of assembly areas to keep this plan current if information changes. All site personnel will be briefed of the assembly and evacuation locations and routes (including alternate locations for each work location and will be updated whenever these change.

Figure 9-1 has been included to show the site layout and location of primary evacuation area (field office) and routes. The SSHO will use this same map to diagram egress routes from each work areas to the evacuation area and assembly areas for each site. From the field office, the map showing the route to the nearest emergency hospital (Figure 9-2), **Mid Coast Hospital**, located at 123 medical Center Drive in Brunswick, Maine will be used if medical services are required (See Section 9.2.6 below).

9.2.1.4 Emergency Equipment

The emergency equipment listed in Table 9.1 will be strategically placed and maintained on site in accessible locations where active work is taking place:

- Fire extinguishers will be maintained on site and shall be immediately available for use in the event of an emergency.
- If fuel will be transferred from portable fuel cans, they will be UL approved safety cans properly labeled.

Fire extinguishers will be inspected monthly to ensure:

- Sufficient charge
- No physical damage
- Tamper indicators are in place
- Up-to-date inspection tag

Site personnel will be trained in the use of the fire extinguisher as part of site-specific training.

9.2.2 Spill Plans

This section is prepared in complement to the spill response and reporting procedures included in the Environmental Protection Plan (EPP) and both sets of procedures will be reviewed by project staff. This plan deals with response and notification from a health and safety standpoint, while the EPP focuses on prevention of spills as well as cleanup and notification for spills to the environment, including agency notification and what spills are reportable to outside agencies:

In the event of a spill (any amount, regardless of how small):

- The SS notifies the Site Manager and SSHO.
- The Site Manager will notify the PM, NTR, and the CSO.
- The PM will notify the RPM.
- The SSHO will notify the SHM.
- Any spill quantity is reportable the NTR, RPM, and CSO, as well as to the PM and SHM.
- TtEC will assist the NTR, RPM, and CSO with any required notification to regulatory agencies if the spill is reportable (refer to Environmental Management Plan).
- In no case will TtEC report a spill to a regulatory agency without first notifying the NTR, Caretaker Site Officer, and RPM and gaining permission.
- An investigation and incident report will be prepared and corrective actions identified.

9.2.3 Firefighting Plan

Workers will not fight any fires other than incipient stage fires. There will be at least one fire extinguisher (refer to Table 9.1) at each active work location. The fire extinguishers are intended to fight only small fires that have recently occurred and can be reasonably extinguished immediately (incipient stage fires). In no case will workers attempt to fight any fire that cannot be reasonably extinguished within 30 seconds to 1 minute.

If a fire breaks out onsite, call (or designate someone) to call 911 before attempting to put out the fire (incipient stage only) and only if fighting the fire does not put anyone at further risk. Ensure a means of egress is available in the event the fire cannot be extinguished.

To use the fire extinguisher, remember the word P.A.S.S. – pull the pin, aim the nozzle at the base of the fire, squeeze the lever, and sweep side to side at the base of the fire. Workers will be given fire extinguisher training during project orientation.

Fire extinguishers will be inspected by the SSHO initially and then on a monthly basis (at a minimum). Additionally, all fire extinguishers will be inspected and serviced annually by a qualified professional. Any defective or partially-used fire extinguisher will be red-tagged and taken out of service until such time that it can be serviced. Fire extinguishers will be secured or supported when transported and in storage. During project demobilization, all fire extinguishers and other hazardous material will be properly dispositioned for further use at other TtEC projects. If fire extinguishers and other hazardous materials will be sent by a carrier, TtEC will ensure that the proper hazardous material declarations are prepared by a qualified individual for

ground shipment only.

9.2.4 Posting of Emergency Telephone Numbers

The list of emergency telephone numbers in Table 9.2 will be maintained at the telephone communications points in the field office. Please note, the Environmental Protection Plan contains additional numbers for reporting spills to outside agencies, and these are not included in the table.

9.2.5 Man Overboard/Abandon Ship

Not Applicable

9.2.6 Medical Support

9.2.6.1 First Aid

TtEC will ensure that a minimum of two people, including the Site Manager, SS, and SSHO as well as subcontractors have current certifications in CPR, AED, first aid, and bloodborne pathogens. All UXO technicians, including SUXOS and UXOSO have current CPR and first aid training. Other than rendering basic CPR and first aid, these employees are not expected to perform emergency medical duties; however, they are authorized to perform emergency rescue or other duties up to the level of their training.

For first aid injuries that are not deemed an emergency situation, appropriate care may include stabilization and transport (e.g., in TtEC site vehicle) to an urgent care or occupational medicine clinic. The SSHO will evaluate the location of the nearest occupational medicine provider by contacting WorkCare® during mobilization for these non-emergency injuries or illnesses. WorkCare® will be contacted immediately following appropriate first responder patient care or when the patient is transferred to emergency responder personnel in order to help assist with patient and case management and recommendations.

9.2.6.2 Medical Emergency

In the event of a medical emergency, first aid and CPR assistance will be provided by CPR, first aid, and, if an AED is onsite, AED trained individuals. The injured party will be moved as minimally as possible if the scene remains safe for the injured or ill person and first aid responders or responding emergency personnel. If it is safe to move the person without further injury or the location may become compromised, the person will be moved to the nearest location for continued care. No person will enter an unsafe location; however, to rescue an injured worker if the scene poses a hazard that could injure or trap the would-be rescuer.

Medical emergencies, should they occur on the project site, will typically rely on emergency responders (e.g., ambulance service) for patient stabilization and transport to the hospital. In the event of a medical emergency in which actual or suspected serious injury occurs, the following procedures will be implemented:

- Survey the scene and evaluate whether the area is safe for entry.
- Render first aid, CPR, and AED (if available) as necessary.
- Obtain emergency medical services for ambulance transport to a local hospital by calling 911 from a cell phone or landline. This procedure will be followed even if there is no visible injury. Provide the following information to the emergency dispatch personnel:
  - Identify location by address (or nearest cross-street intersection), request medical assistance, and provide a name and telephone number.
- Other personnel in the work area will be evacuated to a safe distance until the EC determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work will not commence until the hazard control issues are resolved.
- Notify the PM and SHM as well as the NTR. The PM will notify the RPM.

The nearest emergency hospital to NAS Brunswick is the **Mid Coast Hospital located at 123 Medical Center Drive, Brunswick, Maine.** The location of and directions to this hospital are included in Figure 9-2, and contact numbers for both hospitals including WorkCare® are provided in Table 9.1. The SSHO is instructed to drive by the nearest hospital to ensure that it is accessible and available and that the most efficient routes (primary and alternate) are identified during mobilization.

9.2.6.3 Fatal Injury

If a fatal injury occurs, the following additional steps will be followed:

- Notify the SSHO and Site Manager immediately.
- SSHO will notify the SHM, who will initiate contact with OSHA and other appropriate agencies.
- Site Manager will notify the PM and NTR
- PM will notify the RPM and Contracting Officer
- The work activities on the project must be stopped for 24 hours.
- Assist the SHM and OSHA, as directed.

9.2.6.4 Medical Data Sheet

Each field team member, including visitors and subcontractors, will be asked (the form is voluntary, but encouraged) to complete and submit a copy of the Medical Data Sheet (see Appendix E). This sheet will be provided to the SSHO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention. Any pertinent information regarding allergies to medications or other special conditions should be documented. This data sheet will be maintained confidential by the SSHO and information shared only to the extent necessary to support medical care of the individual.

9.3 Plan for Prevention of Alcohol and Drug Abuse

TtEC has a Drug-Free Workplace Program. All contractors and subcontractors on this project are subject to drug and alcohol testing at any time. Supervisors, managers, and the SSHO are to determine the fitness of their workers, including assessing whether their workers may be under the influence of any alcohol or drugs, including over-the-counter and prescription medications. During the initial site orientation and training conducted at the beginning of the project, all workers are reminded of the program and policies. The program and policies are also described in the Work Rules. Workers are encouraged to confidentially list their medications on a medical information form that is provided to them and retained by the SSHO. If a worker is injured or involved in an accident, the worker(s) involved may be asked to be tested. If a supervisor observes any worker who appears to be under the influence of drugs or alcohol, he/she may request testing of the worker.

9.4 Site Sanitation Plan

TtEC will provide portable toilet and hand washing facilities at the project worksite. These facilities will be serviced as necessary, but no less than on a weekly basis, maintained in good condition, and located in a worker-accessible location for each active work area.

Workers will discard all food debris and other detritus in a designated refuse container. Project wastes generated from the field activities will be packaged and disposed of as specified in the Waste Management Plan following applicable federal, state, and local laws and regulations.

Potable water will be provided for washing hands and face and for any drinking water provided to employees.

9.5 Access and Haul Road Plan

TtEC will utilize existing roadways and paths to the extent possible to access work locations where the surveys and remedial actions will be performed. Temporary haul routes may need to be constructed. If such roads are required, the Site Manager and/or SS will prepare a written Haul Road Plan and this plan will be submitted by FCR into this APP.

9.6 Respiratory Protection Plan and PPE

This section outlines the respiratory protection and PPE to be used on this project as well as reasons for downgrade or upgrade. PPE for site workers is selected and used based upon the existing and potential hazards anticipated, and the requirements of 29 CFR, Part 1910.120. Different levels of personal protection will be provided to workers depending on specific work tasks performed. The selection of PPE also requires an evaluation of chemical contaminants, concentrations of these chemical contaminants, and physical hazards that may be encountered.

Reasons to upgrade level of protection:

- Known or suspected presence of dermal hazards.

- Occurrence or likely occurrence of gas or vapor emission.
- Change in work task that will increase contact or potential contact with hazardous materials.
- Request of the individual performing the task.

Reasons to downgrade level of protection

- New information indicating that the situation is less hazardous than was originally thought.
- Change in site condition that decreases the hazard.
- Change in work task that will reduce contact with hazardous materials.

9.6.1 Respiratory Protection Plan

The need for respiratory protection is not currently anticipated for work being performed at any of the sites on this project based on review of the scope of work activities and the level of site contaminants remaining at each of the sites (see Section 2d). Engineering and administrative controls such as good dust control practices and good hygiene practices such as effective control zone management, decontamination and hand washing, as well as proper use of PPE will be implemented to help to control potential exposures. There are no anticipated activities or levels of contaminants in soil that are anticipated to expose workers to site-related chemical hazards above the permissible exposure limit (PEL) or action levels requiring the need for respiratory protection if these controls are effectively put into place. Dust control will be maintained on the site and air sampling will be done in accordance with the Dust Control Plan. Good dust control practices will help to reduce inhalation of respirable dusts from soil particles and help to keep other contaminants that may also be present at relatively low levels within soils (e.g., low levels of cadmium, arsenic, PAHs, PCBs, and ROCs from being inhaled or ingested with soil particles or migrating offsite.

Air monitoring for VOCs during well development, well injection and well sampling tasks and during excavation, test pitting and trenching at sites where solvent contamination is possible (refer to Section 2d) will be performed by the SSHO and documented in the site logbook.

Ambient air measurements for volatile organic vapors will be collected in the breathing zone of site workers at sites where VOCs are a potential contaminant of concern. No level above 10 ppm is acceptable without further investigation. Vapor levels in excess of this limit will result in the suspension of work until ambient vapor concentrations have dissipated to below 10 ppm. If work must continue in levels greater than 10 ppm, or at lesser concentrations if readings are sustained (do not dissipate), the SHM will evaluate the situation with the SSHO and recommend additional exposure control strategies, such as having site personnel who are qualified to wear a respirator and who are fit tested and trained, wear a full-face air purifying respirator equipped with organic vapor and high-efficiency particulate air (HEPA) cartridges.

Should signs of unknown forms of contamination or suspected higher levels of contaminants be discovered, work will stop and the Navy as well as the SHM will be notified so that the situation can be evaluated by the SSHO, SHM, and the Navy in order to address adequate levels of

protection and any additional engineering controls, monitoring requirements, and PPE requirements.

9.6.2 Personal Protective Equipment

The SHM has reviewed the applicable work plans and other available information and has evaluated each major work activity to determine the appropriate level of PPE needed for the work. This evaluation included a consideration of potential hazards present; work operations to be performed; potential routes of exposure; concentrations of contaminants present or reasonably expected; characteristics, capabilities, and limitations of PPE; and, any hazards that the PPE may create or exacerbate (e.g., heat stress). Evaluation findings and recommendations are listed in the AHA matrix and include the date the evaluation was conducted, the activity evaluated, PPE recommendations, and the name of the person(s) performing the assessment.

The basic level of PPE selection, as required by 29 CFR 1910.132, on the project site includes a hardhat when overhead hazards are present or when working around heavy equipment, safety glasses, safety boots that comply with ASTM F2412 and ASTM F2413 (except during geophysical operations), leather work gloves, work clothes, ear plugs when around power tools and heavy equipment, and weather-appropriate clothing. When handling soil and debris that is known to or may contain low levels of contamination such as cadmium, PAHs, PCBs, potential incinerator ash material, etc. workers and samplers will wear appropriate chemical protective gloves (e.g., vinyl or nitrile) as identified for the potential contaminants at the site, which are specified in the AHA.

Good hygiene practices will also help to keep potential dermal and ingestion exposures below the PEL. Workers will have access to and be instructed to use hand washing stations when leaving the contaminated area and before going on breaks to eat, drink, or smoke. Controlled work zones, including exclusion zone, contamination reduction zone, and support zones will be established and proper decontamination procedures will be followed. Soiled PPE will not be allowed within office or break areas and appropriate decontamination procedures will be followed for personnel, tools, and equipment before leaving an area.

If hazardous materials are in use on the project (e.g., spray paint, gasoline, hot asphalt emulsion, etc.), the MSDS or Safety Data Sheet (SDS) will be evaluated to determine the need for any additional PPE (e.g., chemical protective gloves) when for use of these products and the PPE needs will be included in the AHA where the product will be used.

Additional tasks not included in the AHA matrix will be reviewed by the SSHO and SHM. Any additional PPE requirements will be incorporated into the APP by completing a field change request (FCR) form. The FCR forms and PPE selection will require approval by the SHM.

9.7 Health Hazard Control Program

The primary health hazards associated with this work are physical hazards associated with heavy equipment and vegetation clearing tools and equipment operation. In addition, MEC hazards, if MEC is present in the surface of the work site in the Quarry present explosion or fire hazards to

personnel. In addition, some sites contain low-level residual contaminants such as metals (e.g. cadmium and arsenic), PAHs, PCBs, and residual solvents such as tetrachlorethene (refer to Section 2). It is possible also, that additional contamination could be discovered that was previously not known about or fully characterized. There are also numerous construction-related or environmental physical hazards including but not limited to noise, slips, trips, and falls, heat or cold stress, potential for severe weather. Biological hazards may be present onsite as well and include bloodborne pathogens (e.g., if first aid or CPR are required) as well as the potential for contact with poisonous plants and bites or stings by insects. Radiological hazards are also potentially present and will be controlled by following procedures in the Radiological Management Plan and TSPs.

TtEC will create systems and procedures to prevent and control physical, chemical, biological, and environmental hazards identified through the risk analysis. The hierarchy of controls is engineering, administrative, work practice, and PPE. Use of such controls in conjunction with PPE will help reduce the hazard or exposure to the lowest practical level. Where no standard exists, creative problem-solving will be used to create effective controls. The basic formula for controlling workplace hazards, in order of preference, includes:

- Eliminating the hazard from the method, material, or the facility
- Abating the hazard by limiting exposure or controlling it at its source
- Training personnel to be aware of the hazard and to follow safe work procedures to avoid it
- Prescribing PPE for protecting employees against the hazard and ensuring they not only use it, but they know how to use it correctly

9.8 Hazard Communication Program

Specific hazardous materials or chemicals that will be brought onto the project site are anticipated to be minimal (e.g., fuel, oil, lubricants necessary to perform routine maintenance of or operation of equipment and spray paint for marking ground). Larger quantities of hot asphalt will be required for specific tasks. When any material or chemical is brought onto the site, a MSDS or SDS must be provided to the SSHO. This includes all hazardous materials brought onsite by the subcontractors for their operations.

The SSHO will include all MSDSs or SDSs in an Appendix F of this APP in the field and a copy will be available in the field office. The SSHO will review the MSDSs or SDS with the workers and this training will be documented on the daily safety meeting form. All workers will have general HAZCOM training that explains how the program is managed at the site and that specifically requires them to notify the SSHO when any new material is brought onto the site.

All containers will be labeled specifying the content and hazards of the material in the container. An inventory will be maintained citing the location and quantities held.

9.9 Process Safety Management Plan

Not applicable.

9.10 Lead Abatement Plan

Not applicable.

9.11 Asbestos Abatement Plan

Should asbestos be identified as a concern during radiological surveys and require removal, , a separate asbestos abatement plan (including AHA) will be prepared and added to this APP by FCR.

9.12 Radiation Safety Program

The Radiation Safety Program as required by EM 385 1-1 06.E.03 is addressed within site-specific documents outside of this APP; including the Basewide Radiological Management Plan, Dust Control Plan, and individual TSPs.

9.13 Abrasive Blasting

Not applicable.

9.14 Heat/Cold Stress Monitoring Plan

There is a potential for heat stress and cold stress or related injuries during the performance of the planned activities from exposure to ambient temperatures and season in which the work is conducted, effects of wind chill, level of work activity, and level of PPE worn during work tasks and other factors, which can add significant heat stress to otherwise routine tasks. The SSHO will implement TtEC EHS Procedure 4-6, Temperature Extremes.

Heat stress-related problems include heat rash, fainting, heat cramps, heat exhaustion, and heat stroke.

- Heat rash occurs because sweat is not evaporating, causing irritation and vesicular inflammation. Standing erect and immobile in the heat allows blood to pool in the lower extremities. As a result, blood does not return to the heart to be pumped back to the brain and fainting may occur.
- Heat cramps are painful spasms of the muscles due to excessive water and salt loss from profuse sweating.
- Similarly, heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. Heat exhaustion is characterized by clammy and moist skin, nausea, dizziness, headaches, and low blood pressure.
- Heat stroke is characterized by dry skin due to lack of sweating, dry mouth, mental confusion and convulsions.

A person exhibiting signs of heat stress should be removed from the work area and moved to a shaded/cool area immediately. The injured person should be soaked with water and fanned to promote evaporation. Medical attention must be obtained immediately. **EARLY RECOGNITION AND PROMPT TREATMENT OF HEAT STRESS SYMPTOMS, INCLUDING HEAT STROKE, ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH**. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illnesses. To avoid heat stress, the following steps, as necessary, will be implemented:

- Adjust work schedules.
- Monitor temperature with a wet bulb globe thermometer (WBGT).
- Modify work/rest schedules according to monitoring requirements.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day, if possible, or at night if adequate lighting can be provided.
- Perform physiological monitoring.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, e.g. 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kilograms [kg]) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat.
- When heavy sweating occurs, encourage the worker to drink more. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.

The following strategies may be useful:

- Maintain water temperature at 50° to 60 degrees Fahrenheit (°F) (10°-16.6 degrees Celsius [°C]).
- Provide small disposable cups that hold about 4 ounces (0.1 liter).
- Have workers drink 16 ounces (0.5 liters) of fluid, preferably water or dilute drinks, before beginning work.
- Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break.
- A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
- Train workers to recognize the symptoms of heat-related illnesses.
- Rotate personnel and alternate job functions.
- Cooling vests when impermeable clothing is worn.

Early symptoms of heat stress related problems may include:

- Decline in task performance
- Lack of coordination
- Decline in alertness
- Unsteady walk
- Excessive fatigue
- Muscle cramps
- Dizziness

In summary, proper training and preventive measures will aid in averting loss of worker productivity and serious illness from heat stress. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat-related illnesses. To avoid heat stress, maintain worker's body fluids and electrolytes at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluids intake must approximately equal the amount of water lost in sweat, e.g., 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 ounces (0.23 kilograms) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat.

Cold weather in Maine could present the potential for cold stress during spring, fall, and especially winter months and temperatures may drop below freezing. As a result of the potential for freezing rain, snow, sleet and wet weather, with the added potential for wind chill, cold stress will be discussed as follows:

- Exposure to low temperatures presents a risk to employee safety and health through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment.
- Work conducted in the winter months can become a hazard for field personnel due to cold exposure. The personnel must exercise increased care when working in cold environments to prevent accidents that may result from the cold. The effects of cold exposure include frostbite and hypothermia. Wind increases the impact of cold on a person's body. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally labeled frostbite. Recognition of the symptoms of cold-related illnesses will be discussed during the health and safety briefing conducted prior to the onset of site activities.
- Hypothermia is a life-threatening condition in which the core body temperature falls below 95°F. Hypothermia can occur at temperatures above freezing particularly when the skin or clothing becomes wet. During exposure to cold, maximum shivering occurs when the core temperature falls to 95°F. As hypothermia progresses, depression of the central nervous system becomes increasingly more severe (Table 9.3). This accounts for the progressive signs and symptoms ranging from sluggishness and slurred speech to disorientation and eventually unconsciousness.

Frostbite is both the general and medical term given to areas of cold injury. Unlike hypothermia, frostbite rarely occurs unless environmental temperatures are less than freezing and usually less than 20°F. Frostbite could be a concern in Maine during this field effort if the fieldwork is conducted in the winter months. Frostbite injuries occur most commonly on the distal parts of the body (nose, earlobes, hands, and feet) that are subject to intense vasoconstriction. The three general categories of frostbite are:

- Frostnip – a whitened area of the skin which is slightly burning or painful.
- Superficial frostbite – waxy, white skin with a firm sensation but with some resiliency. Symptomatically feels "warm" to the victim with a notable cessation of pain.
- Deep frostbite – tissue damage deeper than the skin, at times, down to the bone. The skin is cold, numb, and hard.

In preventing cold stress, the SSHO must consider factors relating both to the worker and the environment. Training, medical screening, establishment of administrative controls, selecting proper work clothing, and wind-chill monitoring contribute to the prevention of hypothermia and frostbite. Recognizing the early signs and symptoms of cold stress can help prevent serious injury. Thus, workers will be trained to recognize the symptoms of hypothermia and frostbite and have appropriate first aid instruction. When the air temperature is below 50°F, the SSHO will inform workers of the proper clothing requirements and any work practices that are in effect to reduce cold exposure.

- Cold injuries and illnesses recognition and prevention measures will be emphasized during daily safety briefings when the potential for cold injuries and illnesses exists.
- Work will cease under unusually hazardous conditions.
- Phenothiazine (a sedative) and beta blocker drug use will be prohibited.
- A heated area will be available on site.
- Temperature will be recorded daily on site.
- Warm beverages will be available on site.

The SSHO will establish a work/rest schedule based upon worker monitoring. At the first sign of uncontrollable shivering, the worker will be rested in a heated shelter. Work will be stopped when the air temperature reaches 0°F.

Workers will be encouraged to layer clothing when air temperature is below 50°F. Clothing that has a high insulation value will be worn under protective garments. Insulated gloves will be worn when the wind chill index is below 32°F (i.e., air temp 50°F and wind speed > 20 miles per hour [mph] or air temp 40°F and wind speed > 5 mph). Insulating dry clothes will be available.

9.15 Crystalline Silica Monitoring Plan (Assessment)

Not applicable.

9.16 Night Operations Lighting Plan

Night operations are not anticipated to be required during the remedial action. All work will be performed during daylight hours.

9.17 Fire Prevention Plan

Fire prevention and protection measures require preplanning. At least one 10A:60BC (minimum capacity) fire extinguisher will be located at each work area and at least one 1A-10:BC fire extinguisher will be located within each site vehicle and each piece of heavy equipment.

Employees will follow safe work practices, including proper storage of flammable and combustible liquids, and the following rules:

- Smoking is permitted only in those areas designated specifically by the Site Manager or SS which are not within any controlled work zone.
- Personnel will follow hot-work procedures (not currently anticipated) to ensure that work is performed in a safe environment.
- Refueling will be performed only in a designated area.
- Equipment must be refueled with the equipment turned off (except under special circumstances as required by an operator's manual).
- No refueling will be performed unattended.
- Latching on fueling hoses is prohibited. Smoking is prohibited in any area where refueling is performed.
- Compressed gases, if present, will be secured only in an upright position. Flammable gases will be stored separately from oxygen gas cylinders. Any flammable cylinder storage areas (if any) will be posted as "FLAMMABLE, NO SMOKING."
- All other flammable liquids will be stored in an approved storage cabinet, unless they are for immediate use.
- Non-sparking and explosion-proof equipment and tools will be used whenever the potential for ignition of flammable or explosive gases, vapors, or liquids exists.
- Proper housekeeping will be conducted on board vessels to keep combustible materials away from heaters or vents, manifolds, or other potential ignition sources onboard.
- Any spills will be promptly cleaned up and sorbent materials will be placed in a closed metal container for disposal.

Hot work is not planned; however, if required (for instance if grinding or cutting of materials will create sparks), no hot work is permitted until it is determined that the area is gas-free and that there are no flammable or combustible materials stored within 50 feet of the work area. The TtEC Hot Work Procedure, EHS 6-5 and permit system will be implemented if any work is considered to be hot work, including fire watch. In addition, TtEC will notify the CSO and NTR if hot work will be performed.

In the event of a fire or explosion, contact the appropriate emergency authorities by calling 911 as specified in Table 9.2 – Emergency Contact Information. Any fire must also be reported to

the RPM, NTR, CSO, PM, and SHM. The person reporting the fire is required to provide the following information to emergency personnel:

- His/her name
- Location of the fire
- Number of injured persons and nature of injuries, if known
- Substance(s), chemical(s), or materials involved in the fire
- Size of the fire and available fuel (estimate)
- Extent of fire
- Rate that the fire is expanding (estimate)
- Time the fire started and the time the fire was extinguished
- Any other pertinent information

The Site Manager will assist the CSO and NTR to manage notifications and follow-on reporting as required.

9.18 Wild Land Fire Management Plan

Not applicable.

9.19 Hazardous Energy Control Plan

Control of hazardous energy during installation, start-up, and maintenance activities (where performed) will follow TtEC EHS 6-4 and OSHA 1910.147. EHS 6-4, Lockout/Tagout, establishes the TtEC Control of Hazardous Energy Program. This program applies to all TtEC operations, except as follows:

- Work on cord- and plug-connected electrical equipment where the plug is under the control of the employee performing the work
- Hot tap operations
- Work involving minor changes and adjustments to equipment during routine operations (such as small tooling adjustments)

Refer to details of this program in EHS 6-4. Details of methods used to control hazardous energy for a defined task must be documented in the AHA for that task. This analysis will require site- and equipment-specific analysis.

Temporary power and lighting will be in accordance with the National Electric Code and installed by qualified persons. Systems that are 110 volts will be protected by ground fault circuit interrupters or subject to the Electrical Safety – Assured Grounding in accordance with EHS 3-10.

9.20 Critical Lift Plan

Not applicable, as no crane use will currently be required for this project. However, this section is being used to address hoisting operations (lifting of equipment [not personnel)] by means of mechanical equipment such as an excavator). This means of hoisting may occasionally be required for loading and unloading of equipment and materials or placement of rolls of geotextile for the capping. Lifting by this means is not a critical lift because critical lift plans are required only for cranes. Lifts by other equipment are limited by the type of equipment used and such lifts are limited by restrictions imposed by the manufacturers of the equipment used. This section addresses hoisting and rigging performed by construction equipment that may be performed on this project.

9.20.1 General Requirements

Hoisting operations will be suspended during excessive inclement weather at the discretion of the Competent Person (SS-TBD) is Competent Person for TtEC. Subcontractors will provide and designate a Competent Person (TBD) for this task if performed. Equipment manufacturer's recommendations will be followed to determine ability to perform safe hoisting operations based on wind calculations and equipment configuration.

All rigging used in hoisting operations will be inspected by the Competent Person each day before use. Defective equipment or equipment showing excessive wear will be taken out of service. Rigging equipment will be used in accordance with the equipment manufacturer's instructions and will not be used for loads in excess of rated capacity. Rigging will only be attached to equipment via attachments specifically designed for lifting as per the manufacturer. Rigging will be properly stored and maintained when not in use. Only positive latching devices will be used to secure the load and rigging. Design, testing, and capacities of fabricated lifting devices will be maintained on site.

All hoisting equipment documentation, including inspection, training, certification records, and load data will be maintained on site. If any unsafe conditions or faulty equipment are detected, the equipment will not be used until the problem is resolved and satisfactory inspections have been completed. Daily pre-use inspections will be performed each day hoisting operations are to be performed. Inspections will include all functioning parts and systems, mechanical structures, and site conditions associated with hoisting operations.

Hazards during hoisting operations include being struck by loads during movement, being crushed underneath loads during placement, and being cut or pinched while handling loads or its rigging. Other hazards could include equipment rollover or boom collapse due to side loading. Controls that will be used to mitigate hazards will include the following:

- Implementation of the above requirements for equipment and personnel performing hoisting operations.
- Equipment load charts will be used to plan picks based equipment configuration and manufacturer's instruction.

- Only authorized and qualified persons will be involved in hoisting and rigging operations. Personnel involved in hoisting will use standard signal systems for communication during operations. The equipment operator and rigger will have the authority to stop or suspend work if there is a safety concern related to the hoisting operation. A signal person will be used during all hoisting operations and is the only person directly communicating with the equipment operator.
- Personnel will not be allowed to enter the swing radius of the heavy equipment while equipment is in motion. When rigging and unrigging a load, whenever possible, all heavy equipment and rigging devices will be grounded. If grounding is not possible, all loads including the rigging devices will be lowered to the extent possible, all motion will be stopped, and eye contact will be made between the rigger and operator before attempting to unsecure the rigging.
- A guide rope will be attached to the load to allow positioning without requiring personnel in the vicinity of the placement location.
- Leather work gloves will be worn while handling the load, the guide rope, and the rigging, to protect against rope burns, cuts, scrapes, and pinch points.
- Prior to performing hoisting operations, the work area will be inspected and evaluated for hazards and unstable surface conditions. Hoisting operations will only be performed if adequate space is available for maneuvering and on stable ground surfaces.

9.20.2 Hoisting and Rigging by Mechanical Equipment

Hoisting operations performed using on-site hydraulic excavators or loaders will only be by equipment and operators meeting the requirements of this section will be used for hoisting operations. If manufacturer procedures for lifting and transport of hoisted loads are unavailable, the equipment will not be used for hoisting. Because hoisting and rigging using mechanical equipment is may be performed on this project, an AHA has been prepared and will be followed when hoisting and rigging is used. The requirements of EM 385 1-1 (USACE 2011), Section 16.S –Hydraulic Excavators, Wheel/Track/Backhoe Loaders Used to Transport or Hoist Loads with Rigging, have been incorporated into the AHA in accordance with Section 16.S.03.a. The AHA includes the following:

- Written proof of qualifications of equipment operators, riggers, and others involved in the operations
- Operational testing performed as per EM 385 1-1 Section 16.S.03.b
- Proper operating procedures in accordance with the equipment manufacturer's operating manual
- Proper use and on-site availability of manufacturer's load rating capacities or charts
- Proper use of rigging, including positive latching devices to secure the load and rigging
- Inspection of rigging
- Use of tag lines to control the load
- Adequate communications
- Establishment of a sufficient swing radius (equipment, rigging, and load)
- Stability of surfaces beneath the hydraulic excavating equipment

Heavy equipment used for hoisting will be certified for the application by the equipment manufacturer and will be selected based on capacity to meet the load requirements of the project. Before heavy equipment intended to be used for hoisting operations is used, it will be inspected, tested, and certified by a Competent Person to be in accordance with the manufacturer's recommendations for use. An operational test with the selected hydraulic excavating equipment will be performed in the presence of the government-designated authority (if present or upon request). Heavy equipment used for hoisting operations will be supplied and operated in accordance with equipment operations manuals, guides, procedures/instructions, and load charts.

Operational testing will be performed using a load equivalent to the maximum anticipated load to be lifted by each piece of equipment during the course to the project. Details of the testing and results will be documented.

9.21 Contingency Plan for Severe Weather

The potential for severe weather is possible and storms can occasionally be severe, including thunderstorms, and in the winter, snow and ice storms can occur, including high winds. NAS Brunswick is located along the northern Atlantic Seaboard. The SSHO will monitor the weather forecast daily. In preparation for an approaching storm, all equipment will be secured, and all doors and windows of the equipment and offices will be closed. All tools and supplies will be stored in a designated secure location. Current work tasks will be safely idled and secured as necessary.

If particularly ominous weather conditions are predicted, the SSHO will monitor radio broadcasts or National Weather Service reports regularly. Nearby thunderstorms could have lightning associated with them. Whenever a thunderstorm arises, the SSHO will determine if lightning is within 10 miles of the site. If lightning is close to the site, work will stop until no lightning activity is observed for a minimum of 30 minutes and workers will seek shelter in a full enclosed vehicle cab or other fully enclosed structure. A lightning meter will be available on-site as an indicator of approaching storms.

The SS and the SSHO will assess what work procedures can be safely performed when wind conditions exceed 25 mph, lesser wind speeds may require consideration of work suspension for certain tasks. They will also give consideration to fugitive dust and odor emissions, the safety of equipment in high winds, and protection of workers from flying debris and dust in windy conditions.

9.22 Float Plan

Not applicable.

9.23 Site-Specific Fall Protection and Prevention Plan

Several tasks on this project may require workers to perform work at heights of 6 feet or greater

above the next lower level. This plan addresses the site-specific hazards, which are anticipated at the present time to be limited to work in elevated work platforms (EWPs) or aerial lift platforms.

9.23.1 Duties and Responsibilities

The competent person for fall protection will be designated prior to initiating an activity that requires fall protection and names included in AHAs. The competent person is responsible for conducting the initial inspection of all equipment used for work at heights 6 feet or greater above the next lower level. The competent person will inspect all fall protection systems prior to installation and after installation. The competent person will check all components of personal fall arrest systems and anchorages. The competent person will provide training to all employees who work at heights and who use fall protection systems and those employees who use fall restraint systems. The competent person will have has had training and/or experience with fall protection programs and systems.

9.23.2 Description of Project and Tasks

This project may require surveys of wall surfaces over 6 feet high in buildings from an EWP or require personnel to conduct surveys over test pits or trenches from a basket. Use of the EWP or aerial lift platform reduces the risk of falling and gives the survey crew a secure anchor point while working on the platform. Workers will wear safety harnesses and use appropriate lanyards for all activities where a fall hazard exists. EWPs have designated anchorage points located inside the platform.

9.23.3 Training Requirements

All workers will be trained in the safe use of a full-body harness, safety lanyard, and fall protection systems. They will be trained on how to connect to an authorized anchor point, how to move from one point to another point (if necessary), and the rules regarding work on EWPs.

9.23.4 Prevention and Control of Anticipated Hazards

Each task that requires work at heights is included in an AHA. The AHA describes the hazards and the control measures on a task specific basis.

9.23.5 Rescue Plan and Procedures

Personnel using a full body harness with safety lanyards will be instructed on how they would be rescued if they are connected to and should fall from an anchorage point. While working on an EWP, the rescue is easily achieved by carefully rotating the EWP to point where the worker can safely be lowered to the ground. Work on a EWP always requires at least two workers to be in or operating the EWP. Workers attached to a secured anchor point will fall no more than 2 feet and can be raised back onto the scaffold platform or a work surface by nearby workers. (The buddy system requires that at least two workers are in any work area and that they have radio communication.)

9.23.6 Design of Anchorages

Anchorage points on EWPs are designed by manufacturers of the equipment. As part of the EWP inspection, these points are inspected for damage or other signs of defects. Anchorage connectors used to tie the lifeline to the anchorage shall also be capable of withstanding a 5,000-pound load per worker attached.

9.23.7 Administrative Controls

Daily inspections of the EWPs are required and are documented on an inspection form. The SSHO will inspect personal fall arrest systems at least once each week. All safety harnesses and lanyards will be stored in designated areas in a hanging position (not stored on the ground or lying flat on a surface). Any device that has been deployed will be removed from service and discarded. This includes the full body safety harness as well as the used lanyard. When fall hazards are noted, workers are advised of these hazards at morning safety meetings, on site radios throughout the day, and also by use of barricades and signs.

9.23.8 Other Requirements

If workers will be need to work within 6 feet of any unprotected leading edge to perform any other work-related tasks (not currently anticipated), they will wear fall protection and a competent person will develop and submit and implement onsite, a Site-Specific Fall Protection and Prevention Plan in accordance with Section 21.C of EM 385 1-1 for the task. This plan shall include, in detail, the specific practices, equipment and methods used to protect workers from falling to lower levels. The plan will be updated as conditions change and at least every 6 months.

If an excavation is 6 feet or greater in depth (currently not anticipated), field personnel must be at least 6 feet from the edge of the excavation unless fall protection systems are used (guardrails or personal fall arrest system) or safe sloping is designed and implemented. If a personal fall arrest system is used, there must be an anchorage point capable of withstanding 5,000 pounds, a lanyard or self-retracting lifeline that does not allow a person to fall more than 2 feet, and a full body harness.

9.24 Demolition Plan

Not applicable.

9.25 Excavation/Trenching Plan

In support of radiological surveys and site characterization and for MEC subsurface investigation (if/when performed), some excavation and trenching will be required. It is currently anticipated that excavations, test pits, and trenches will not exceed 5 feet in depth. It is also currently anticipated that no entry into excavations at depths greater than 4 feet in depth will occur. Shallow excavations will generally be dug by hand methods (shovel); however deeper excavations and/or test pits will likely require use of small excavator or backhoe. Excavations

will generally be immediately backfilled after the investigation or survey is complete unless there is a condition that warrants it to remain open temporarily. Any open excavation will be barricaded when left unattended.

Excavations deeper than 4 feet are considered to be confined spaces; no person will enter any excavation for any purpose that is deeper than 4 feet without implementation of the TtEC Confined Space Program in EHS 6-1, including preparation of a site-specific Confined Space Entry Procedure and an AHA.

In the event that unanticipated chemical contamination is encountered during an excavation (e.g., buried drums, stained soil, odor, free product), work will halt in that location and the SSHO will notify the SHM and the Site Manager. The Site Manager will notify the PM and the RPM. An evaluation will be made to determine the proper precautions to take prior to proceeding with further investigation or removal, such as monitoring and level of personal protective equipment necessary to protect workers.

For excavations greater than 5 feet in depth, an excavation/trenching plan is required per EM 385 1-1 Section 25. Excavations will be conducted in accordance with OSHA excavation regulations as described in 29 CFR 1926.651 and in accordance with EM 385 1-1 Section 25. Because excavation and trench depths are not anticipated to exceed 5 feet, an AHA has been developed to cover intrusive investigations where excavations are required for excavations up to 5 feet in depth. The following information addresses excavation requirements for excavations up to 5 feet in depth with no entry by personnel for excavation depths greater than 4 feet.

Any excavation or trenching operation that is 4 feet or more in depth will be performed in accordance with EM 385-1-1 and EHS 6-3.

Exploratory techniques, such as “pot-holing,” will be performed to ensure that any excavation near utilities can be performed safely.

Dust suppression measures may include the use of a compound that will make the soil less likely to generate dust or the use of water. However, work procedures as soil is moved and especially as it is lifted and loaded must be performed in such a way as to minimize the generation of dust. For example, loaders dumping soil into a dump truck or a stockpile may have to lower the bucket as close as possible to the truck or stockpile before dumping to reduce the drop height of the soil and thereby reduce the amount of dust generated.

The following provides general requirements governing activities in and around excavations and trenches where entry will occur in excavations less than 4 feet in depth.

- Surfaces surrounding open trenches and excavations will have all surface hazards removed.
- All utilities will be located and cleared prior to initiating digging. Public or facility utility groups will be used where possible for this purpose. In the absence of either, the SSHO will specify the procedures to be used to clear utilities in consultation with the SHM and PM. When the excavation is open, utilities (if present) will be supported and protected

from damage. Clearance and support methods will be documented on the daily inspection checklist.

- EM 385-1-1, Section 25, requires the installation of perimeter protective systems for all open excavations. Class I perimeter protection is the most protective and requires installation of fences and barricades, which would prevent members of the public (people other than workers) from entering or falling into the excavation. Consult the EM 385-1-1 for the types of protective system required for various situations.
- When vehicles and machinery are operating adjacent to excavations, warning systems such as stop logs or barricades will be used to prevent vehicles from entering the excavation or trench. In any case, vehicles, equipment, materials, and supplies will never be placed closer than 2 feet from the edge of any excavation. A professional engineer may have to calculate the distances of heavier equipment for placement away from the edge so as to prevent collapse of the excavation wall caused by the weight of the equipment.
- Excavated and loose materials should be kept at least 3 feet from the edge of excavations but at a minimum of 2 feet from the edge of the excavation in accordance with OSHA requirements.
- Barriers will be provided to prevent personnel from inadvertently falling into an excavation. Workers within 6 feet of the edge of the excavation must be protected by fall protection (guardrails or personal fall protection system) if the excavation is 6 feet or greater in depth (currently not anticipated).
- If the need for excavations greater than 5 feet in depth arises, this excavation and trenching plan will be updated to include site-specific information that will be required in addition to the basic information contained herein (e.g., protection of adjacent structures, protection of utilities, traffic control needs, diagrams or sketches of the work area, etc., anticipated soil conditions and protection methods, as necessary).

9.25.1 Excavation Competent Person

A competent person, TBD, will be designated to oversee proper implementation of all excavation safety. Competent persons will have an adequate combination of experience and training to classify soil types and select protective systems as outlined in 29 CFR 1926.652. Training and experience pertaining to qualification as a competent person will be documented and include the following:

- General safety practices related to working in or near open excavations
- Inspection requirements and techniques
- Classification of soils in accordance with 29 CFR 1926.652, Appendix A
- Uses, limitations, and specifications of protective systems in accordance with 29 CFR 1926.652

Training records will be maintained in accordance with EHS 1-9, Recordkeeping. The Competent Person will provide site personnel with training on-site-specific excavation

requirements as outlined in this plan and the task AHAs. The Competent Person will be on-site daily during excavations.

9.25.2 Daily Inspections

Inspections will be performed daily on all excavations, adjacent areas, and protective systems before personnel enter the trench. The checklist provided in the EHS procedure or equivalent will be used.

9.25.3 Soil Classification

To perform soil classification, the competent person will use a thumb test, pocket penetrometer, or shear vane to determine the unconfined compressive strength of the soils being excavated. In soils with properties that change (one soil type mixed with another within a given area), several tests may be necessary. When different soil types are present, the overall classification will be that of the type with the lowest unconfined compressive strength. Classifications will result in a soil rating of Stable Rock, Type A, Type B, or Type C in accordance with 29 CFR 1926.652, Appendix A. Soil classifications will be listed on the daily inspection checklist. The soils analysis checklist provided in the EHS procedure or equivalent will be used for soil classifications. From our experience, most of the excavations performed will be Type C soils as in most cases the soil has been previously disturbed and then backfilled,

9.25.4 Sloping and Benching

All sloping and benching will be done in accordance with 29 CFR 1926.652, Appendix B. Selection of the sloping method and evaluation of surface surcharge loads will be made by a competent person familiar with the requirements contained therein. Sloping and benching methods and specifications will be listed on the daily inspection checklist.

9.25.5 Stability of Adjacent Structures

When excavating or trenching near an adjacent structure, the following practices will be implemented:

- Support systems such as shoring, bracing, or underpinning will be provided where the stability of buildings, walls, or other structures is endangered by excavation.
- Excavation of bases or footings of foundations will be prohibited unless support systems are used, the excavation is in stable rock, a professional engineer has determined that the structure is sufficiently removed from the site as to not pose a hazard, or a professional engineer determines that the excavation will not pose a hazard to employees due to the structure.
- Support systems will be used when it is necessary to undermine sidewalks, pavements, and appurtenant structures.
- Surcharge load sources and adjacent encumbrances will be listed with their evaluation date on the daily inspection checklist.

9.25.6 Protective Systems

Protective systems are required on all excavations over 5 feet in depth or in excavations less than 5 feet when examination of the ground by a competent person reveals conditions that may result in cave-ins and entry into the excavation is required. Selection and installation of protective systems will be done in accordance with 29 CFR 1926.652, Appendices C and D, or manufacturers' data for shoring and shielding systems. Selection of a protective system will be based on soil classification and job requirements by a competent person. Protective systems and specifications will be listed on the daily inspection checklist. Protective systems, as discussed here, refer to protective systems within the excavation itself and not to the perimeter protective systems as mentioned above

9.26 Emergency Rescue (Tunneling)

Not applicable.

9.27 Underground Construction Fire Prevention and Protection Plan

Not applicable.

9.28 Compressed Air Plan

Not applicable.

9.29 Formwork and Shoring Erection and Removal Plans

Not applicable.

9.30 Precast Concrete Plan

Not applicable.

9.31 Lift Slab Plans

Not applicable.

9.32 Steel Erection Plan

Not applicable.

9.33 Site Safety and Health Plan for HTRW Work

The Site Safety and Health Plan is included as Attachment 1 to this APP.

9.34 Blasting Safety Plan

Because surface clearance has already been done at the quarry and no intrusive investigations are

planned at this point in time, it is not anticipated that munitions will be found that will require MEC disposal onsite. A Digital Geophysical Mapping (DGM) survey is being performed under a separate Abbreviated APP. Results of the DGM survey will be used to plan further action related to MEC at this site, which may include subsurface intrusive investigation. Prior to any MEC disposal activities, an Explosives Management Plan will be prepared as part of the project Work Plans, which includes the procedures that will be followed for blow-in-place or open detonation of MEC onsite. In addition, prior to these activities being conducted, an Explosives Safety Submission will be prepared, peer reviewed by TtEC MEC safety management staff and approved by the Naval Ordnance Safety and Security Activity.

MEC related general safety precautions are included in Section 9.37.

9.35 Diving Plan

Not Applicable.

9.36 Confined Spaces

A confined space is any enclosed area having a limited means of egress where ventilation is not adequate to remove a toxic or flammable atmosphere or oxygen deficiency that may exist. Examples of confined spaces include, but are not limited to tanks, boilers, vessels, bins, manholes, tunnels, pipelines, underground utility vaults, and any open-top spaces more than 4 feet in depth such as pits, excavations, tubes, trenches, and vessels.

TtEC EHS 6-1 outlines confined space procedures in detail. No confined space entry is allowed per this plan. Prior to the start and during the conduct of work at each site, the SSHO and the SS will identify confined spaces or confined spaces created by the nature of the work (e.g., excavations). The SSHO will not allow entry into these spaces. If a confined space requires entry after this plan has been approved but was not part of the original plan, this section will be modified and approved per the amendment procedure described in this APP and an AHA will be developed for the task. The SHM will review all confined space entry plans and completed checklists and/or permits prior to entry.

All site workers are provided confined space awareness training as part of the project orientation training. As part of this awareness training, workers are instructed on how to identify confined spaces, what entry requirements there are, and who to contact if they believe a confined space exists. The awareness class is not the required training class if entry into a confined space is required. Workers will require a formal training course in confined spaces, including rescue if entry is required. There are no known existing confined spaces onsite; however, the SSHO will evaluate work areas to identify potential confined spaces so they can be appropriately posted. Excavations or trenches that are deeper than 4 feet are also considered to be confined spaces. There will be no entry into any confined space to achieve any of the work activities, including entry into any excavation or trench that is deeper than four feet. All work at the present time can be achieved without putting personnel into excavations that are deeper than four feet.

9.37 MEC Hazards

The Quarry Area may contain MEC and MPPEH. It is believed that this area was used as a dump site. NOSSA has determined that there is at least a medium likelihood of encountering munitions related items in the subsurface.

UXO is military munitions that have been primed, fuzed, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard; and remain unexploded whether by malfunction or design. DMM are military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term DMM does not include UXO, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations. MEC and MPPEH can pose significant risk to workers if the items are contacted and/or handled incorrectly.

Based on the Site Investigation in 2008 and the Exploratory MEC Investigation in 2010, MEC/MPPEH found at the site included:

- Multiple flares
- Unknown fuze
- Numerous Munitions Documented as Safe (MDAS) - Rocket motor tail fins and tail fin assemblies; 2.75-inch rocket motor case, shipping case, and tail assembly; MK31 MOD 0 day/night signal; small arms spent casings, illumination grenade parts, 81-mm fins, M1 clip, 5.56-mm blanks, LAU container, 3.5 inch rocket parts.
- .50 caliber rounds and/or casings
- 3.5-inch Rocket Warhead with Fuze, Practice
- M48 Power Train Time Fuze
- M28 rifle grenade

The Most Probable Munition has been estimated to be a 75-mm projectile.

Only UXO-trained personnel who are qualified in accordance with DDESB TP #18 are authorized to investigate and handle MEC or MPPEH. Operations involving MEC are inherently dangerous and require strict adherence to safe practices and safety procedures, as well as positive control of personnel. Training on the recognition and avoidance of MEC will be provided to all site personnel. Due to the variety of munitions items that may be encountered, all site workers must be vigilant in identifying hazards at the work site and bringing them to the attention of supervisory personnel.

The SUXOS will be notified of all MPPEH/MEC finds and will be responsible for verifying the identification of MEC. UXO technicians will follow the safety concepts/considerations specified in the Basic Safety Concepts and Considerations for MEC Response Action Operations, Engineer

Pamphlet 385-1-95a (USACE, 2004). Field personnel will observe the exclusion zones identified in the ESS, the Explosives Management Plan, this APP, as well as SUXOS direction.

A DGM survey is being performed under an Abbreviated APP (separate from this APP) in order to conduct information about subsurface metallic anomalies that may be MEC/MPPEH to facilitate further decision-making for subsurface clearance. A surface clearance of the Quarry Area has already been performed. During follow on intrusive investigations (if performed following DGM survey data evaluation), any item that cannot be determined to be explosive-free will be treated as MEC. TtEC will either consolidate MEC that is safe to move and perform open detonation onsite using donor explosives, will blow-in-place MEC items that are not safe to move following procedures in the Explosives Management Plan, or, may contact the designated Explosive Ordnance Disposal team for disposal, which is currently being determined. MDAS will be consolidated into a drum and will be disposed of at the end of the project though a demilitarization process. All debris that is not handled as MEC will be radiologically screened to determine if it is radiologically impacted. Any debris that is radiologically impacted will be turned over to the LLRW contractor for disposal.

As a guideline to the safe handling of MEC during clearance, the following rules will be enforced throughout the project:

- Avoid inhalation of, and skin contact with, smoke, fumes, and vapors of explosives and related hazardous materials.
- Consider as extremely hazardous MEC that has been exposed to fire or detonation. Chemical and physical changes may have occurred to the contents, which render it much more sensitive than it was in its original state.
- Make every effort to identify the MEC. Carefully examine the item for markings and other identifying features such as shape, size, and external fittings. Do not move the suspected MEC item. All MEC items located will be treated as UXO until determined otherwise.
- Plan for, provide, and know the measure(s) to be taken in the event of an accident or emergency.
- Provide a designated emergency vehicle in the area in case of an accident or an emergency.
- Do not handle, use, or remain near explosives during the approach or progress of an electrical storm. All personnel should move to a safe place.
- Do not dismantle, strip, carry, or subject UXO to unnecessary movement, except in response to a valid requirement.
- Do not allow unauthorized or unnecessary personnel to be in the vicinity of a UXO item.
- Always base operations upon minimum exposure consistent with efficient operations.
- Do not rely on color-coding of munitions for positive identification of contents. Munitions having no, incomplete, or improper color codes may be encountered.
- Avoid the area forward of the nose of ammunition until it can be determined that the item is not a shaped-charge or high-explosive anti-tank round. The explosive jet can be fatal to great distances forward of the longitudinal axis of the item. Assume that any shaped-charge munitions contain a piezoelectric fusing system until the fusing is otherwise

identified. Piezoelectric fuses are extremely sensitive, can fire at the slightest physical change, and may remain hazardous for an indefinite period.
- Approach an unfired rocket motor from the side. Ignition will create a missile hazard and hot exhaust.
- Do not expose electrically fired rocket motors within 25 feet of any exposed electronic transmitting equipment or antenna leads.
- Assume that practice munitions contain a live charge until it can be determined otherwise.
- Positively identify and review all safety precautions prior to handling practice bombs. Some practice bombs do not contain any positive safety features.

10.0 RISK MANAGEMENT PROCESSES

AHAs for the planned activities are listed in Table 2.1 of this plan and AHAs are included in Appendix A of this APP. If any new tasks are identified, more information becomes known, or if planned activities vary from the written AHAs, the SSHO (with the assistance of the workers or subcontractors, etc.) will develop or alter the existing AHAs to address the specific activities and hazards for each task and each worksite. The AHAs listed will be reviewed by the SHM and will be submitted to the Contracting Officer for review and approval.

11.0 REFERENCES

Department of Defense Explosives Safety Board (DDESB). 2004. Technical Paper (TP) 18, Minimum Qualification for Unexploded Ordnance (UXO) Technicians and Personnel. December 2004.

TtEC. 2009. Project Orientation, Rules and Safety Guidelines Handbook. July.

U.S. Army Corps of Engineers (USACE). 2004. Basic Safety Concepts and Considerations for Ordnance and Explosives Operations. Engineer Pamphlet (EP) 385-1-95a. August 2004.

U.S. Army Corps of Engineers (USACE). 2007b. Safety and Health Requirements of Munitions and Explosives of Concern (MEC) Operations. ER 385-1-95. March 2007.

USACE. 2008. Safety and Health Requirements. Engineer Manual (EM) 385-1-1, Sep 2008 Consolidated. August 2011.

U.S. Department of Labor, Occupational Health and Safety Administration; 1910 – Occupational Safety and Health Standards, General Industry. Code 29 of Federal Regulations (CFR). Parts 1910.95, 1910.120, 1910.132, 1910.134, and 1910.147.

U.S. Department of Labor, Occupational Health and Safety Administration; 1926 – Occupational Safety and Health Standards, Construction Industry. Code 29 of Federal Regulations (CFR). Parts 1926.59, 1926.601, and 1926.602.

TABLES

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Table 2.1 Activity Hazard Analyses (AHAs)

General AHAs *(may require modification to be made site- and task-specific)*	
AHA – 1	Mobilization and site setup
AHA – 2	Hoisting and rigging via mechanical means
AHA – 3	Fence removal and/or installation
AHA – 4	Vegetation clearing and grubbing (includes mulching)
AHA - 5	Backfill and site restoration (including seeding)
AHA – 6	Asphalt paving
AHA – 7	Equipment removal and radiological survey of buildings
AHA – 8	Radiological surface surveillance
AHA – 9	Removal of radiological hotspots in buildings
AHA – 10	Excavation (test pits) and trenching
AHA – 11	Digital geophysical mapping (DGM) surveys
AHA – 12	Chemical soil sampling
AHA – 13	Chemical groundwater sampling
AHA – 14	Direct push soil boring and sampling
AHA – 15	Drilling for monitoring well/injection point installation
AHA – 16	Ethyl lactate injection
AHA – 17	Installation of multilayer landfill cap
AHA – 18	Asphalt removal
AHA – 19	Concrete scabbling for radiological hotspot removal
AHA – 20	Demobilization and waste disposal
AHA – 21	Use of Elevating Work Platforms

Table 3.1 Comparison of TtEC and 2011 BLS Data for NAICS 237990 (TRIR and DART Rates)

	NAICS 237990 Heavy Construction Other than Highways 2011	TtEC 2010	TtEC 2011	TtEC 2012
Total Recordable Incident Rate (TRIR)	3.5	1.32	0.92	0.30
Days Away/Restricted Duty Rate (DART)	2.0	0.24	0.35	0.15

Table 9.1 Emergency Equipment and Locations

Equipment	Location
Industrial First Aid Kit with Bloodborne Pathogens Kit	Office, SZ for active work locations
*Fire Extinguisher, one 10-A-60:BC	SZ for active work locations
Fire Extinguisher, one 1A:10BC	Site vehicles and heavy equipment
Fire Extinguisher, one 40:BC	Refueling areas
Portable Eye Wash (15-minute/0/4 gallon per minute)	SZ at active work locations
Air Horn (if not equipped with vehicle horn)	Active work location
Spill Kit (appropriately stocked with sorbent pads, socks, gloves, and bags)	Each active working area and refueling areas
Cellular Telephones and Handheld Radios	Minimum of Site Manager, SS, SSHO, SUXOS, RSOR (others as required for safety and communication purposes with each team)

* Minimum capacity rating

Table 9.2 Emergency Contact List

Ambulance/Fire/Police (cellular or land line)		**911**
Medical	**Mid Coast Hospital Emergency Department** **123 Medical Center Drive, Brunswick, Maine** **(See Figure 9-2)**	**911** (207) 373-6000
WorkCare® Case Intervention		1-800-455-6155 1-888-449-7787
Poison Control		1-800-222-1222
Navy Contracting Officer, Faith Smith		(757) 341-1986
Navy Installation Representative CSO Officer – Robert Leclerc		(207) 406-2290
Navy NTR – Joe Gallant		(207) 438-2990
Navy RPM – Todd Bober		(215) 897-4911
Explosive Ordnance Disposal Mobile Unit Twelve Detachment Newport, RI		(401) 832-3302
MRRA Representative – Steve Levesque		(207) 798-6512
TtEC PM, Derek Pinkham		(215) 702-4070 (office phone) (215) 200-5182 (cellular phone)
TtEC SHM, Roger Margotto, CIH		(619) 471-3503 (office phone) (619) 988-0520 (cellular phone)
TtEC UXO Safety Manager, Steve Neill		(770) 330-7068
TtEC Health Physics Manager, Erik Abkemeier		(757) 466-4906
TtEC Site Manager, TBD		TBD
TtEC Site Superintendent, TBD		TBD
TtEC SSHO, TBD		TBD
TtEC SUXOS, TBD		TBD
TtEC UXOSO, TBD		TBD
TtEC RSOR, TBD		TBD
Other subcontractor key personnel contact information (e.g., supervisors) will be added at a later date.		

Abbreviations and Acronyms:

CIH – Certified Industrial Hygienist
CSO – Caretaker Site Office
MRRA – Midcoast Redevelopment Reuse Authority
NTR – Navy Technical Representative
PM – Project Manager
TtEC – Tetra Tech EC, Inc.
SSHO – Site Safety and Health Officer
SHM – Safety and Health Manager
SUXOS – Senior UXO Supervisor
UXOSO – UXO Safety Officer
UXO – unexploded ordnance

Table 9.3 Progressive Clinical Symptoms of Hypothermia

Core Temperature	Clinical
95°	Maximum shivering.
87°-	Consciousness clouded; blood pressure becomes difficult to obtain;
84°-	Progressive loss of consciousness; muscular rigidity; respiratory rate
79°	Victim rarely conscious.
70°-	Maximum risk of ventricular fibrillation.

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FIGURES

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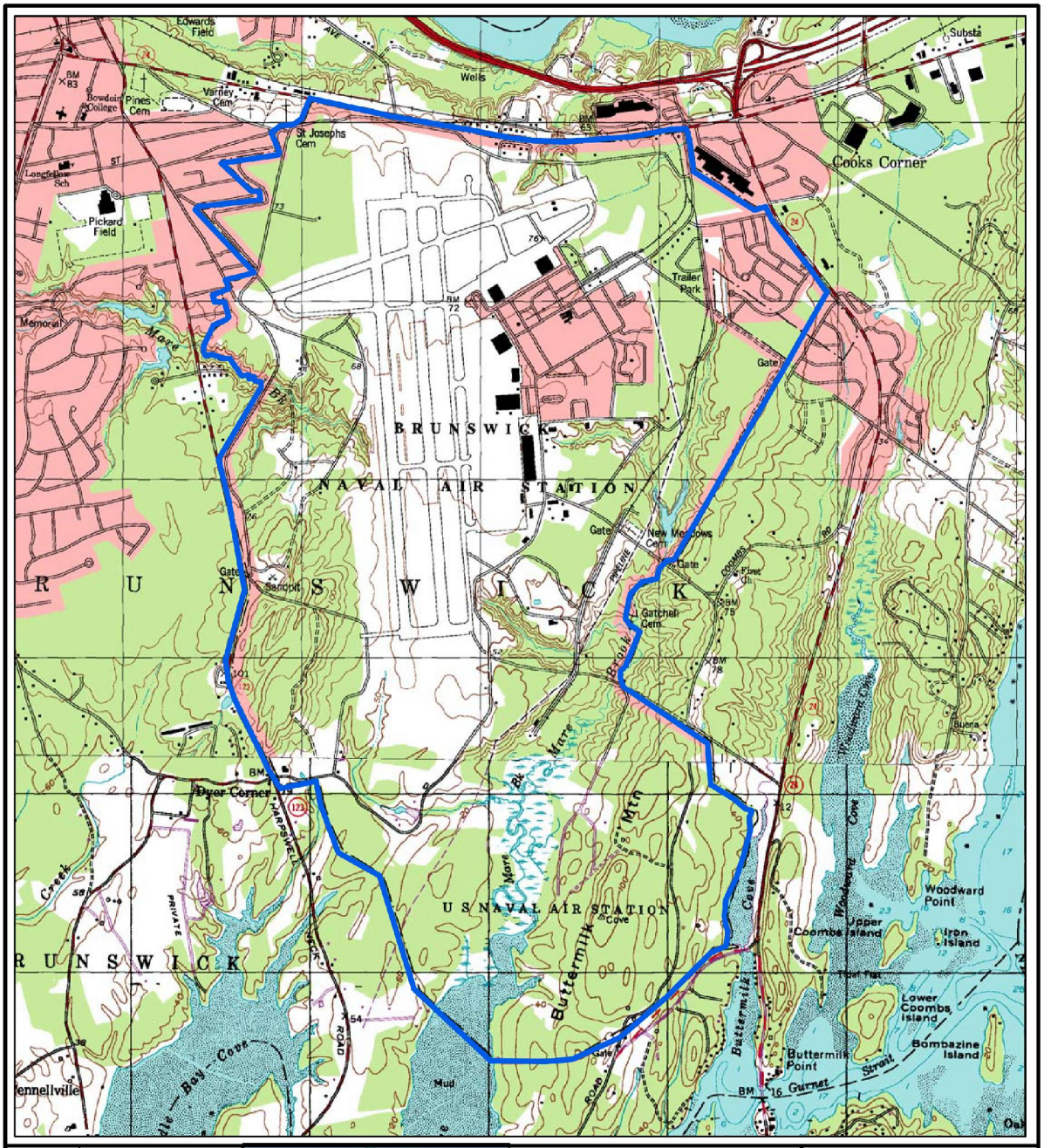
P:\CAD PROJECT FILES\NAS BRUNSWICK\DWG FILES\BRUNSWICK_BASEWIDE APP FIGURE 2-1_11-11-13.DWG
PLOT/UPDATE: NOV 11 2013 12:39:05



Contract No.	
Description	NASB Brunswick, Maine
Coordinate system	NAD 1983, UTM, Zone 19 N in meter
Sources	Naval Base Boundary provided by Navy. Orrs Island (1978) and Brunswick (1980) 7.5 minute quadrangles provided by USGS.

Date		Rev.	Date	App. By

Legend

NAS Brunswick Boundary

TETRA TECH EC, INC.

Figure 2-1

Location Map
Naval Air Station
Brunswick, Maine

0 875 1,750 3,500 Feet

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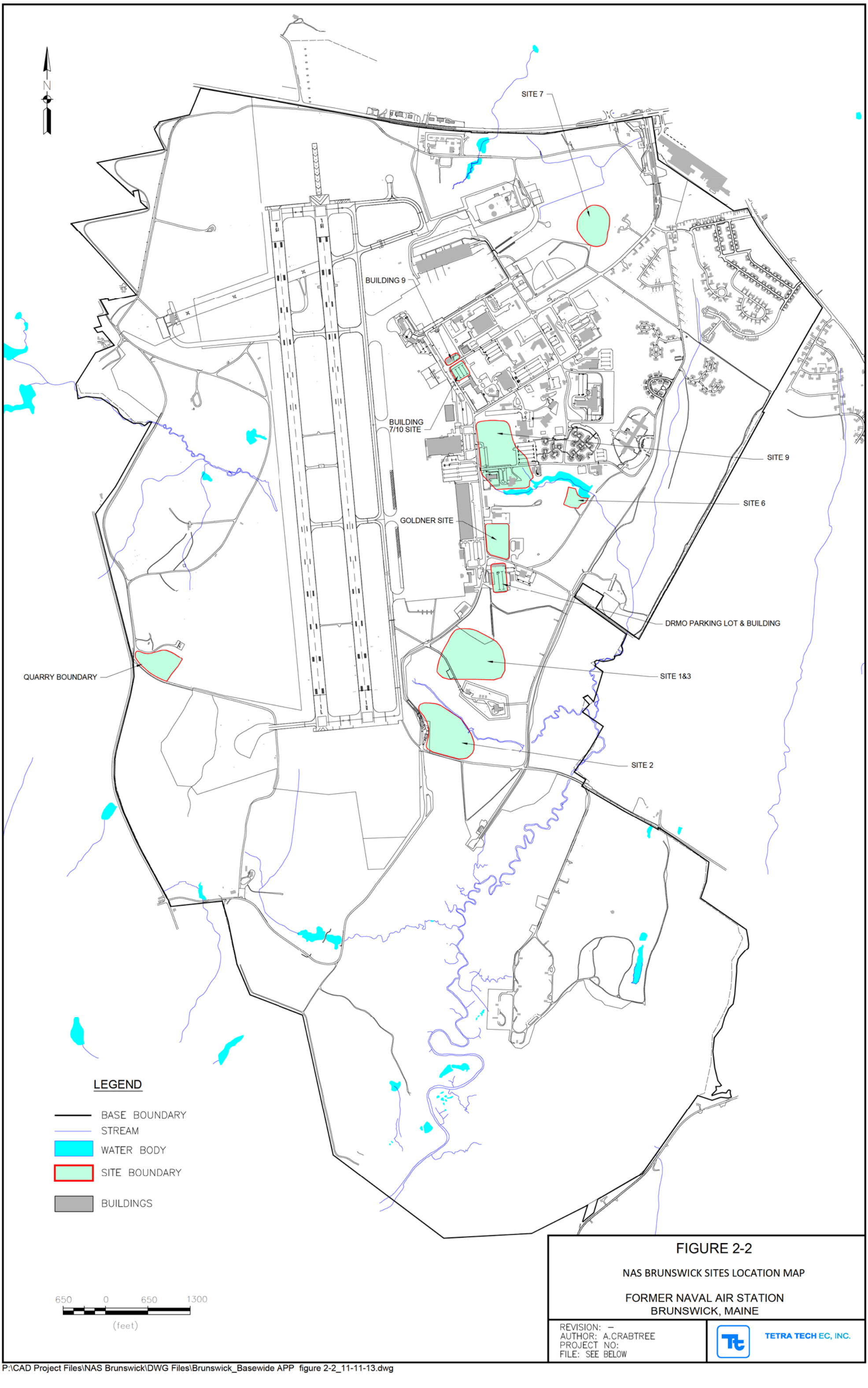

FIGURE 2-2

NAS BRUNSWICK SITES LOCATION MAP

FORMER NAVAL AIR STATION
BRUNSWICK, MAINE

REVISION: –
AUTHOR: A.CRABTREE
PROJECT NO:
FILE: SEE BELOW

TETRA TECH EC, INC.

P:\CAD Project Files\NAS Brunswick\DWG Files\Brunswick_Basewide APP figure 2-2_11-11-13.dwg

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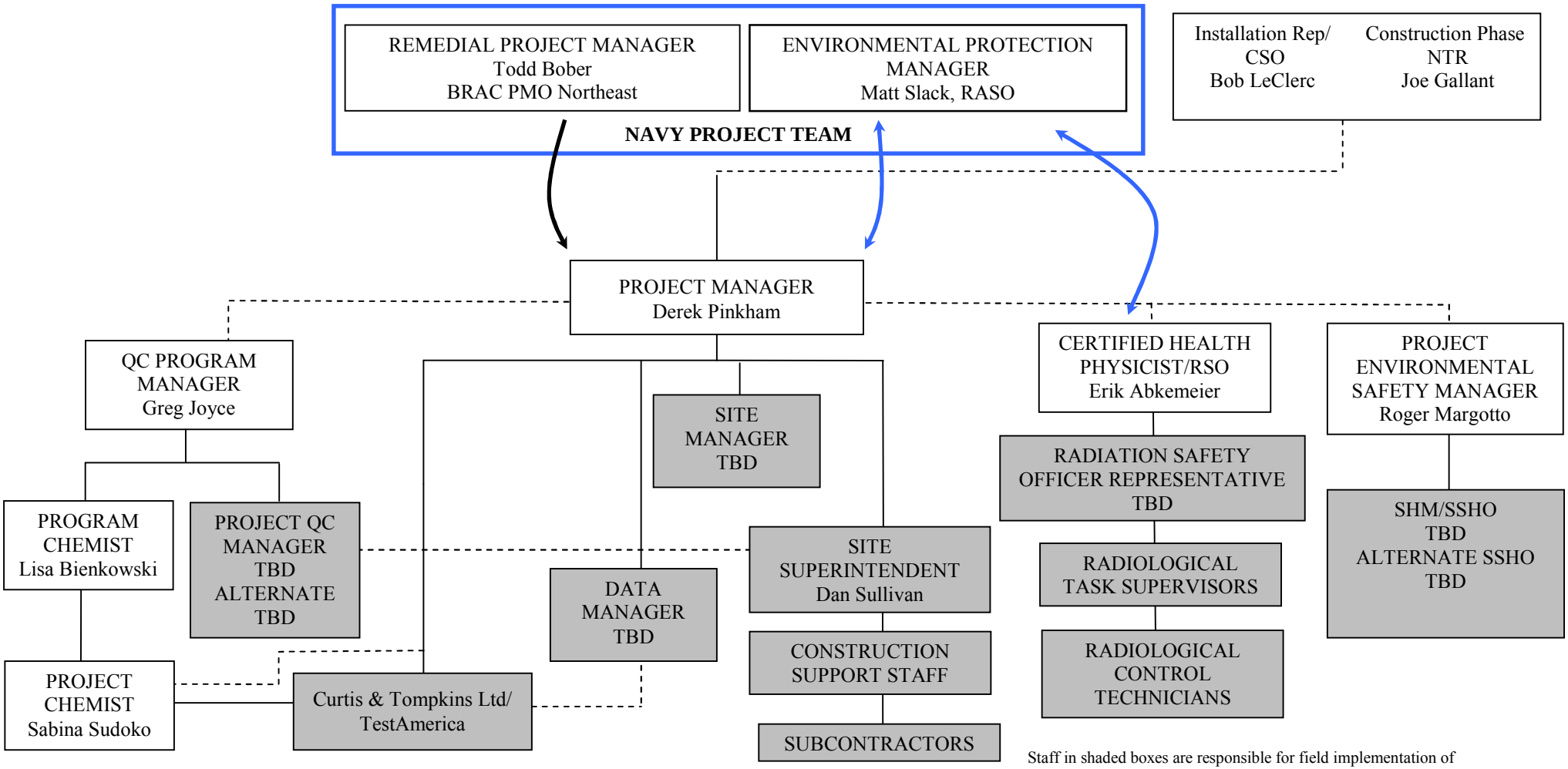
FIGURE 4-1

PROJECT ORGANIZATION CHART



Legend

Formal reporting relationship

Supporting relationship

Primary lines of technical communication

Line of technical direction (alternate where dashed)

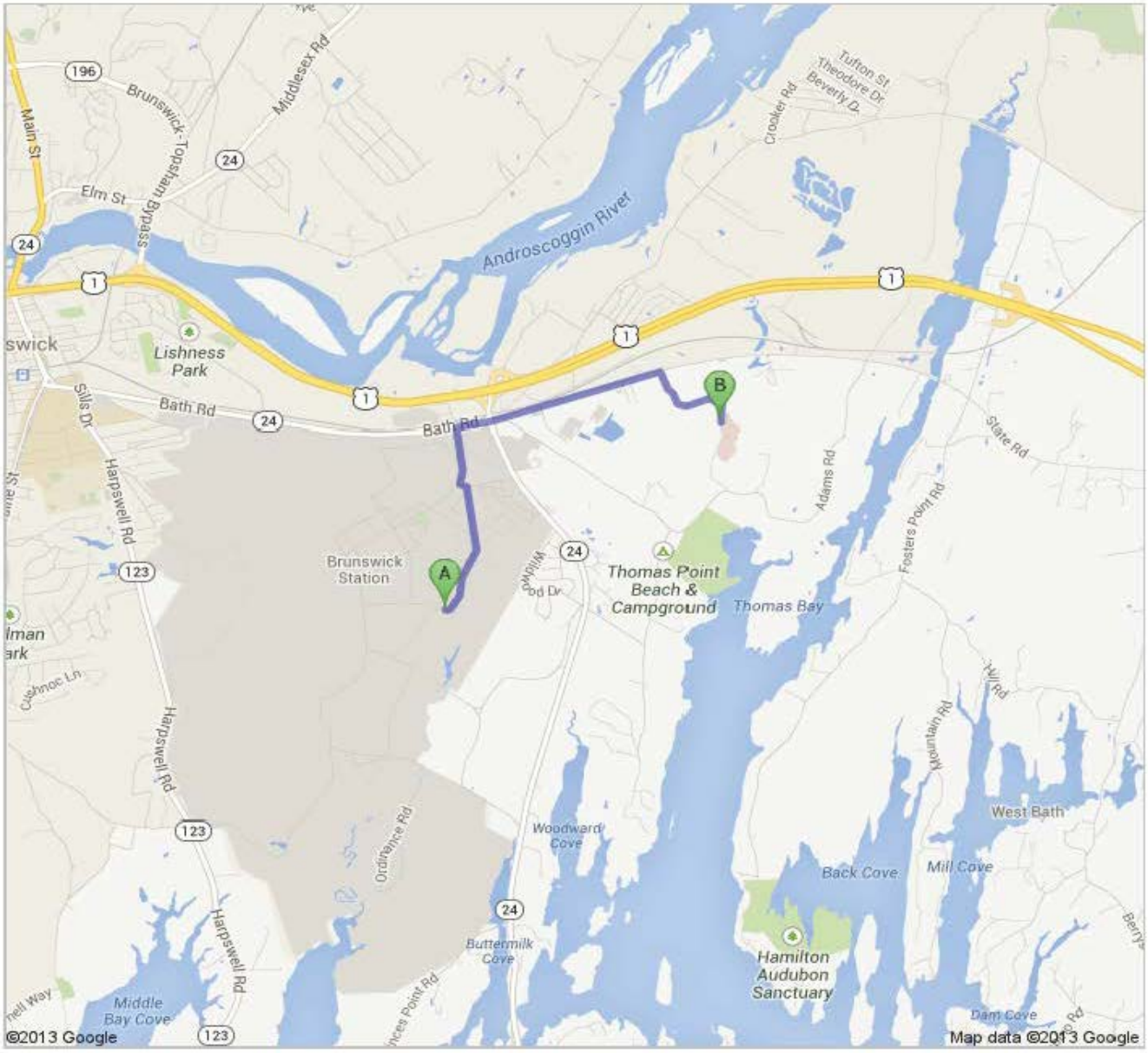
Staff in shaded boxes are responsible for field implementation of activities under the Work Plan.

The Construction Manager (Jeff Bray) has overall responsibility for coordinating the activities of on-site technical staff.

Abbreviations and Acronyms:
BRAC PMO – Base Realignment and Closure Program Management Office
CSO – Contractor Site Office
RASO – Radiological Affairs Support Office
NTR – Navy Technical Representative
RSO – Radiation Safety Officer
QC – Quality Control
SHM – Safety and Health Manager
SSHO – Site Safety and Health Officer

Figure 9-2

Route & Directions to Mid Coast Hospital
123 Medical Center Drive, Brunswick, ME 04011



1. Head east on Neptune Drive toward Lupine Circle (about 2 minutes)
2. Turn left onto Forrestal Drive
3. Turn right on Admiral Fitch Avenue (About 55 seconds)
4. Take the 1st right onto ME-24 S/Bath Road. Continue to follow Bath Road (about 4 minutes)
5. Turn right onto Medical Center Drive. Destination will be on the left (about 1 minute)

ATTACHMENT 1

SITE SAFETY AND HEALTH PLAN

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION CONTRACT (RAC)
CONTRACT NO. N62470-13-D-8007
CONTRACT TASK ORDER NO. WE09

FINAL
SITE HEALTH AND SAFETY PLAN

REMEDIATION OF QUARRY, BUILDING 7/10, SITE 1/3 LANDFILL AND RADIOLOGICAL REMEDIATION/ASSESSMENT
AT
FORMER NAVAL AIR STATION BRUNSWICK
CUMBERLAND COUNTY, MAINE

August 2014

Prepared for

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9742 Maryland Avenue
Norfolk, VA 23511-3095

Prepared by

Tetra Tech EC, Inc.
5250 Challedon
Virginia Beach, Virginia 23462

Revision	Date	Prepared by	Approved by	Pages Affected
0	08/12/14	J. Peters	R. Margotto	All

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TABLE OF CONTENTS

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ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
µg/kg	micrograms per kilogram
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
APP	Accident Prevention Plan
CFR	*Code of Federal Regulations*
CMC	Corporate Medical Consultant
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination Reduction Zone
dBA	Decibels, A-Scale
EC	Emergency Coordinator
EHS	Environmental Health and Safety
EM	Engineer Manual
EZ	Exclusion Zone
GFCI	Ground Fault Circuit Interrupter
HAZWOPER	Hazardous Waste Operations and Emergency Response
HTRW	Hazardous, Toxic, and Radioactive Waste
kg	kilogram
MEC	munitions and explosives of concern
mph	miles per hour
MPPEH	material potentially presenting an explosive hazard
MSDS	Material Safety Data Sheet
NAS	Naval Air Station
NEC	National Electrical Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PID	photoionization detector
PM	Project Manager
PPE	Personal Protective Equipment
RPM	Remedial Project Manager
RSOR	Radiation Safety Officer's Representative
SHM	Safety and Health Manager
SS	Site Superintendent
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SZ	Support Zone
TtEC	Tetra Tech EC, Inc.
TWA	Time-weighted Average
UL	Underwriters Laboratory
USACE	U. S. Army Corps of Engineers

UXO	unexploded ordnance
UXOSO	UXO Safety Officer
VOC	Volatile organic compound
WBGT	Wet Bulb Globe Thermometer
WNV	West Nile Virus

1.0 INTRODUCTION

1.1 Scope and Applicability

This Site Safety and Health Plan (SSHP) establishes policies and procedures to protect workers and the public from the potential hazards posed during field operations during remediation of the Quarry, Building 7/10, Site 1/3 Landfill, and radiological remediation and assessment at the Naval Air Station (NAS) Brunswick in Brunswick, Maine. The elements of this plan comply with the informational requirements of the following regulations and guidance:

- Occupational Safety and Health Administration (OSHA)
  - 29 *Code of Federal Regulations* (CFR) 1910.120 [b][1]
  - 29 CFR 1926.65[b][4][ii]
- U.S. Army Corps of Engineers (USACE)
  - Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, Engineer Regulation (ER) 385-1-92 (2007a)
  - USACE Safety and Health Requirements Manual, Engineer Manual (EM) 385-1-1, Section 28B (Sep 2008 consolidated August 2011)

This SSHP is an attachment to the Accident Prevention Plan (APP) and has been structured as a companion document to be used in conjunction with the APP. Information and guidance already contained in the APP will be referenced in this document and will not necessarily be repeated.

1.2 Site Description and Contamination Characterization

Please see Section 2.0d. of the APP.

1.3 Protection of Site Workers and Environmental Safety and Health

The protection of site workers and environmental safety and health are major concerns during this remedial action. The purpose of this SSHP is to ensure safe and healthful working conditions at the site. The safety and health organization and procedures contained in this SSHP have been established based on an analysis of the potential hazards, and personnel protection measures have been chosen based on these risks. Material Safety Data Sheets (MSDS) and a Hazardous Material Inventory List will be maintained on site for the hazardous materials needed to conduct the tasks outlined in the APP and the MSDSs are included in Appendix F of the APP. These include substances such as gasoline, diesel fuel, or oil for operation of equipment and tools, small quantities of oils or other lubricants (e.g., grease) for daily maintenance of tools and equipment, and spray paint as well as hot asphalt emulsion used for asphalt paving and ethyl lactate solution for injection of the groundwater at one site.

1.4 Compliance Required

Compliance with the APP and this SSHP is required by the Tetra Tech EC, Inc. (TtEC)

employees, their subcontractors, and visitors who participate in the investigation and remedial actions. Refusal or failure to comply with the APP/SSHP or violation of any safety procedures by field personnel and/or subcontractors may result in their immediate removal from the site, following consultation with the Safety and Health Manager (SHM) and the Project Manager (PM).

1.5 Applicable Standards, Regulations, and Guidance Documents

Adherence to applicable portions of federal, local, and national consensus organization and to corporate health and safety standards, regulations, and guidance manuals is required during field activities. These include, but may not be limited to, the following:

- 29 CFR 1910, OSHA, General Industry
- 29 CFR 1926, OSHA, Construction Industry
- USACE Safety and Health Requirements Manual, EM 385-1-1 (Sep 2008 consolidated August 2011)

The state of Maine follows Federal OSHA General and Construction Industry rules and regulations for private sector employers.

2.0 HAZARD ANALYSIS AND RISK ANALYSIS

Fire and explosion hazards could occur through improper refueling activities or operation of gasoline- or diesel-powered equipment and tools. MEC and MPPEH could present a fire or explosion hazard if MEC are present and contacted at the surface during the geophysical surveys performed at the Quarry Area. More information about MEC hazards is provided in Section 9.37 of the APP.

Potential radiological exposures could occur in areas that contain radionuclides of concern (ROCs) (refer to Section 2d. of the APP). Radiological controls will be implemented and followed within Radiologically Controlled Areas under the oversight of the Radiation Safety Officer's Representative and work procedures will be in conformance with the Basewide Radiological Management Plan, Dust Control Plan, and Task Specific Plans to ensure personnel exposure to ROCs at the sites is kept down to as low as reasonably achievable (ALARA) during surveys and remedial activities.

The various sites where work will be conducted may contain relatively low levels of contaminants, including metals, polychlorinated biphenyls, polynuclear aromatic hydrocarbons, pesticides, and volatile organic compounds. Cadmium and arsenic contamination in certain areas identified by previous site analysis could expose workers above action levels. However, the contaminants are not wide spread, and the evaluation for the hazard is conservative as it is based on a dust level of 5 mg/m^3. Therefore, these contaminants present a minimal human health risk for exposures as long as good engineering controls using effective dust control; administrative controls using zone control by identifying the specific areas of concern and ensuring that the aforementioned dust control is in place and limiting the number of worker in the affected area;

and personal protective equipment (PPE) use is implemented onsite under the supervision of the Site Safety and Health Officer (SSHO).

Other physical hazards include slips, trips, or falls, including open excavation and trenching hazards and potentially working from elevated work platforms and manlifts, struck by or caught between hazards, including during work around construction equipment including earthmoving equipment and large trucks as well as drilling rigs (crushing or laceration/puncture injuries, head injuries), severe weather hazards, biological hazards, and heat or cold stress illnesses.

An Activity Hazard Analysis (AHA) has been developed for each planned activity and operation occurring in each major phase of work for the project. Each AHA identifies the sequence of work, specific hazards anticipated, and the control measures to be implemented to minimize or eliminate each hazard. The AHA is used to augment daily health and safety meetings and is intended to heighten on-the-job safety and hazard awareness. A pre-task briefing will be documented and may be combined with the daily tailgate safety meeting. AHAs are the focal point for safe conduct of work on a project. Since each task is described and evaluated, workers will be better prepared to perform work safely.

The Site Safety and Health Officer (SSHO) will discuss the risks and precautions associated with each task identified in the Work Plan and this APP/SSHP and will update and maintain AHAs on a site-and task-specific basis to address site hazards and hazard mitigation strategies. Daily safety meetings are held at the start of each shift, prior to the day's activity. The purpose of the safety meeting is to discuss the potential chemical, physical, and environmental hazards that could be encountered during the work that will be performed, along with preventive safety measures and emergency procedures. Attendance is mandatory for the employees involved in the specific work identified by the AHA. During a work day, if there are any changes or new conditions to be addressed, the SSHO will update the AHA and ensure the workers review the amended AHA. Amended AHAs must be reviewed by the Safety and Health Manager (SHM). If a change must be implemented immediately, and the SHM cannot be contacted, the SSHO may implement the change, leave the SHM a voicemail notification, and forward a copy of the change to the SHM as soon as possible.

If there are changes required due to changing conditions or requirements, the SSHP may be modified by using the Field Change Request form and by obtaining the approval of the Project Manager (PM), the SSHO, and the SHM. The Contracting Officer will also be notified to approve any changes to the APP/SSHP or AHAs.

The SSHO will modify these AHAs as appropriate, add new AHAs for new tasks, and train the employees who perform the tasks on the appropriate AHA. The SSHO will forward any modified or new AHAs to the SHM for review and approval, and the SHM will forward them to the Contracting Officer for approval.

The AHAs for this project (as currently anticipated) are located in Appendix A of the APP.

2.3 Chemical Hazards

2.3.1 Site Contaminants

When performing soil disturbing activities and well installation/sampling activities, the potential for contact with soil, groundwater, and respirable dusts containing these contaminants can present a risk of exposure if not properly controlled during work tasks. Potential exposures to the relatively low chemical contaminants of concern in soil at the various work sites (refer to Section 2d of the APP) will be through implementation of effective engineering controls such as controlling of visible dusts generated during soil handling operations, practicing of good hygiene practices such as hand washing and effective decontamination procedures, administrative procedures such as effective training and supervision of employees and good task-specific hazard analyses, and finally, use of proper personal protective equipment (PPE) as specified in the APP, this SSHP, and task-specific AHAs. Exposures are not anticipated to be above the permissible exposure limit (PEL) if the above controls are properly implemented. A Dust Control Plan has been prepared independently of this APP/SSHP.

In addition to dust controls, TtEC will implement three site control zones (See Section 10), including a contamination reduction zone (CRZ) where workers and equipment undergoes the necessary degree of decontamination prior to leaving a controlled work area to minimize the potential for spreading of contaminants outside the work area on person or on equipment or into common areas such as site vehicles, break rooms, etc.

Workers will have access to sanitation stations and be instructed to wash hands when leaving the work site and prior to eating, drinking, smoking, using the restroom, or chewing (e.g., tobacco or gum). Lastly, personal protective equipment (PPE) will be worn within work areas based on the hazard assessment for each task, potential for contact with site contaminants, and work area as specified in the AHAs.

At the Building 7/10 site, TtEC will evaluate the area around the well and casing for potential volatile organics in worker's breathing zone during drilling, sampling, and injection tasks using a photoionization detector (PID) as described in Section 7.0 of this SSHP. In other sites where solvents may have been disposed of, including Site 1/3 landfill, Site 09, and Site 07, screening of the air in worker's breathing zone will be done using a PID will be performed during excavation and trenching activities by the SSHO and documented.

2.3.2 Hazardous Materials

MSDSs and a Hazardous Material Inventory List will be maintained on site for the hazardous materials needed to conduct the tasks outlined in the APP and the MSDSs are included in Appendix F of the APP. These include substances such as gasoline, diesel fuel, or oil for operation of equipment and tools, small quantities of oils or other lubricants (e.g., grease) for daily maintenance of tools and equipment, and spray paint as well as hot asphalt emulsion used for asphalt paving and ethyl lactate solution for injection into the groundwater at one site.

2.4 Physical Hazards

There are numerous physical hazards associated with the project which, if not identified and addressed, may present the potential for accidents and personal injury to the workforce as well as operational problems. To minimize physical hazards, TtEC has developed standard safety protocols that will be followed. Failure to follow safety protocols, or improper adherence to these policies, will result in discipline of the employee. Some health and safety guidelines and rules are described in this section and in Section 10 of this plan. TtEC personnel and subcontractors will follow these requirements as specified here. Supervisors will observe the general work practices of each worker and enforce safe procedures to minimize physical hazards. Hard hats, safety glasses, and safety boots are required in the construction or investigation areas of the work site, unless specifically exempted by the SHM or SSHO.

2.4.2 Noise

Site activities will involve the use of heavy equipment and power tools that may exceed the occupational noise exposure limit action levels. Exposure to noise equal to or exceeding the OSHA 8-hour time-weighted average (TWA) sound level [85 decibels adjusted (dBA)] could result in hearing loss. To minimize this hazard, the SSHO will ensure the following measures are employed:

- Noise monitoring and worker education on hearing conservation principles
- Effective use of hearing protection by all personnel working near excessive occupational noise sources
- The use of engineering and/or administrative controls to reduce employee exposures to noise, where possible

Workers on site will be instructed to observe the "noise rule of thumb" on this project, described as follows:

> *In general, if a worker must raise his/her voice to be heard by someone standing next to him/her (within 2 feet), noise levels may be exceeding 85 dBA and hearing protection will be required.*

Additional sound level monitoring may be conducted on site using a noise survey meter. Personnel with a standard threshold shift will be restricted from high noise exposure, or will be required to wear hearing protection.

2.4.4 Motor Vehicles and Heavy Equipment

Prior to the use of the vehicles and equipment, operators will conduct a safety inspection and record the findings in the Safety Inspection Equipment Checklist (Appendix A). Dust suppressant (water misting) will be used for controlling airborne dust generation to the fullest extent possible without causing runoff or hazardous conditions. In addition, vehicular traffic speed on non-paved roads will be restricted to 15 mph (or less). Motor vehicles and material

handling equipment assigned to these sites will conform to the requirements of 29 CFR, Parts 1926.601, and 1926.602. Crews using personnel transport vehicles to and from the worksites will use the vehicle's safety belts. Drivers of vehicles will be responsible for passenger use of the safety belts. Personnel are not allowed to ride in the bed of pickup trucks, unless there is an approved restraint system installed and used. The Site Superintendent is responsible for maintaining a clean jobsite, free from hazards, and for providing safe access and egress from the site. Traffic cones and/or high-visibility barrier tape will be used, where appropriate, for traffic control into/out of restricted areas. Personnel will wear reflective, high-visibility safety vests or clothing whenever working in and around vehicles and on roads and jobsites. Other requirements include the following:

- Whenever the operator leaves the operator's position, the equipment will be turned off unless the equipment must be kept running to perform required maintenance or a safety inspection. (In this case, the operator will prevent the movement of the equipment by placing equipment in "park," by setting the emergency brake or another type of brake, or by placing blades or pans to the ground or any other manufacturer-recommended method to keep the vehicle from moving.)
- Blades and buckets on heavy equipment will be lowered during transport. Blades and buckets will be placed on the ground whenever the operator leaves the machine.
- Construction equipment (heavy equipment) has the right-of-way in field activities.
- Heavy equipment will have a reverse signal alarm (90 dBA) that operates automatically.
- The equipment will have brakes and brake lights. Equipment operated in hours of darkness must have operating headlights.
- Personnel will not ride on, or be on, any equipment while it is in motion unless there is a seat or stand designed for a person to occupy that has restraints, such as approved seatbelts.
- Seatbelts and restraints will be used when any equipment is in motion. The project will use heavy equipment including excavator and/or backhoe, dozer, and haul trucks. This equipment poses unique and immediate hazards that, if uncontrolled, can result in severe injury or fatality. Injuries can result from malfunctioning equipment, improper operation, or personnel placing themselves in operator "blind spots" or between pieces of the equipment, or between equipment and immovable objects.

Personnel will receive initial and regular reminders that it is their responsibility to remain out of the operating areas of any moving heavy equipment to avoid being injured. In addition, the following precautions will be taken to help prevent injuries and accidents:

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horns, and other safety devices will be checked at the beginning of each work day.
- Examination of hydraulic lines will emphasize those lines in close proximity to the operator.
  - A piece of paper or cardboard will be employed to check for high pressure leaks in this area that could result in hydraulic fluids being injected into the skin.
  - Using gloved or bare hands for this inspection is prohibited.

- Large equipment will not be backed up unless equipped with a reverse signal alarm, audible above the surrounding noise level, and backup warning lights, or unless the vehicle is backed up only when an observer signals that it is safe to do so.
- Motor vehicle cabs will be kept free of all non-essential items and all loose items including equipment and/or samples will be secured.
- The parking brake, for vehicles so equipped, will be set before shutting off and dismounting a vehicle.
- Wearing of seat belts is mandatory.
- During periods of rain, fog, or other adverse weather conditions, the use of headlights is mandatory.
- All posted traffic signs and directions from flagmen (if used) will be observed.
- The designated haul routes will be communicated with all vehicle and haul truck operators.
- Personnel will be prohibited from placing themselves between operating equipment and immovable objects.
- Personnel will wear high-visibility vests to increase visual recognition whenever working within 15 feet of an established traffic pattern/route or working near heavy equipment.
- Efforts will be directed to minimize the number of personnel within an area.

Personal responsibility will be invoked as a safety precaution. Heavy equipment operators have a limited field of vision and may not be aware that someone is near the equipment being operated. Therefore, although heavy equipment is required to be equipped with warning devices such as backup alarms, and the operator is required to operate with caution, it is incumbent on personnel in the area to maintain sufficient distances from the equipment. For example, a sufficient distance is beyond the reach of an excavator turning a full 360 degrees with its bucket and boom fully extended. It is also incumbent on personnel in the area to ensure that they have made eye contact with the operator prior to moving within the reach of the excavator or other mechanical equipment. The operator must cease operations and rest the bucket (or other extension) on the ground before personnel approach. Caution will be exercised at all times. It will be emphasized that personnel should NEVER place themselves between operating heavy equipment and immovable objects due to the potential for crushing injuries and death.

Heavy equipment will be controlled via the following measures:

- Ensuring that only appropriately qualified/experienced personnel are permitted to operate the devices.
- Initial and periodic inspections of heavy equipment to provide safe operation will be documented by using the Equipment Inspection Checklist found in Appendix A.
- Keeping heavy equipment operations areas clear and otherwise adequate to allow for the safe movement of the equipment without endangering personnel or property.
- Implementing appropriate vehicle maintenance and decontamination operations.

Safe and proper practices will be followed at all times, or vehicle operating privileges will be suspended or revoked at the discretion of the SSHO. The SSHO will be responsible for ensuring that these requirements are implemented on site.

2.4.6 Traffic

TtEC personnel will follow local traffic rules. Other tenant operations may be ongoing simultaneously with TtEC activities in some areas, including regular traffic on roadways in and around the unrestricted areas of the site. Coordination with the Caretaker Site Officer and Midcoast Redevelopment Reuse Authority (MRRA) point of contact will be done as required to ensure traffic safety and the delineation of controlled work zones and traffic patterns. A separate Traffic Control Plan has been developed and will be updated as required. Site vehicles and haul trucks will yield to pedestrians, if present. Personnel working in areas subject to vehicular traffic (streets, parking lots, and so forth) will wear high-visibility safety vests. Flashing light or reflectorized barricades will be used for roads that are temporarily blocked due to equipment use. Fences and barricades, as well as appropriate signage will be used to delineate controlled work zones when necessary to keep unauthorized personnel out of the work area and to secure the area during not work hours.

2.4.7 Electrical Hazards

In order to prevent accidents caused by electric shock, the SSHO will inspect any electrical connections on a daily basis. The SSHO will shut down and lock out any equipment that is found to have frayed or loose connections until a qualified electrician is contacted and repairs are made. The equipment will be de-energized and tested before any electrical work is done. The equipment will be properly grounded prior to, and during, work. In addition, ground fault circuit interrupters (GFCIs) will be installed for each circuit between the power source and tool for outdoor use. In the event that generators are used to supply power, these generators will contain GFCIs.

Requirements for electrical safety include:

- Electrical wiring and equipment will be listed by an OSHA-recognized testing laboratory. The usual recognized testing laboratories are Underwriters Laboratory (UL), Canadian Standards Association (US), and Factory Mutual.
- Live parts of wiring and equipment will be guarded to protect persons or objects from harm. Un-insulated live wires must be placed at various heights and distances from the ground and from buildings, depending on the voltage carried by those lines. (Consult the SHM if un-insulated live wires are anticipated.)
- Transformer banks and high-voltage equipment will be protected from unauthorized access.
- A qualified electrician will perform the work on electrical power supplies and lines.
- If live electrical work is performed by a qualified electrician, arc flash protection must be provided. The SHM must be notified so that appropriate arc flash protection requirements are documented.
- Flexible cords (extension cords) will contain the number of conductors required for service, plus a ground wire. Cords will be rated for hard usage (S, SE, SEO, SO, SOO, ST, STO, STOO). Flexible cords are not allowed to pass through doors or windows, or to be placed on the ground where they are subject to being run over by vehicles. If flexible cords must pass through walls, the cords will be protected by bushings or fittings.
- Flexible cords must be inspected on each day of use. No splices or fraying are allowed.

- Flexible cords will not be secured with staples, hung from nails, or suspended by bare wire. (Plastic tie straps, commonly used today, are acceptable.).
- Portable lamps must have bulbs protected by a substantial guard and attached to the lamp holder handle.
- The circuit breaker panels and electrical transformers and supply equipment must be labeled as to the voltage contained therein.
- The circuit breaker panels must be labeled as to what each breaker controls.
- The breaker panels and electrical panels must have a cover protecting any live exposed wires.
- At least a 30-inch clearance must be maintained on three sides of the circuit breaker boxes, transformers, and electrical supply equipment so as to provide ready access to the equipment in the event of an emergency. A 36-inch clearance is required for higher voltages. TtEC requires a 36-inch clearance of the breaker boxes, and so forth.
- Circuit breaker boxes that are locked, or kept in locked rooms, must have a key readily available in the event of an emergency.
- If any live electrical work will be done, it must include sufficient arc flash protection. Permission from the SHM for live electrical work must be obtained and proper precautions must be implemented prior to this task.

Portable generators, if used, must meet the requirements for grounding as specified in the NEC National Fire Protection Association 70. NEC 250-6 has certain exemptions for the grounding of portable and vehicle-mounted generators. Refer to USACE code EM 385-1-1, Section 11, for additional details. Portable generators will be operated in open air only, where there is sufficient ventilation to prevent accumulation of exhaust gases, including carbon monoxide.

2.4.7.1 Overhead Electrical Hazards

Overhead power lines may present a hazard to equipment and personnel. To prevent equipment contact with power lines and to prevent arcing, adequate clearance must be maintained. TtEC requires a minimum clearance of 15 feet. If adequate clearance cannot be maintained, electrical disconnects may be required to secure against a contact hazard. A survey of the work area, including haul routes, laydown and staging areas will be conducted prior to mobilization to identify potential overhead hazards an ascertain their voltage so that minimum clearance distance can be ascertained, and this information will be communicated to subcontractors and equipment operators. No equipment will be moved with raised booms in areas where overhead electrical lines are present.

2.4.7.2 Underground Utilities

A high-loss-potential hazard includes potential for contact with underground utilities in areas where ground penetrating activities are performed in laydown areas or any of the work locations (e.g., trailer or grounding system placement, fencepost placement, excavation and trenching, grubbing, etc.). The opportunity to encounter fire, explosion, or electrocution hazards exists from inadvertent contact with underground utilities. Therefore, the locations of underground utilities will be verified prior to performing any ground-penetrating activities and precautions

will include: white-lining the area of excavation; having utilities located using a private locating service; and performing a geophysical survey to clear utilities in the area where these activities will be performed in accordance with TtEC Corporate Procedure EHS 3-15.

2.4.8 Slips, Trips, and Falls

Planned activities associated with remediation and construction operations will bring field personnel into areas with potential slip, trip, and fall hazards. These hazards may include the following:

- Uneven terrain, stumps and cut off vegetation
- Presence of open excavation and/or trenches
- Work performed from manlift baskets or elevated work platforms
- Workplace clutter
- Wet or slippery surfaces (e.g., liner material)

Hazards of this nature and the potential consequences of injury from a slip, trip, or fall are more likely when personnel are maneuvering and carrying equipment on these work sites.
Control measures may include the following:

- Performing site walks prior to starting work activities to locate, mark, and/or remove trip and fall hazards.
- Selecting the best approach routes to work areas and locations, keeping in mind that these may not be the shortest routes
- Proper clearing and grubbing and leveling of the site to facilitate surveys (as required)
- Applying traction grit such as sand over slippery surfaces in laydown areas and walkways
- Maintaining good housekeeping practices throughout the project
- Using barricades or other appropriate warnings to demarcate hazard areas
- Proper selection and use of portable ladders.
- Following all applicable excavation and trenching safety procedures.
- Following all applicable fall protection procedures.

The SSHO will evaluate all walking/working surfaces to ensure these comply with the objectives stipulated in 29 CFR 1926 Subparts C – General Safety and Health; G – Signs, Signals and Barricades; Subpart P Excavation and Trenching, Subpart M – Fall Protection, and Subpart X – Stairways and Ladders. Requisite strength, heights and widths, and fall protection will be evaluated as required for the work tasks.

2.4.9 Head Injuries

At a minimum, workers will don hard hats if they have an overhead hazard and when working around heavy equipment; safety boots; and safety glasses prior to performing any site construction or investigation activities. This will prevent minor injuries caused by bumping one's head while working around and under equipment and cutting or removing vegetation.

2.4.10 Falling Objects

No personnel will work under equipment or suspended loads at any time. Hoisting and rigging tasks will be performed as outlined in the APP (see Section 9.20) and a specific AHA has been developed for this task. Also, the supervisor will verify that a sufficiently wide area is clear of personnel while the equipment is in operation.

2.4.11 Heavy or Awkward Lifting, Ergonomic Strains, and Back Injuries

Routine activities at the project may involve tasks that, by their nature, may subject personnel to unexpected ergonomic stresses. Examples of ergonomic stresses include:

- Muscular sprains and strains
- Musculoskeletal trauma from impacts or vibrations
- Fatigue due to extended work schedules

Caution and workload awareness should be exercised by site personnel during project activities. Tasks which involve manual manipulation of tools or materials, and/or prolonged exposure to vibrating mechanical equipment should be monitored by the individuals involved with them to preclude the adverse effects of ergonomic stress.

Hazards associated with heavy or awkward lifting are more frequent in the early morning hours (prior to muscles becoming limber) and later in the day (as a result of fatigue). The following provisions will be used to minimize hazards of this nature:

- Use machinery, lifting-assist devices (two wheeled carts or dollies), or multiple personnel for heavy lifts, where possible. (TtEC prohibits lifting more than 50 pounds without assistance.)
- Use proper lifting techniques.
- Plan your lifts: place heavy items on shelves between the waist and chest and lighter items on higher shelves. Also, if the load must be carried to another location, plan and inspect the route to ensure that slipping/tripping hazards are absent.
- Stretch and limber muscles prior to and after extended periods/frequent lifts.
- "Test" the lift; before attempting to fully lift or move an object, give the object a "nudge" to assess its approximate weight and your ability to safely lift and move it without injury. If you are not confident that you can complete the lift without hurting yourself, either get a lifting aid (such as a dolly or mechanical hoist), get help from others, or both.
- Move as close to the load as possible, and ensure that good hand holds are obtainable. Wear gloves where necessary to improve hand holds.
- Lift with your legs, not your back; bend your knees and avoid turning and twisting when lifting, carrying, or depositing loads.
- Break lifts into steps if the vertical distance from the starting point to the placement of the lift is excessive.
- Periods of high-frequency lifts or extended-duration lifts should include sufficient breaks to guard against fatigue and injury.

Other considerations associated with lifting injuries and muscle strains include the following:

- Assess the area available to maneuver the lift.

Rearrange the area, remove clutter, and minimize the necessity of twisting and turning.

- Evaluate the area of the lift.
  - Investigate conditions of the walking/working surfaces where the lift will occur, over the planned path of travel, and at the location the load will be deposited.
  - Conditions such as poor housekeeping/clutter, slippery surfaces, and rough or uneven terrain may magnify the potential for injury during a lift.
- Take into account your overall physical condition
  - Report previous injuries on your Medical Data Sheet or inform supervisor of limitations.
  - DO NOT attempt to lift items that will put you at risk.
  - Break loads that you must carry into smaller, manageable loads, and get assistance whenever significant lifting tasks are involved.

By evaluating applicable contributing factors, planning your lifts, and incorporating feasible control measures, the potential for injury associated with lifting can be minimized.

2.4.12 Illumination

Site work, when performed outdoors, is scheduled to be performed during daylight hours only (1/2 hour after sunrise to 1/2 hour before sunset). If work must be performed during hours of darkness or inside buildings, the project will provide additional lighting is to meet the requirements of EM 385 1-1 Table 7-1.

2.4.12 Portable Power Hand Tools

Any portable power tools (e.g., drills, reciprocating saws, scabbler, etc.) used in the work area must have appropriate guarding, interlocks, or controls to ensure safe operation. Machinery and equipment must be inspected for defects in the guarding, electrical safety, and operation before each use. All electrical equipment must be listed by a Nationally Recognized Testing Laboratory (NRTL) as required by Subpart S of 29 CFR 1910 and Section 11.A.a. in EM 385 1-1.

The following specific precautions regarding power hand tools will be used to help prevent injuries and accidents:

- Never remove, make inoperative, or reduce the effectiveness of any equipment or machine guard.
- Never override any safety interlock or attempt to operate any piece of equipment or machinery without guards or other required safety devices in place and fully functional.
- Never operate any piece of equipment or machinery when it is functioning improperly or at any time when operation would constitute a hazard. Malfunctioning equipment must be repaired immediately or removed from the premises.
- Do not use electrically-powered tools near flammable materials or within an explosive atmosphere, unless they are of the explosion-proof type meeting the National Electric Code

(NEC) requirements for explosive areas. Employees operating the equipment should be aware of sparks and/or metal fragments when using this equipment.

- At no time will electrical power equipment be operated without proper grounding. All electrical cords and cables, including extension cords, must include a third wire ground.
- All electrical power tools will be listed by a nationally recognized laboratory and marked to indicate that they have double insulation if they are not internally grounded.
- Do not use electrical tools in wet or damp areas.
- Use tools only for their intended purpose (e.g., do not use a wrench to hammer an object). Defective tools (e.g., with mushroomed heads or split or defective handles) are to be taken out of service until they can be repaired, or they are to be replaced.
- Do not use conductive (i.e., metal) tools around energized electrical sources. Test insulated
- Select the correct size and type of wrench for each job. Wrench handles will not be extended with a pipe or “cheater” bar.
- Repair mushroomed punch, drift, and chisel heads or take the tool out of service and replace. Metal particles may break off and fly into the face or eyes of nearby workers when mushroomed heads are struck.
- Wear eye protection at all times when using hand tools (powered or manual).
- Do not use "cheaters" to increase capacity. Get a bigger sized tool.
- Know how to shut a tool off before turning it on. No locked "on" switches on hand-held power tools.
- Eye protection is required for protection from flying particles.
- Power-activated tools will be inspected daily before use for proper operation of tool safety devices. Workers must be authorized by a foreman to operate this equipment.
- Power tools designed to accommodate guards will have guards installed and functioning prior to use.
- The power supply must be properly attached to the tool and to the source. Electric tools must be grounded (or "double insulated").
- Check the work area for other people before starting the power tool. Warn people nearby.
- Be prepared for jamming of rotating tools. Maintain good footing, good balance, and watch out for nearby obstructions. Check for loose clothing.
- Shut off and bleed down the air hose before disconnecting air tools. Never point an air hose toward another person or yourself.
- Power tools must be GFCI-protected. Electric power tools must be double-insulated or have a grounding prong on the cord.
- Avoid using power tools in wet locations (air-powered tools may be used).
- Protect cords and plugs from damage. Keep the power cord away from the operating portion of the power tool.
- Power tools must be turned off before disconnecting from the power source. If a circuit breaker is tripped or the tool stops operating, turn off the power switch before disconnecting the power source.
- Disconnect power cords from the source before coiling.
- Store tools in a safe place when not in use. Protect from weather, dirt, and water.
- All hand tools and power tools will be inspected prior to use. TtEC employs inspection

checklists (See Appendix A) and colored stickers and/or tape, as previously described, to indicate that equipment has been inspected and is ready for use.

2.5 Biological Hazards

Biological hazards may be encountered on site. Workers should anticipate the likelihood of encountering these hazards when in undeveloped outdoor areas. Insect bites and insect stings can cause localized swelling, itching, and minor pain that can be handled by first aid treatment. In sensitized individuals, however, effects can be more serious such as anaphylactic shock, which can lead to severe reactions in the circulatory, respiratory, and central nervous system and, in some cases, even death. The SSHO will identify personnel with a known reaction to bites and stings at the pre-job safety orientation meeting.

Personnel will not attempt to capture or feed any wild or semi-wild animals due to the possibility of a bite or parasitic infestation. Additionally:

- Animal and bird droppings often contain mold, fungus, or bacteria that represent a significant respiratory hazard, including lung diseases and allergies. Personnel will not touch such droppings.

2.5.1 Insects

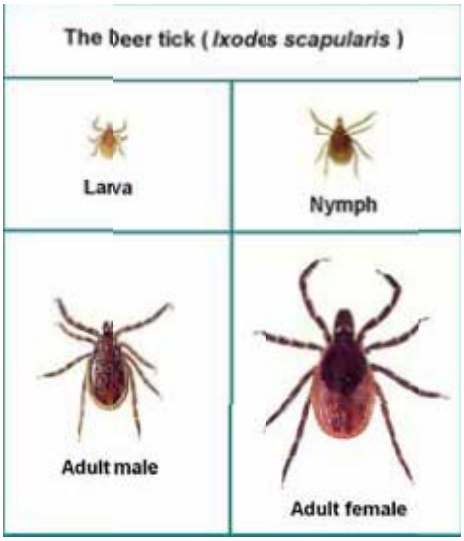
Insects, including bees, wasps, hornets, spiders, ticks, may be present at this site making the chance of a bite or sting possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition; any individuals who have been bitten or stung by an insect will notify the SSHO. Field personnel who may have insect allergies will provide this information to the SSHO prior to commencing work, and will have allergy medication on site. The following is a list of preventive measures:

- Apply insect repellent prior to fieldwork and as often as needed throughout the work shift. Apply DEET (vapor-active repellent) to any exposed skin surface (except eyes and lips), and apply the permethrin repellent spray to field clothing. Note: Allow the permethrin to dry before using the treated clothing.
- Wear proper protective clothing (work boots, socks and pants).
- When walking in vegetated areas, avoid contact with bushes, tall grass, or brush as much as possible.

Mild insect stings or bites should be treated by applying a baking soda paste or ice wrapped in a wet cloth. Bee stingers should be gently scraped off the skin, working from the side of the stinger. The suction device in commercially available snake bite kits can also be used to remove the stinger. If insect bites become red or inflamed or symptoms such as nausea, dizziness, shortness of breath, etc., appear, medical care will be sought immediately. Immediate medical care is essential for persons who are allergic to insect bites/stings. If an allergic person receives a spider bite or insect bite/sting, seek immediate medical attention, keep the victim calm, and check vital signs frequently. Rescue breathing should be given, if necessary, to supply oxygen to

the victim. Various spiders may be encountered at the site and many spiders have the potential to bite; however, there are no dangerous spiders of particular concern in Maine.

2.5.3 Lyme Disease



Lyme disease is caused by an infection from the bite of a deer tick, which is about the size of the head of a pin. During the painless tick bite and following the blood meal, a microorganism (spirochete) may be transmitted into the bloodstream that may lead to Lyme disease. A 24- to 48-hour period is necessary for the tick to feed and become engorged. During this time period, it is unlikely that the tick has regurgitated its stomach contents into the host and therefore, infection is unlikely.

Lyme disease may cause a variety of medical conditions including arthritis, which can be treated successfully if the symptoms are recognized early and medical attention is received. Treatment with antibodies has been successful in preventing more serious symptoms from developing. The effects of the disease vary from person to person, which often makes it difficult to diagnose. Typically, the incubation period ranges from two days to two weeks. Early signs may include a flu-like illness, an expanding skin rash and joint pain. If left untreated, Lyme disease can cause serious nerve or heart problems as well as a disabling type of arthritis.

Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. This flu-like illness is out of season, commonly happening between May and October, when ticks are most active. A large expanding skin rash usually develops around the area of the bite. More than one rash may occur. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. It's easy to miss the rash and the connection between the rash and a tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash. Joint or muscle pain may be an early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes with other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

Lyme disease can affect the nervous system. Symptoms include stiff neck, severe headache, and fatigue usually linked to meningitis. Symptoms may also include pain and drooping of the muscles on the face, called Bell's palsy. Lyme disease may also mimic symptoms of multiple sclerosis or other types of paralysis. Lyme disease can also cause serious but reversible heart problems, such as irregular heartbeat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Often, the effects of Lyme disease may be confused with other medical problems.

Control measures to prevent contracting Lyme disease include:

- Avoid dense or high brush, when possible.
- Wear light colored clothing.
- Spray DEET on your skin and permethrin on clothing and work boots.
- Tuck pant legs into socks and shirts into gloves, if possible.
- Self/buddy check neck, hairline, groin, and body after working in areas that may contain deer ticks. Shower immediately after returning home from the job site.

If a tick is found biting an individual, the SSHO will be contacted immediately. The tick can be removed by grasping the tick with tweezers as close to the skin as possible, and pulling gently or using a tick removal system (e.g., Pro-Tick, www.scs-mall.com/store/). The affected area should then be disinfected with alcohol or similar antiseptic. If personnel feel sick or have signs similar to those above, they will notify the SSHO immediately. Additionally, employees finding engorged ticks on their body will be given a medical examination. The removed tick should be saved in small bottle and labeled with the date and location of origin. The tick can then be tested for Lyme pathogens.

2.5.4 West Nile Virus

West Nile virus (WNV) encephalitis is a mosquito-borne viral disease that can cause an inflammation of the brain. WNV is transmitted to people by the bite of a mosquito that has become infectious after feeding on a bird infected with the virus. Birds serve as the reservoir hosts of WNV, and the principal vector in the transmission from one bird to another is the mosquito. Humans and horses are known as dead end hosts, because once a human or horse is infected, the virus is no longer transmitted.

Most infections produce no symptoms in people, or symptoms are mild or moderate. Approximately 80 percent of those infected with WNV will show no symptoms. About 20 percent of cases produce mild symptoms including: fever, headache, and body aches, often with skin rash and swollen lymph glands. Less than 1 percent of cases show more severe infections marked by headache, high fever, neck stiffness, muscle weakness, stupor, disorientation, convulsions, paralysis, coma, and, rarely, death. Persons age 50 years or older and immune-compromised individuals are at a higher risk of developing a more severe infection. Symptoms of WNV will generally last a few days, although even some healthy people report having the illness last for several weeks. The symptoms of severe disease (encephalitis or meningitis) may last several weeks, a though neurological effects may be permanent.

Control measures to prevent contacting WNV include:

- Mosquitoes are most active at dawn and dusk. Limit outdoor activities at those times, when possible.
- Wear long-sleeved shirts and long pants.
- Spray DEET on your skin and permethrin on clothing and work boots.

2.5.5 Poisonous Plants

Poison ivy, oak, or to a lesser degree, sumac may present in Maine. The potential for contact with poisonous plants (i.e., poison ivy, poison oak, and poison sumac) exists when performing fieldwork in and vegetated areas, especially during vegetation removal tasks and site walks. Poison ivy can be found as vines on tree trunks or as upright bushes. Poison ivy consists of three leaflets with notched edges. Two leaflets form a pair on opposite sides of the stalk, and the third leaflet stands by itself at the tip. Poison ivy is red in the early spring and turns shiny green later in the spring. Poison ivy has white berries and red or yellow foliage in the fall of the year. Poison sumac can be present in the form of a flat-topped shrub or tree. It has fern-like leaves, which are velvety dark green on top and pale underneath. The branches of immature trees have a velvety "down." Poison sumac has white, hairy berry clusters.

Contact with poison ivy, oak, or sumac may lead to a skin rash in susceptible individuals. A rash results from a toxin found in the sap; it is extruded from the leaves and contained in the stems and roots. The rash is characterized by reddened, itchy, blistering skin requiring first aid treatment. In the event of contact with one of these plants, immediately wash skin thoroughly with Technu or Zanfel, taking care not to touch face or other body parts.

Avoidance of plant/sap contact is the only effective means of preventing the poisoning. A person experiencing symptoms of poisoning should remove contaminated clothing. Wash affected skin with Technu or Zanfel as soon as possible after exposure. Use calamine or other poison ivy lotion if the rash is mild and to reduce itching. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity. Employees will be trained in the identification of these species and will be advised to wear protective clothing such as gloves and long-sleeved shirts when working conditions permit. Employees should also consider applying barrier lotions (e.g. Ivy Block) to skin that has the potential to contact these species. Alcohol wipes, Dawn liquid soap and Technu or Zanfel can be used to decontaminate skin and reusable clothing to prevent exposure to poison ivy. Gloves should be worn when removing and decontaminating clothing potentially exposed to poison ivy.

2.5.6 Bloodborne Pathogens

Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts, or abrasions of the skin or mucous membranes. They are not transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions, all blood should be considered infectious, and all skin and mucous membranes should be considered to have possible points of entry for pathogens. Two primary bloodborne pathogens include Hepatitis B and human immunodeficiency virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS).

Potential bloodborne pathogen exposures include:

- Contact with contaminated medical equipment or medical waste or sharps
- Medical emergency response operations such as administering first aid or cardiopulmonary resuscitation (CPR)

To reduce the risk of contracting a bloodborne pathogen, take the following precautions:

- Avoid contact with blood and other bodily fluids.
- Use protective equipment when giving first aid/CPR, such as disposable gloves and breathing barriers.
- Thoroughly wash your hands with soap and water immediately after giving care.

When cleaning up blood or other bodily fluids:

- Clean up the spill immediately or soon as possible after the spill occurs.
- Use disposable gloves and other PPE when cleaning spills.
- Wipe up the spill with paper towels or other absorbent materials.
- After the area has been wiped up, flood the area with a solution of one quarter cup of liquid chlorine bleach to 1 gallon of fresh water and allow it to stand for at least 20 minutes.
- Dispose of the contaminated material used to clean up the spill in a labeled biohazard container.

The SSHO should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job. Site personnel will be given bloodborne pathogens training.

2.6 Action Levels and Methods for Mitigation

2.6.1 Implementation Of Engineering Controls And Work Practices

TtEC will create systems and procedures to prevent and control hazards identified through the risk analysis. The hierarchy of controls is engineering, administrative, work practice, and PPE. Whenever feasible, engineering, administrative, or work practice controls will be instituted even if they do not eliminate the hazard or reduce exposure. Use of such controls in conjunction with PPE will help reduce the hazard or exposure to the lowest practical level. Where no standard exists, TtEC will evaluate, develop, and implement effective controls. The basic formula for controlling workplace hazards, in order of preference, includes:

- Eliminating the hazard from the method, material, or the facility
- Abating the hazard by limiting exposure or controlling it at its source
- Training personnel to be aware of the hazard and to follow safe work procedures to avoid it
- Prescribing PPE for protecting employees against the hazard and ensuring they not only use it, but they know how to use it correctly

2.6.2 Work Stoppage and/or Emergency Evacuation of On-site Personnel

All employees and subcontractor personnel are empowered, authorized, and responsible to stop work at any time when an imminent and uncontrolled safety or health hazard is perceived. An employee's failure to adhere to the requirements of the APP or this SSHP, the project-specific

work, or to observe specified safety requirements and restrictions or to properly use identified protective equipment may lead to injury or illness. As a result, deviation from safety and health procedures is not tolerated. Failure to comply with health and safety procedures and requirements will lead to reprimand up to and including dismissal. Health and safety-related information will be communicated to employees through meetings, postings, written communications, and reporting of hazards.

2.6.3 Prevention and/or Minimization of Public Exposures to Hazards Created by Site Activities

Site security will be used to retain complete control over active operational areas as detailed in the Access and Haul Road Plan in the APP. Because activities will take place at a facility that is not under security of an active base, the first line of security will involve using fences and gates as well as temporary barriers and signs, site work permits, and any existing or additional physical barriers at the sites to restrict unauthorized TtEC as well as other personnel from entering a controlled work area. Signage will be posted instructing workers to contact the Site Superintendent for access. Some access may require work stoppage and escort (e.g., during geophysical survey activities, MEC related activities, or active radiological surveys).

3.0 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

3.1 Primary Staff and Workers

Personnel with primary responsibility for implementation of the On-site Health and Safety Program through implementation of the APP and this SSHP include:

- Project Manager (PM) – Derek Pinkham
- Site Manager - TBD
- Site Superintendent (SS) - TBD
- Corporate Safety and Health Manager (SHM) – Roger Margotto, CIH, CSP, CHMM
- Corporate UXO Safety Manager – Steve Neill
- Corporate Health Physics Manager – Erik Abkemeier
- Senior UXO Supervisor (SUXOS) – TBD
- UXO Safety Officer (UXOSO) - TBD
- Site Safety and Health Officer (SSHO) - TBD
- Radiation Safety Officer's Representative (RSOR) - TBD
- Subcontractor Foreman or Supervisors (under the direction of the Site Superintendent)

All TtEC and subcontractor personnel from supervisors to workers on this project have a primary responsibility for enforcement and implementation of the provisions identified in this SSHP, and they each must recognize their responsibility for their own safety and health and take actions to stop and notify or correct unsafe conditions they notice. This is a fundamental tenant of the TtEC Health and Safety Policy.

The key roles and corresponding responsibilities of site supervisors listed above and workers, including subcontractors, and a summary of the organizational structure for managing and implementing safety and health on this project are described in Section 4.2 of the APP and an organizational chart is included as Figure 4-1 in the APP.

3.2 Visitors

All visitors to the project site will report to the TtEC office for a safety briefing and assignment of an escort, as applicable. Visitors, including TtEC employees who are not assigned to the project, will sign in and out on the project visitor's log, maintained in the main office, each time they visit the site.

At no time will visitors be allowed onto the project site until they have acknowledged training and understanding of the APP and SSHP, and have received a briefing specific to the hazards of the area they intend to visit and don the required PPE. Visitors, other than as provided for by contract for Navy personnel, are responsible for supplying any PPE required for access to the project site.

Access to the exclusion zone (EZ) will be limited to personnel essential to the work being conducted. During MEC surface clearance operations, the only authorized personnel are qualified UXO technicians under supervision of the SUXOS. During radiological survey work, the only authorized personnel are qualified radiological survey technicians with the proper controls in place, under direction of the RSOR.

Under specific conditions, and on a case-by-case basis, authorized visitors (i.e., personnel conducting project functions that require them to be present in the EZ for a specific purpose and a limited time) may be granted access to the EZ while operations are being conducted under the direction of the SUXOS (for MEC related activities and only when the SUXOS has stopped active MEC related work), the RSOR (for radiological survey work subject to the Radiological Management Plan requirements), or the SS (all other activities). The person(s) requesting access to the EZ must have a legitimate need for access and will submit an access request letter to the PM prior to the proposed date for the site visit. At a minimum, the request for authorization will include the names of the individuals requesting access, identification of emergency contacts for these individuals, purpose of the visit, task(s) to be performed, and a rationale to support the need to access the EZ. All visitors must be escorted while in the EZ. If an unauthorized individual enters the EZ, all work will cease until that individual is removed from the EZ.

4.0 TRAINING

Refer to Section 6.0 of the APP.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Refer to Section 9.6 of the APP.

6.0 MEDICAL SURVEILLANCE

TtEC requires that site workers participate in a medical surveillance program that meets the requirements of 29 CFR, Part 1910.120(f) for work within an EZ where they could become exposed to a site contaminant. The medical surveillance program, managed by the TtEC medical consultant, is certified by the American Board of Preventive Medicine-Occupational Medicine, will be instituted for the following employees:

- The employees who are, or who may be, exposed to hazardous substances or health hazards at or above the PEL, or, if there is no PEL, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year.
- The employees who wear a respirator for 30 days or more a year or as required by 29 CFR, Part 1910.134.
- The employees who are injured, become ill, or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.

A copy of the certification of participation in the medical surveillance program shall be maintained in the project files by the SSHO. The certification must include the employee's name, date of last examination, and the name of the examining physician(s).

6.1 Baseline Physical Examination Protocol

Employees who are expected to participate in on-site activities where they are potentially exposed to health or safety hazards will be required to complete a baseline physical examination.

6.2 Medical Clearance

The workers who must enter EZ, or who meet the criteria listed above, must provide the SSHO with a written opinion from a licensed physician attesting to the employee's fitness for duty at a hazardous waste site. A physician's written opinion of the employee's ability to wear a respirator will also be required when there is reasonable possibility that a respirator may be required for site work (currently not anticipated). The physician's written opinion must be dated within the previous 12-month period, or an alternate time period as determined by the physician, for continued work. There are no additional specific medical surveillance requirements for this project.

6.3 Record Keeping

The SSHO will maintain a file for each person on site. This file will have a copy of the physician's statement of employee's fitness for duty, the employee's ability to wear a respirator, and work restrictions, if any. The SSHO will confirm the employee and project supervisors comply with medical work restrictions, if any. The SSHO will also ask each employee to complete a form to indicate known allergies, prescription medications, and other medical information that will allow the Emergency Coordinator to respond to a medical emergency in an

appropriate manner. Personnel will notify the SSHO regarding medications (voluntary; but encouraged), including over-the-counter, they are using on each day of work. The SSHO, in consultation with the SHM and/or a medical consultant, will determine if these medications would affect a worker in a manner that would impair the ability of the worker to perform work safely. At no time will the SSHO maintain the copy of any actual medical records. These records are maintained by the TtEC medical consultant, WorkCare.

7.0 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

Because there is a potential for solvents (tetrachloroethene) to be present in low levels in groundwater at Building 7/10 site and the potential for solvent contaminants to be encountered during soil excavations are several sites (see Section 2d of APP), the potential for organic vapor levels in worker's breathing zone exists during well installation and development or sampling tasks and some excavation related tasks. A properly calibrated MultiRAE® or other PID equipped with a 10.6 electron volt lamp as approved by the SHM will be used to screen for volatile organic compounds at each well casing and in excavations, trenches, and test pits to ensure worker's breathing zone concentrations do not exceed the action levels listed below during these tasks.

Ambient air measurements for volatile organic vapors will be collected in the breathing zone of site workers at sites where volatile organic compounds (VOCs) are a potential contaminant of concern. No level above 10 ppm is acceptable without further investigation. Vapor levels in excess of this limit will result in the suspension of work until ambient vapor concentrations have dissipated to below 10 ppm. If work must continue in levels greater than 10 ppm, or at lesser concentrations if readings are sustained (do not dissipate), the SHM will evaluate the situation with the SSHO and recommend additional exposure control strategies, such as having site personnel who are qualified to wear a respirator and who are fit tested and trained, wear a full-face air purifying respirator equipped with organic vapor and high-efficiency particulate air (HEPA) cartridges.

Should signs of unknown forms of contamination or suspected higher levels of contaminants be discovered, work will stop and the Navy as well as the SHM will be notified so that the situation can be evaluated by the SSHO, SHM, and the Navy in order to address adequate levels of protection and any additional engineering controls, monitoring requirements, and PPE requirements.

If respiratory protection is required (currently not anticipated based on information already known about the sites), the APP will be updated to include respiratory protection requirements.

For this project, it is currently anticipated that dusts (and any low-level contaminants present with the dust particles) can and will be controlled through adequate misting/wetting of the soil with water spray during soil handling activities will be sufficient to control dusts and keep dust concentrations from presenting an exposure concern. The SSHO and the RSO will monitor the implementation of dust controls on this project in accordance with the Dust Control Plan. The SS with support from the RSOR and SSHO will help implement dust controls during site work

and sample results from dust monitoring (as specified in the Dust Control Plan) will be reviewed to determine adequacy of dust controls being implemented.

Should signs of unknown forms of contamination or suspected higher levels of contaminants be discovered, work will stop and the Navy as well as the SHM will be notified so that the situation can be evaluated by the SSHO, SHM, and the Navy in order to address adequate levels of protection and any additional engineering controls, monitoring requirements, and PPE requirements.

8.0 HEAT AND COLD STRESS

The procedures and practices for protecting workers from heat and cold stress are identified in Section 9.14 of the APP.

9.0 STANDARD OPERATING PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES

9.1 General Site Rules and Prohibited Activities

The following general health and safety work rules shall be followed by TtEC employees and subcontractors:

- Site personnel must attend each day's Daily Briefing.
- Any individual taking prescribed drugs shall inform the SSHO of the type of medication. The SSHO will review the matter with the SHM and the Corporate Medical Consultant (CMC), who will decide if the employee can safely work on site while taking the medication.
- The PPE specified by the SSHO and in the APP and SSHP shall be worn by site personnel in active work areas. This includes, but is not limited to, hard hats as required, safety toe boots, and safety glasses.
- Personnel must sign the site log and the EZ log when used at the worksite.
- Personnel must follow proper decontamination procedures where required.
- Eating, drinking, chewing tobacco or gum, smoking, and/or any practice that increases the probability of hand-to-mouth transfer and ingestion of material or hand-to-mouth contact is prohibited in the EZ. (Exceptions may be permitted by the SHM to allow fluid intake during heat stress conditions).
- Signs and demarcations shall be followed. Such signs and demarcation shall not be removed except as authorized by the SSHO.
- Site personnel must follow Hot Work Permits as issued if hot work is performed.
- Site personnel must use the Buddy System in the EZ.
- Site personnel must follow the work/rest regimens and other practices required by the

heat stress program.

- Site personnel must follow lockout/tag-out procedures when working on equipment involving moving parts or hazardous energy sources.
- No person shall operate equipment unless trained and authorized.
- Fall protection or fall arrest systems must be in place when working at elevations greater than six feet for temporary working surfaces and four feet for fixed platforms.
- Safety harnesses and lanyards must be selected by the Competent Person. The user must inspect the equipment prior to use. No defective personal fall protection equipment shall be used. Personal fall protection that has been shock loaded must be discarded.
- Hand and portable power tools must be inspected prior to use. Defective tools and equipment shall not be used.
- Ground fault interrupters shall be used for cord and plug equipment used outdoors or in damp locations. Electrical cords shall be kept out of walkways and puddles unless protected and rated for the service.
- Improper use, mishandling, or tampering with health and safety equipment and samples is prohibited.
- Horseplay of any kind is prohibited.
- Possession or use of alcoholic beverages, controlled substances, or firearms on any site is forbidden.
- All incidents, no matter how minor, must be reported immediately to the SS and SSHO.
- Be your work partner's keeper. Consider the actions in terms of the hazard it may create for others.
- Consult with the SSHO if there is any doubt as to the safe way of performing a task or job.
- There will be no running at any time, except in extreme emergencies.
- Throwing any object at personnel or equipment is prohibited.
- Know and be familiar with emergency routes and procedures, and how to get to them. Do not block exits with material or equipment.
- The use/wearing of personal headphones is prohibited. Their use may preclude reception of audible warning signals and/or hazard communication. Also, personal cell phones may not be used during work hours except when an employee is on break, unless the cell phone is being used for job-related purposes. Cell phones will not be used at any time that workers are driving or operating any equipment, or using any tools or mechanical devices.
- Workers will park only in designated areas and are reminded to follow the site-specific traffic rules and routes. In particular, workers are reminded to wear seat belts.
- Workers will wear high visibility reflective safety vests when working in the area so that they are readily visible to other workers and to vehicular traffic.

- All underground utilities will be located and marked and geophysically verified before any ground intrusion.

9.2 Housekeeping

- Clean work areas and storage areas encourage better incident prevention, and make the work easier to do.
- Dispose of trash and scrap in proper containers. This includes lunch papers, soft drink cans, banding straps, wood, rags, paper cups, etc.
- Keep tools, materials, and equipment stored in an orderly manner and in their proper places. This prevents unnecessary damage and helps to locate them when needed.
- Keep stored material, scrap, and other tripping hazards out of roads and walkways and away from emergency equipment. If it is in a walkway and it is not moving, it does not belong there.
- Cords, cables, and hoses crossing roads or walkways are to be covered to prevent tripping or damage, or are to be supported overhead, at least 7 feet above walkways and 14 feet above roads.

9.3 Fire Prevention

See Section 9.17 of the APP.

10.0 SITE CONTROL MEASURES

This section outlines the means by which TtEC will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the potential spread of mud or soil and any potential contaminants from contaminated areas into other areas of the site.

It is anticipated that a basic three-zone approach will be used during work at these sites. This approach will be comprised of an exclusion zone (EZ); a contamination reduction zone (CRZ) [as required], and a support zone (SZ).

Site control requires the establishment of a regulated area (EZ) and an area for locating support and emergency equipment (SZ) in an accessible location and for performing equipment and personnel decontamination procedures (CRZ) prior to leaving the area when the potential for contaminant transport offsite is present.

10.1 Exclusion Zone

EZs will be formed in each active work area on a site specific and task specific basis. The area around active MEC investigation and clearance activities will be managed as an EZ. The boundaries of MEC related EZs are governed by MEC related procedures established in the Explosives Safety Submission and the Explosives Management Plan and will be implemented under the direction of the SUXOS. Likewise, boundaries for the Radiological Control Area will be implemented under the direction of the RSOR as per the Radiological Management Plan and

Task Specific Plans. Specialized training and worker qualifications related to the hazards within are required for any personnel to be within the EZ. The SSHO will assist the SS in establishing the EZ around other active work sizes.

Barricades or cones, along with caution tape or signage, will delineate the EZ if not fenced.

10.2 Contamination Reduction Zone

Adjacent to the EZ, the CRZ will serve as a buffer zone to prevent the spread of contamination beyond the work area. Workers will either wrap contaminated tools and equipment with plastic, or workers will decontaminate the equipment and themselves in this area before moving to the next work area. Not all activities or areas will require a CRZ. The SSHO will assist the SS, UXOSO, and the RSOR in making this determination and setting up areas as appropriate to the tasks.

10.3 Support Zone

The SZ will be arranged considering accessibility, utility availability, wind direction, and line-of-sight to work. Typically, the SZ is located in an upwind direction from the work areas. Emergency equipment will be staged in this zone.

10.4 On-Site Communications

Site personnel and equipment will be working in close proximity to each other most, but not all of the time and work at multiple sites may be ongoing concurrently. In most instances, hand signals, voice commands (including handheld radio), and line of site will provide the initial means of communication at any one site. Cellular telephones may be required for individuals for work use, however these can be a distraction and not all workers will be authorized to carry them at the direction of the SS. All radios and/or cellular phones used for communication will undergo regular operational checks to verify they work correctly. Hand signals listed in Table 10.1 will be used by site personnel in emergency situations or when verbal communication is difficult. An air horn or vehicle horn will be available and used when necessary to indicate an emergency.

Table 10.1 Emergency Hand Signals

Signal	Definition
Hands on top of head	Need assistance
Thumbs up	Okay, I am all right, or I understand
Thumbs down	No or negative
Gripping partner's wrist	Exit area immediately

10.5 Site Access Control

All site workers will attend the daily briefing before proceeding to work areas. All visitors must

check with the SSHO before entering the site to receive orientation, sign the visitors' log, and get escort (when required) to their work location. All personnel and visitors must have permission to come into any controlled work area.

11.0 PERSONAL HYGIENE AND DECONTAMINATION

This section provides decontamination procedures and guidelines for developing site- and activity-specific decontamination procedures.

11.1 Responsibilities

The SS is responsible for establishing and maintaining appropriate equipment and personnel decontamination areas when required. The SSHO assists the SS to help ensure that adequate decontamination procedures are followed to prevent contamination of individuals or the environment beyond the exclusion zone.

11.2 Contamination Avoidance

Avoiding contamination is the first and best method for preventing the transfer of contamination to personnel or to non-contaminated areas. Each person involved in site operations must regularly practice the methods, listed below, for contamination reduction.

- Know the limitations of the protective equipment being used.
- Do not unnecessarily walk in muddy or known contaminated areas.
- Waste containers should be checked for incompatible materials.
- Use the proper tools to safely conduct the job.

11.3 Decontamination

Decontamination involves physically removing contaminants and/or converting them chemically into harmless substances. Decontamination, proper PPE-doffing procedures, and management of controlled safety zones minimize the chance of cross-contamination from protective clothing to wearer, equipment to personnel, and one area to another.

In general, basic decontamination will consist of:

- Removing residual materials (e.g., soil, mud) regardless of their source before taking breaks or engaging in hand-to-mouth activities.
- Employing soap and water wash and rinse for hands and face. Hygiene wipes may also be used, but are not a substitute to clean water and soap.
- Keeping break areas clean. No dirty field equipment, dirty boots, or PPE will be permitted in these locations or offices.
- Proper doffing of used PPE and proper storage of reusable PPE between uses.

Personnel decontamination will consist of a soap/water wash and rinse for outer protective equipment (boots, gloves, chemical protective suites, etc.) if they become contaminated with mud or soil that has contamination if that PPE will be reused rather than discarded after doffing. It is anticipated that in most instances, PPE will not be contaminated and can be doffed and stowed for reuse without wet decontamination. This determination for level of decontamination required will be made by the SSHO. This function will take place in a CRZ that is set up adjacent to the site activities within a secondary containment where water, if generated, can be collected and managed. A hand washing station (potable water, soap, towels) will be available for workers to wash their hands before leaving the work area or taking breaks.

A boot wash will be available at office and break areas so workers can minimize transference of soil or mud into these areas.

Equipment will follow established traffic patterns for each work location. It is anticipated that heavy equipment, such as excavators or back hoes and portable hand tools such as shovels will be cleaned of adhering soil or mud along with any loose debris prior to tracking mud onto the roadways. Wet decontamination for heavy equipment is not anticipated to be required. Roadways shall be cleared of any debris resulting from the on-site activity. Tracked vehicles will not operate on roadways.

The SS will be responsible for evaluating equipment both arriving on site and leaving the site. The Equipment Inspection Checklist included in Appendix D will be used to document these inspections. Equipment will only be authorized access or exit with this authorization. Evaluation will consist of a visual inspection to ensure that visible contamination has been effectively removed.

12.0 LOGS, REPORTS, AND RECORD KEEPING

The following is a summary of required health and safety logs, reports, and recordkeeping for this project.

12.1 Recordkeeping Procedures

12.1.1 Site Safety and Health Plan Change Approval Form

A Field Change Request Form is to be completed for the changes to the SSHP. This form requires the signatures of the SSHO and the SHM. The form will be completed and submitted according to the proper QC document control procedures. A copy of the approved form will be maintained on site during the field activities and in the project files at TtEC's office thereafter.

12.1.2 Accident/Incident Reports

See Section 8.0 of the APP.

12.1.3 Health and Safety Field Logbooks or Daily Safety Reports

The SSHO, UXOSO, and RSOR will complete and maintain daily log book at the site. Logbooks will be used to document important events as they occur and to document informal daily inspections and other information related to health and safety. Some general procedures will pertain to the use of the logbooks and the following information will be recorded on each page:

- Initials of persons making entry
- Page numbering
- Date
- Time of each entry (military time)
- Location
- Situation requiring entry into log book

The log will be signed at the end of each day or work shift and a diagonal line drawn to the bottom of the page from the last entry. The entries will be made in black ink. No pages will be removed from the logbook, and each page will be numbered. Any corrections will be made with a single line through the entry, and initialed.

The logbook will be used to record daily site conditions and activities. The logbook will contain the following items:

- Names and job titles of the personnel in the work group
- Level of protection
- Health and safety monitoring equipment used
- Calibration records (see Appendix B)
- Weather conditions
- Work/rest schedule (if appropriate)
- A description of the activities as they are occurring
- Any pertinent health and safety observations
- Exposure monitoring data (if appropriate)

Copies of the logbooks will be submitted to the SHM. The original logbooks will become part of the exposure records file and will be maintained in the project files at TtEC's office thereafter.

In lieu of logbooks, a daily safety report, containing the same information as described above, may be used. This report must be submitted electronically each day to the SHM and will be attached to the project daily report.

12.1.4 Material Safety Data Sheets

MSDS will be obtained and kept on file at the project site for each hazardous material brought to, used at, or stored at the site. An MSDS for each contaminant will also be maintained. The MSDS

will be kept on file by the SSHO at the project site, and can be found in Appendix F of the APP.

12.1.5 Safety Checklists

The health and safety checklists will be maintained on site during the field activities and in the project files at TtEC's office thereafter.

12.2 Personal Exposure and Medical Monitoring Records

Medical and training records are normally kept by the employer. Proof of the most recent training and medical qualifications must be provided to the SSHO by the employee. The SSHO will keep a file at the site containing appropriate training and medical qualifications for site workers. Medical records will be maintained in accordance with 29 CFR, Part 1910.1020. The examining physician retains custody of the complete medical record; employee records have only the physician's statement of medical qualification for duty and the employee's fitness to wear a respirator. These records will be kept in the project files at TtEC's office thereafter.

12.3 On-Site Logs

A log of personnel who are on site each day (including job title, level of protection, and work location); visitor registration; training logs; and daily safety inspection logs will be kept on site by the SSHO or designee. Originals will be kept in the project file.

13.0 UNFORESEEN HAZARDS

Should any unforeseen hazard become evident during the performance of work, the SSHO shall bring such hazard information (both verbally and in writing) to the attention of the SS and the SHM. The SS will inform the Site Manager who will notify the Navy RPM, and the PM for resolution as soon as possible. In the interim, necessary action shall be taken to reestablish and maintain safe working conditions.

14.0 REFERENCES

National Fire Protection Association 70 (NFPA 70), National Electrical Code (NEC). Code NEC 250-6.

U.S. Army Corps of Engineers (USACE). 2007a. Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities. Engineer Regulation (ER) 385-1-92. May 2007.

U.S. Army Corps of Engineers (USACE). 2008. Safety and Health Requirements. Engineer Manual (EM) 385-1-1. Sep 2008 consolidated August 2011.

U.S. Department of Labor, Occupational Health and Safety Administration; 1910 – Occupational Safety and Health Standards, General Industry. 29 Code of Federal Regulations (CFR).

Parts 1910.95, 1910.120, 1910.132, 1910.134, and 1910.147.

U.S. Department of Labor, Occupational Health and Safety Administration; 1926 – Occupational Safety and Health Standards, Construction Industry. 29 Code of Federal Regulations (CFR). Parts 1926.59, 1926.601, and 1926.602.

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APPENDIX A

INSPECTION FORMS

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Hand and Power Tool Inspection Checklist

Yes	No	NA	Requirement	Comments
☐	☐	☐	Are all tools and equipment (both company and employee owned) used by employees at their workplace in good condition?	
☐	☐	☐	Any loose parts?	
☐	☐	☐	Missing pins and/or bolts?	
☐	☐	☐	Are broken or fractured handles on hammers, axes and similar equipment replaced promptly?	
☐	☐	☐	Are hand tools such as chisels and punches, which develop mushroomed heads during use, reconditioned or replaced as necessary?	
☐	☐	☐	Are worn or bent wrenches replaced regularly?	
☐	☐	☐	Are appropriate handles used on files and similar tools?	
☐	☐	☐	Are employees made aware of the hazards caused by faulty or improperly used hand tools?	
☐	☐	☐	Are jacks checked periodically to ensure they are in good operating condition?	
☐	☐	☐	Are tool handles wedged tightly in the head of all tools?	
☐	☐	☐	Are tool cutting edges kept sharp so the tool will move smoothly without binding or skipping?	
☐	☐	☐	Are tools stored in dry, secure locations where they won't be tampered with?	
☐	☐	☐	Are appropriate safety glasses, face shields, etc. used while using hand tools or equipment which might produce flying materials or be subject to breakage?	

Power Tool Inspection Checklist

Yes	No	NA	Requirement	Comments
☐	☐	☐	Are grinders, saws and similar equipment provided with appropriate safety guards?	
☐	☐	☐	Are power tools used with the correct shield, guard, or attachment, recommended by the manufacturer?	
☐	☐	☐	Are portable circular saws equipped with guards above and below the base shoe? Are circular saw guards checked to assure they are not wedged up, thus leaving the lower portion of the blade unguarded?	
☐	☐	☐	Are rotating or moving parts of equipment guarded to prevent physical contact?	

Hand and Power Tool Inspection Checklist

Yes	No	NA	Requirement	Comments
☐	☐	☐	Are all cord-connected, electrically operated tools and equipment effectively grounded or of the approved double insulated type?	
☐	☐	☐	Are effective guards in place over belts, pulleys, chains, sprockets, on equipment such as concrete mixers, and air compressors?	
☐	☐	☐	Are portable fans provided with full guards or screens having openings ½ inch or less?	
☐	☐	☐	Is hoisting equipment available and used for lifting heavy objects, and are hoist ratings and characteristics appropriate for the task?	
			Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods of construction?	
☐	☐	☐	Are pneumatic and hydraulic hoses on power operated tools checked regularly for deterioration or damage?	
☐	☐	☐	Air compressor: • Is the air compressor equipped with a Surge Check Valve? • Pressure regulator gauge and valve? • Pressure relief valve? • Water trap and filter?	
☐	☐	☐	**Chainsaws**	
Yes	**No**	**NA**	**Requirement**	**Comments**
☐	☐	☐	Is the chain sharp, well oiled, and properly adjusted (chain tension)?	
☐	☐	☐	Is the bar straight? • Are there indications of excessive wear?	
☐	☐	☐	Does the chain brake lever move freely? Does chain brake stop the chain when applied?	
☐	☐	☐	Does the chain move when idling?	
☐	☐	☐	Are the cans used to fuel the chainsaw safety cans?	
			Does the on/off switch function properly?	
			Does the throttle lock function properly? Is the chainsaw equipped with continuous pressure throttle control?	

Hand and Power Tool Inspection Checklist

Yes	No	NA	Requirement	Comments
☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	PPE: Is the following PPE in serviceable condition? Hardhat with mesh visor and ear muffs? Safety glasses? Chainsaw chaps? Gloves with protection also on the hack of the hands?	
			Emergency Equipment: Is a fire extinguisher available for immediate use? Is a first aid kit immediately available for use? Does it contain the minimum content as required in the APP?	
☐	☐	☐	Communication – Is an acceptable means of communication available (hand signals, radios, air horns, etc.) that will support communication over the engine noise? Type?	
☐	☐	☐	Are MSDSs available for the fuels, fuel additives, and lubricating oils?	
☐ ☐	☐ ☐	☐ ☐	Is the operator trained in proper operation of the chainsaw? Does the operator demonstrate knowledgeable operation?	

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TETRA TECH EC, INC.

VEHICLE/HEAVY EQUIPMENT INSPECTION CHECKLIST

Project:		Equipment Type:	
Equipment No.		Model:	
Manufacturer:		Date:	
Engine Hrs/Mileage		Team Number:	

Equipment Checklist (Check all that apply and provide description of corrections needed)

	Condition Good	Correction Needed
Steering		
Service Brakes		
Emergency Brakes		
Retarder		
Transmission		
Controls		
Hydraulic Leaks		
Exhaust System		
Warning Gauges		
Windshield		
Lights		
Mirrors		
Seat and Seat Belts		
Tires/Tread		
Regular Horn		
Back-up Alarm		
Steps, Hand-holds		
Fire Extinguisher		
Rollover Cage		
Other:		
Other:		

Remarks:

Approvals

Operator's Signature):	Date:
Team Leader Signature:	Date:
Equipment Supervisor's Signature (Repairs or Adjustments Completed):	Date:

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Page 1 of 1

DAILY EQUIPMENT INSPECTION

EQUIP. NO. _____ TYPE _____

MANUFACTURER _____ MODEL _____

PROJECT _____ DATE _____

ENGINE HRS/MILEAGE _____ SHIFT _____

Check appropriate column and describe correction needed.

	Condition Good	Correction Needed
Steering		
Service Brakes		
Emergency Brakes		
Retarder		
Transmission		
Controls		
Hydraulic Leaks		
Exhaust System		
Warning Gauges		
Windshield		
Lights		
Mirrors		
Seat and Seat		
Tires/Tread		
Regular Horn		
Back-up Alarm		
Steps, Hand-holds		
Fire Extinguisher		
Rollover Cage		
Other		

Remarks: _____

_____

_____

Signed _____
Operator

Repairs or adjustments completed:
Date: _____ Signed _____
Equipment Supervisor/Mechanic

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APPENDIX B

CALIBRATION FORM

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DOCUMENTATION OF FIELD CALIBRATION

SITE NAME: _____ PROJECT NO.: _____

Date of Calibration	Instrument Name and Model	Instrument ID Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		

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APPENDIX A

ACTIVITY HAZARD ANALYSES

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Activity Hazard Analysis (AHA) #1

Activity/Work Task: Mobilization and Site Setup	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**

Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine

Contract Number: N62470-13-D-8007

Date Prepared: September, 2013

Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist

Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #1 – Activity/Work Task: Mobilization and Site Setup			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Arrival at Location	Lack of Emergency Preparedness and Health and Safety (General) before beginning work	Get to know the location if not familiar. SSHO to locate the emergency hospital and ensure routes are correct as shown in Figure 9-2. Conduct site orientation with the crew involved in mobilization tasking including establishment of laydown areas, unpacking and unloading and staging of materials and equipment and haul routes review the APP and this AHA, and the Emergency Response Plan and document the training. Ensure communications are established and working properly among team members. Develop a plan for mobilization organization and tasking and emphasize communication. Ensure emergency and basic safety equipment and PPE is located and available for use prior to starting site work. Use buddy system. SSHO will have site workers fill out medical data sheets that are included in an appendix to the APP.	M
2. Unloading and initial staging of materials and equipment including set up of site trailer (general site hazards)	Vehicle operations from Tt or other tenant operations and delivery vendors could cause injury to personnel or others onsite	Workers operating company vehicles will have a valid state issued driver's license. Any Commercial Driver's License (CDL) truck and trailers will be operated by CDL qualified drivers. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use parking brake when parked. Use chocks when parked on inclines. Use dedicated spotter and standard hand signals for backing operations. Wear high visibility vest when working around operating vehicle traffic. Coordinate with NTR, Caretaker Site Officer, and Midcoast Redevelopment Reuse Authority as required to identify travel and traffic patterns and to delineate work areas. Wear high visibility vest when working around traffic.	M
	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Delineate work areas where potential for contact with the public could occur. Wear high visibility vest when working around construction equipment.	M
	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Ergonomic hazards such as sprains, strains, or back injury from lifting or repetitive actions	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist and turn while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some folks) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task.	M

AHA #1 – Activity/Work Task: Mobilization and Site Setup			
Job Steps	**Hazards**	**Controls**	**RAC**
Unloading and initial staging of materials and equipment including set up of site trailer (general site hazards) (continued)	Slips, trips, and falls could lead to injuries	Keep work areas free of debris and equipment in work paths. Follow good housekeeping in work areas. Correct hazards when seen, such as holes or other trip hazards. If they cannot be removed, they must be marked. When trailer is installed, stairs with adequate rails will be provided for entry of personnel into the trailer. 29 CFR 1926.1052 (a) requires a 20-inch clearance on the platform from the door swing radius. Stairs and rails will be in good condition and will be attached on level with the trailer doors and the ground. The site trailer will be cribbed in level position. Tie down of the trailer will comply with EM 385 1-1, Section 04.A.03 requirements.	M
	Handling sharp objects or using hand tools or knives could cause cuts, punctures, or scrapes	Wear leather work gloves when handling materials that may be sharp or have sharp edges (e.g., the tie down straps when tying down the trailer). Be familiar with the proper use and limitations of hand tools. Report even minor injuries to your supervisor for evaluation. Have a first aid kit available and have a minimum of 2 persons with first aid and CPR training onsite. Never carry a knife in one's pocket. Ensure knives have retractable blades.	M
	Exposure to poison ivy or oak.	Identify any "suspicious" vegetation that may be poison ivy or oak in the work area. Mark these areas with warning tape or spray paint. Avoid contact with these plants. Wear long sleeve shirts and pants. Wear disposable gloves Wear an "ivy blocker" and have Technu® or Zanfel post-exposure washing agent available. Refer to Health and Safety Guideline (HSG) 2-8 in the CRL for details and train personnel in the identification and avoidance of these plants.	M
	Use of construction equipment could strike overhead power lines	The travel path, staging, and other locations where mobile equipment with booms will be operated will be evaluated for potential overhead lines. The SSHO will establish the required clearance distances that are required and areas to be avoided will be marked and communicated or isolated through coordination with the local utility provider. The voltage of overhead lines must be known in order to ascertain if more than 15 feet minimum clearance is required.	M
	Cold or heat stress and weather hazards	Properly dress for the weather. SSHO to monitor weather and implement heat stress and cold stress controls as specified in the APP and implement EHS 4-6, Temperature Extremes during the project. Provide breaks for personnel to get either into cool or warm environment. Encourage a steady work pace. Ensure adequate drinking water is available. Know the signs and symptoms of exposure and keep an eye on your partner.	L
	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Use the eyewash for the full 15-minutes, regardless if you feel	M

AHA #1 – Activity/Work Task: Mobilization and Site Setup			
Job Steps	**Hazards**	**Controls**	**RAC**
Unloading and initial staging of materials and equipment including set up of site trailer (general site hazards) (continued)		that the object has been removed. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust.	
	Wind could make materials hard to handle	Avoid handling materials that could respond like a sail (e.g., plywood) in wind. Position vehicles so that doors do not get caught by the wind when opened. Hang onto door when opening and closing in high wind. Open and close doors carefully in the wind and only open one door at a time. SSHO to monitor wind conditions and make recommendations for halting certain activities if wind creates a hazard. Evaluate shutting down tasks if winds exceed 25 mph and are presenting a hazard.	L
	Noise could cause hearing loss and make it hard to communicate	Hearing protection is required when sound levels exceed 84 dBA continuously. This rule applies to personnel working near or on heavy equipment and any other sources of loud noise.	M
	Lack of proper illumination in work areas could cause hazards to not be recognized or eye strain	During mobilization, if lighting is not yet set up, temporary lighting such as portable bright lumen flashlights may be necessary if ambient lighting is not sufficient, especially within the trailer. Work during daylight hours or provide adequate lighting source for work areas to minimize potential for injuries to occur from lack of visibility.	L
	Any ground penetrating activities (e.g., trailer anchors, if used) – potential underground utilities could be contacted	Implement Tt Corporate Procedure EHS 3-15 – Underground Utilities and local requirements to ensure all water, power, sewer, storm drain, communications, and gas lines have been located and marked. Call 811 (call before you dig) and obtain as-builts from Navy or tenants.	M
	Fall hazards (falls from heights of 6 feet or greater)	No person will climb upon any equipment, shipping container, building, trailer, etc. where there is exposure to a fall of 6 feet or greater (no proper guarding and rails in place) without a means of fall protection designed by a Competent Person. At the present time, there is no fall protection plan in place to cover this task and there is no identified need for such activity. A Site-Specific Fall Protection Plan would need to be developed and implemented by a competent person prior to doing the activity. SSHO to identify site fall hazards and ensure appropriate controls are in place if workers could be exposed to a fall.	M
	Potential trips or falls	Survey the site for any slip, trip, or fall hazards. Either eliminate the hazard or mark the hazard so it can be avoided. Use caution when walking around the site and wear sturdy leather work boots. Maintain a clean and orderly work site	M

AHA #1 – Activity/Work Task: Mobilization and Site Setup			
Job Steps	**Hazards**	**Controls**	**RAC**
Unloading and initial staging of materials and equipment including set up of site trailer (general site hazards) (continued)		and keep travel pathways free of obstacles.	
	Head injuries from struck by or falling objects	Wear hard hat when overhead hazards exist and when working in areas with operating construction equipment.	M
	Contact with biting or stinging insects	Workers will apply DEET to work clothing following manufacturer's instructions as a preventative measure for biting insects as required. Workers with allergies will let the SSHO know using the medical data sheet and will carry their own prescription medication as applicable. First aid and medical attention as required.	L
	Electrical hazards could be present during tool use or during hookup of trailer	Ensure that a certified electrician performs all electrical work to hook up office trailer to electrical power source. Electrician to properly ground systems in accordance with electrical code. Ensure that power cords are inspected and in good condition for use, that GFCIs are used properly, and portable generators are not overloaded. Ensure any power tools used are in good working condition and have third prong on cord or are double insulated. All live work requires arc flash protection. Contact SHM if there will be any live work so that additional precautions can be identified and incorporated into this AHA.	M

AHA #1 – Activity/Work Task: Mobilization and Site Setup		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current state-issued driver's license.	Daily vehicle inspection by drivers. Receipt inspection by SS.
Heavy equipment	Operators will be qualified and experienced operators for use of the equipment they operate	Receipt inspection by SS. Daily inspection by operator.
Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.

Abbreviations and Acronyms:

APP – Accident Prevention Plan
EHS – Environmental, Health, and Safety
MSDS – Material Safety Data Sheet
OSHA – Occupational Safety and Health Administration
NRTL – Nationally Recognized Testing Laboratory
SSHO – Site Safety and Health Officer
SS – Site Superintendent

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
1.			
2.			
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Activity Hazard Analysis (AHA) #2

Activity/Work Task: Hoisting and Rigging	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures. This AHA does not address the use of cranes. This AHA addresses the use of heavy equipment that can be configured to lift materials.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #2– Activity/Work Task: Hoisting and Rigging			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Operation of heavy equipment, general	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform	M

AHA #2– Activity/Work Task: Hoisting and Rigging			
Job Steps	**Hazards**	**Controls**	**RAC**
		work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator.	
2. General Precautions	Task hazards and general precautions on use of this AHA.	Refer to AHAs for work tasks in which hoisting and rigging will be performed as part of that task (e.g., mobilization and site setup). Materials being hoisted and the hazards will vary based on what is being lifted and where it is being placed. All hoists and all rigging situations will be unique and must be properly evaluated by the Competent Person (TBD) and the operator of the heavy equipment being used. Tasks in which hoisting and rigging may be performed may in include mobilization and demobilization, drilling support, handling and/or unloading rolls of geotechnical liner, etc. All these tasks have unique hazards to consider in addition to this AHA. This AHA addresses general precautions for performing hoisting and rigging tasks.	M
	Slips, trips, and falls	Clear area to be worked in of loose debris and trip hazards. Ensure a travel path for rigging team.	L
	Heavy lifting and awkward positions	Team-lift or use material handling devices as required. Use good posture when lifting or moving materials. Do not self-lift more than 50 pounds alone. Avoid jerking movements or rotating at waist while walking.	L
2. Rigging and hoisting operations	Improper hoisting and rigging experience and training could result in injuries to workers or equipment damage	The hoisting and rigging competent person, (TBD) will oversee all use of rigging and all hoisting operations performed onsite on a task specific basis. Persons performing equipment operation and rigging tasks will have written proof of qualifications for these tasks. The subcontractor, when required, will provide a qualified rigger to perform the rigging within the EZ when required. This person, when name becomes known, will be added to this AHA as a competent person.	M
	Improper stability of equipment or swing radius could cause equipment failure or damage	The operator will ensure that adequate swing radius for equipment, rigging, and load is established prior to performing the pick. The ground under the hydraulic excavating equipment will be stable and verified sufficient for equipment and load stability. Load charts will be consulted for the lift as applicable.	M
	Failure of rigging or equipment used to perform the hoist could result in injury or equipment damage	Operational testing will be performed as required by EM 385 1-1 Section 16.S.03.b. This testing will be documented by the competent person. More than one test may be required depending upon the materials being hoisted and the rigging being used (e.g., trench box vs. drum). All equipment used for hoisting will meet the manufacturer's guidelines	M

AHA #2– Activity/Work Task: Hoisting and Rigging			
Job Steps	**Hazards**	**Controls**	**RAC**
Rigging and hoisting operations (continued)		for use in performing hoisting tasks (or the equipment will not be used for this purpose). All operating procedures will be per the manufacturer's operating manual, including, authorized factory installed connecting point (eyes and hooks), load rating capacities and charts if required. No hoisting or rigging tasks will be done that constitute a critical lift. If load capacity is within 20 % of capacity, a larger piece of equipment or another means of lifting will be provided. Never allow persons to be positioned under a suspended load.	
	Improper or damaged rigging could cause injury or loss of load	Only positive latching devices will be used to secure the load and rigging. All rigging used to perform the hoist will be inspected by the competent person to ensure it is properly rated, is in good condition, and is properly configured for the lift. Taglines will be used to control the load being hoisted and moved as necessary to control the load movement.	M
	Setting up of rigging could lead to cause pinch points, cuts, or scrapes	Ensure neutral configuration of rigging and slack in rigging before attaching straps. Ensure communication with operator before attaching rigging so that boom and bucket on excavator are not engaged. Wear leather work gloves. Watch out when running hands underneath or on equipment or materials due to sharp edges or pinch points. Wear leather work gloves when handling rigging and materials.	M
	Improper communications and planning could lead to confusion and errors in the pick	The rigger and the operator will be in visual and verbal communication. Standard and recognized hand signals will be used for communication. Rigger and operator to verify that non-involved persons are clear of the load (not underneath or in swing radius). Lift will not occur until rigger notifies operator to do so.	M
	Release of rigging could lead to cause pinch points	Ensure neutral configuration of rigging and slack in rigging before releasing straps. Ensure communication with operator before removing rigging so that boom and bucket on excavator are not engaged. Wear leather work gloves.	M

AHA #2 – Activity/Work Task: Hoisting and Rigging		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Excavator or loader (equipped properly for attachment of rigging)	Trained and experienced operators will operate heavy equipment.	Receipt inspection by SS. Daily inspection by users/operators. Task observation of operators by SS. Ensure equipment meets manufacturer's guidelines for performing hoisting. Have copy of manufacturer's operation manual onsite.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.
Hoisting and Rigging Equipment	Competent person (TBD) is responsible for hoisting and rigging	Initial and before use inspection of equipment and material used for hoisting and rigging, operational testing of the equipment and material.

Abbreviations and Acronyms:

APP – Accident Prevention Plan
SSHO – Site Safety and Health Officer
SS – Site Superintendent
PPE – personal protective equipment

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
1.			
2.			
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Activity Hazard Analysis (AHA) #3

Job/Task: Fence Removal and/or Installation	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September, 2013		
Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #3 – Job/Task: Fence Removal and/or Installation

Job Steps	Hazards	Controls	RAC
1. Establish areas where new fence will be located	Workers could be injured by MEC/MPPEH if fence installation is required at the Quarry Site (applicable only to Quarry Site).	Properly qualified UXO personnel will provide MEC/MPPEH avoidance as required for location where fence posts will penetrate the ground. All workers will have MEC awareness training. Non-UXO personnel will adhere to instructions of the UXO personnel at all times when MEC may be a concern.	M
	Workers could be exposed to soil or debris that is radiologically impacted (at HRA sites only)	Properly qualified radiological technicians, under direction of the RSOR, will ensure that site boundaries are surveyed for fence installation as required by the TSP and Radiological Management Plan.	L

AHA #3 – Job/Task: Fence Removal and/or Installation			
Job Steps	**Hazards**	**Controls**	**RAC**
Establish areas where new fence will be located (continued)	Exposure to poison ivy or oak.	As area is inspected, identify any "suspicious" vegetation that may be poison oak or ivy. Mark these areas with warning tape or spray paint in preparation for fence removal and/or placement. Avoid contact with these plants. Wear long sleeve shirts and pants. Wear disposable gloves Wear an "ivy blocker" and have Technu® or Zanfel post-exposure washing agent available. These plants need to be removed (if removal is required) carefully to avoid spreading vegetation throughout the site or spraying plant debris on personnel or equipment. Also cutting tools that cut this vegetation need to be cleaned and handled carefully as the oils can remain on cutting surfaces. Refer to Health and Safety Guideline (HSG) 2-8 in the CRL for details.	M
	Potential for low level chemical contaminants to be present in soil or buried waste at some sites	Review the site information and potential chemical contaminants for each site where fence will be placed. Know and establish the boundaries of waste areas to the extent possible prior to fence placement (temporary fences). SSHO will determine the need for any monitoring (e.g., using PID where soils may be disturbed. Keep dust generation low during any soil disturbing activities. Wear leather work gloves (at a minimum) during fence installation tasks and for incidental contact with soils during post-holing.	M
	Slips, trips, and falls	Pay attention to where you are walking. Locate and mark surface debris that could present a trip hazard. Store and stage tools and equipment properly and follow good worksite housekeeping practices.	M
	Marking paint can be an inhalation hazard	Review MSDS for spray paint before use. Position upwind when spraying paint to mark limits.	L
	Failure to observe and prepare for encounter with insects or rodents could cause injury to worker.	Observe for insects and rodents. Apply DEET as necessary. Avoid placing hands in concealed areas. Wear protective gloves. Use tools wherever possible to dislodge objects first, before placing hands low to ground to move objects.	M
2. Remove existing fence materials (when removal of fence is required)	Construction equipment could cause injury to personnel (general)	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator.	M
	Reciprocating or band saws can cut or strike workers causing severe injuries if	Workers will be trained and experienced in the use of saws and will operate the saws as per manufacturer's recommendation. Saw blades will be sharp	M

AHA #3 – Job/Task: Fence Removal and/or Installation			
Job Steps	**Hazards**	**Controls**	**RAC**
Remove existing fence materials (when removal of fence is required) (continued)	used improperly	and replaced as often as required to keep them sharp. Inspect saws before use. Wear steel toe leather work boots and leather work gloves when using saws.	
	Eye injuries when using saws and cutting tools	Workers will wear safety glasses and a face shield (plastic) when using saws to cut metal fence materials. Locate a portable emergency eye wash at each work area. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	M
	Potential for fires if cutting of fence creates sparks	Spark producing means and methods of cutting should be avoided if non-sparking cold cutting methods can be utilized, especially in areas where there is dry vegetation. The cutting tool to cut fence posts will be a non-spark producing operation. If sparks will be created, a hot work permit is required and hot work procedures in accordance with EHS 6-5 will be implemented.	L
	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Noise could cause hearing loss while using saws or operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously. This rule also applies to personnel working around heavy equipment and when using saws or generator.	M
	Slips, trips, and falls in debris piles from cutting.	All fence debris will be placed into manageable piles to keep potential trip and fall hazards to a minimum.	M
	Sections of metal chain link fence can be hard to manage and heavy and could cause manual strains.	As sections of fence are removed, direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift more than 50 pounds alone. Encourage a steady, sustainable work pace. Use equipment as much as possible to maneuver heavy or awkward items. If hoisting and rigging will be used to load materials onto trucks, refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Workers could be struck by sections of fence when sections are cut away from posts (chain link or barbed wire may recoil)	Ensure that the ends of fence are secured when tension is released. Ensure persons that may be in the way move out of the way when tension is released.	M

AHA #3 – Job/Task: Fence Removal and/or Installation			
Job Steps	**Hazards**	**Controls**	**RAC**
Remove existing fence materials (when removal of fence is required) (continued)	Slips, trips, and falls while carrying tools and equipment could cause injury	Keep saws in off position when walking to new locations. Ensure you carry saw with blades facing out and away from body so that if you do fall, you do not fall onto saw. Watch your steps.	M
	Struck by or against heavy equipment	Wear high-visibility safety vests when working on ground in vicinity of powered equipment. Make eye contact with operators before approaching equipment.	M
	Failure to observe and prepare for encounter with insects or rodents could cause injury to worker.	Observe for insects or rodents. Apply DEET as necessary. Avoid placing hands in concealed areas. Wear protective gloves. Use tools wherever possible to dislodge objects first, before placing hands low to ground to move objects.	M
	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
3. Place new fence materials	Punctures, cuts, scrapes, from fence materials	Wear leather work gloves when handling fence materials and tools.	M
	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
	Use of powered auger to dig postholes improperly can cause injuries	Use tools in accordance with manufacturer's requirements. Inspect tool before use. Do not wear loose clothing around augers and do not place any part of body in or near rotating parts. Know the procedures for backup up auger and removing debris that may get lodged in parts. Always secure power source and isolate hazardous energy before attempting to remove debris.	M
	Workers could experience strains from manually moving materials and equipment.	Direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift more than 50 pounds alone. Encourage a steady, sustainable work pace. Use equipment as much as possible to maneuver heavy or awkward items.	M
	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M

AHA #3 – Job/Task: Fence Removal and/or Installation			
Job Steps	**Hazards**	**Controls**	**RAC**
Place new fence materials (continued)	Workers could experience eye hazards from debris or concrete dust.	Safety glasses are the minimum required eye protection for all work areas. Locate a portable emergency eye wash at each work area. Flush objects from eyes; do not rub. Stand upwind from dry concrete material use. Review MSDS for concrete mixtures.	M
	Mixing and pouring of concrete can present exposure to silica dusts, irritation to respiratory tract, and caustic chemical skin reaction or sensitization	Obtain and review MSDS for concrete raw materials such as sand and concrete mixtures. Avoid breathing of dusts by positioning upwind of areas where concrete materials are being used. Practice good dust control through water misting while pouring dry materials. If dusts are not able to be controlled, a properly fitting dust mask can be worn. Wear nitrile gloves under leather work gloves when handling concrete. Have access to and use hand washing stations and remove concrete mix and dust if it gets on skin.	M
	Concrete mixers (if used) have rotating parts that can cause injury	Do not place hands into rotating barrel unless machine is turned off and unplugged from power source. If outside of mixer has rotating gears they must be guarded. Do not overload mixer. Use mixer per operating instructions and load limits.	M
	Bags of concrete are heavier than 50 pounds and can cause back injury and strains	Do not order 80 pound bags of concrete. Purchase 60 pound bags and if possible, have concrete bags in back of pickup or at level with the mixer to reduce strain in lifting and turning while mixing. Have worker on stable platform as required in order to not require lifting and positioning of concrete over waist level.	M
	Cuts, scrapes, and hand injuries from handling debris	Wear leather work gloves when handling debris.	M
	Noise could cause hearing loss while using mixers and equipment	Hearing protection is required when sound levels exceed 84 dBA continuously. Rotate tasks to avoid long periods of exposure. SSHO to monitor noise levels in work area as required assessing adequacy of hearing protection for users and those in the area who may be performing other tasks.	M
	Fence sections could kick back on worker while securing material to posts or stretching fence to be taught	Use team method to install fence and use proper tools for stretching and attaching chain link to posts. Ensure team is trained on proper fence installation methods and tool use. Wear leather work gloves, eye and face protection and hard hat.	M
	Contact with poisonous plants or oils from poisonous plants	If plants are present on trees or as vegetation on ground, wear ivy block cream, wear long pants and shirt. Have Technu or Zanfel on hand. Be sure to wash hands before touching face. Avoid handling with leather work gloves without wearing additional disposable gloves as oils may remain on gloves and re-contaminate any user to the hazard.	M

AHA #3 – Job/Task: Fence Removal and/or Installation		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
1. Vehicles	Drivers must have current state-issued driver's license.	Receipt inspection by SS. Daily and before use by operator. Use equipment safety checklist.
2. Mobile construction equipment including auger attachment	Only trained equipment operators may operate mobile construction equipment.	Receipt inspection by SS. Operator qualification by SS. Inspect all equipment upon arrival at site and on each day of use. Use equipment checklist. Have operations manual onsite and be familiar with proper use of equipment and attachments.
3. Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
4. First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	First aid kits must be inspected weekly as required by OSHA. Fire extinguishers must be inspected monthly. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.
5. Concrete mixer	Specific training for power and hand tools will be provided. Review operators' manual for each tool and ensure that directions are followed.	Inspect before each use. Maintain as per manufacturer's recommendation.
6. Industrial hygiene monitoring equipment (e.g., WBGT)	SSHO must be familiar with use/limitations of the monitoring equipment, calibration procedures, and industrial hygiene strategy.	Calibration and function checks before use.

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
EHS – environmental health and safety
EM – Engineer Manual
MEC – munitions and explosives of concern
mph – miles per hour
MPPEH – material potentially presenting an explosives hazard
OSHA – Occupational Safety and Health Administration
PE – Professional Engineer
PPE – personal protective equipment
RAC – Risk Assessment Code
RSOR – Radiation Safety Officer's Representative
SPF – sun protection factor
SS – Site Superintendent
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
UL – Underwriters Laboratories UXO – unexploded ordnance
NTRL – Nationally Recognized Testing Laboratory
WBGT- wet bulb globe temperature index

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #4

Job/Task: Vegetation Clearing and Grubbing (includes mulching)	**Overall Risk Assessment Code (RAC) (Use highest code)**	**H**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007	**Severity**	**Probability**
Date Prepared: September, 2013		Frequent / Likely / Occasional / Seldom / Unlikely
Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist	Catastrophic	E / E / H / H / M
	Critical	E / H / H / M / L
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager	Marginal	H / M / M / L / L
	Negligible	M / L / L / L / L

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

AHA #4 – Job/Task: Vegetation Clearing and Grubbing (includes mulching)

Job Steps	Hazards	Controls	RAC
1. Establish limits of vegetation clearance	Workers could be injured by MEC/MPPEH in Quarry Area.	In the Quarry Area, only vegetation clearing will be performed – no intrusive grubbing activities will be done prior to DGM surveys. Properly qualified UXO personnel will provide MEC/MPPEH avoidance as required. All personnel will have MEC awareness training. Non-UXO personnel will adhere to instructions of the UXO personnel at all times when MEC may be a concern.	M

AHA #4 – Job/Task: Vegetation Clearing and Grubbing (includes mulching)			
Job Steps	**Hazards**	**Controls**	**RAC**
Establish limits of vegetation clearance (continued)	Workers could be exposed to soil or debris that is radiologically impacted (at HRA sites only)	Properly qualified radiological technicians, under direction of the RSOR, will ensure that site boundaries are surveyed for fence installation as required by the TSP and Radiological Management Plan.	L
	Exposure to poison ivy or oak.	As area is inspected, identify any "suspicious" vegetation that may be poison oak. Mark these areas with warning tape or spray paint in preparation for vegetation clearance. Avoid contact with these plants. Wear long sleeve shirts and pants. Wear disposable gloves Wear an "ivy blocker" and have Technu® or Zanfel post-exposure washing agent available. These plants need to be removed carefully to avoid spreading vegetation throughout the site or spraying plant debris on personnel or equipment. Also cutting tools that cut this vegetation need to be cleaned and handled carefully as the oils can remain on cutting surfaces. Refer to Health and Safety Guideline (HSG) 2-8 in the CRL for details.	M
	Potential for low level chemical contaminants to be present in soil or buried waste at some sites	Review the site information and potential chemical contaminants for each site where fence will be placed. Know and establish the boundaries of waste areas to the extent possible prior to land disturbing activities such as grubbing. SSHO will determine the need for any monitoring (e.g., using PID where soils may be disturbed. Keep dust generation low during any soil disturbing activities. Wear leather work gloves (at a minimum) during any manual grubbing tasks and for incidental contact with soils during vegetation removal	M
	Slips, trips, and falls	Pay attention to where you are walking. Locate and mark surface debris that could present a trip hazard. Store and stage tools and equipment properly and follow good worksite housekeeping practices.	M
	Marking paint can be an inhalation hazard	Review MSDS for spray paint before use. Position upwind when spraying paint to mark limits.	L
	Failure to observe and prepare for encounter with insects or rodents could cause injury to worker.	Observe for insects and rodents. Apply DEET as necessary. Avoid placing hands in concealed areas. Wear protective gloves. Use tools wherever possible to dislodge objects first, before placing hands low to ground to move objects.	M
2. Cutting vegetation (includes tree cutting using heavy equipment with cutter and/or mower attachments or chainsaws)	Construction equipment could cause injury to personnel (general)	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with	M

AHA #4 – Job/Task: Vegetation Clearing and Grubbing (includes mulching)			
Job Steps	**Hazards**	**Controls**	**RAC**
Cutting vegetation (includes tree cutting using heavy equipment with cutter and/or mower attachments or chainsaws) (continued)		the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator.	
	Chainsaws can cut or strike workers causing severe injuries if used improperly	Workers will be trained and experienced in the use of chainsaws and will operate the chainsaws as per manufacturer's recommendation. Anti-kick teeth will be in place and chain guard mechanism in place. Chainsaws will be industrial or professional grade and maintained per manufacturer's requirements. Chain will be kept sharp. Inspect chainsaw before use. Wear steel toe leather work boots, leather work gloves and leather chaps when working with chainsaws. Never use a chain saw above shoulder height.	M
	Eye injuries with flying wood chips and debris when using chainsaws.	Workers will wear safety glasses and a face shield (mesh) when using chainsaws. Locate a portable emergency eye wash at each work area. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust on roads and in laydown areas.	M
	Noise could cause hearing loss while using saws or operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously. This rule also applies to personnel working around heavy equipment and when using chainsaws.	M
	Slips, trips, and falls in debris piles from cutting.	As trees are felled and limbed, debris will be placed into manageable piles to keep potential trip and fall hazards to a minimum.	M
	Slips, trips, and falls while carrying saws could cause injury	Keep saw in off position when walking to new locations. Ensure you carry saw with chain facing out and away from body so that if you do fall, you do not fall onto chain. Lock in the chain keeper device when moving if saw is to remain in operation. Watch your steps.	M
	Struck by or against heavy equipment	Wear high-visibility safety vests when working on ground in vicinity of powered or other clearing equipment. Make eye contact with operators before approaching equipment.	M
	Workers on ground around tree felling activities could be struck by falling trees	In work areas where trees are being felled, workers doing other tasks or cutting other trees will not work within the fall radius of trees being felled by another worker plus a buffer of 100 feet. Workers will wear high-visibility vests on the ground and have a means of communication.	H

AHA #4 – Job/Task: Vegetation Clearing and Grubbing (includes mulching)			
Job Steps	**Hazards**	**Controls**	**RAC**
Cutting vegetation (includes tree cutting using heavy equipment with cutter and/or mower attachments or chainsaws) (continued)		Workers must communicate carefully with each other and positively establish the proximity of other personnel prior to felling a tree and signal to others the tree falling prior to felling it.	
	Workers could be struck by falling limbs on trees they are cutting	Inspect tree for dead or unstable branches or tops prior to removing. If hazardous trees are identified, mark them and only remove using heavy equipment with cutter attachment (vs. chainsaw). Workers cutting trees will be experienced in proper tree cutting techniques to direct fall direction away from them. Workers will ensure the area around the tree is clear so they can get clear of the trunk expediently when tree begins to fall. Wear a hard hat with face shield.	H
	Operator in cab of heavy equipment could be struck by falling trees	Operator cab will be protected by a sturdy steel mesh cab protector shield over the glass area. Operator will be familiar with and trained in the proper operation of the cutting tool and cutting technique to fell trees away from the cab. Even in cab, operator will wear safety glasses in the event a limb comes through mesh and shatters glass.	M
	Refueling of gas powered equipment could cause fires or spills.	Ensure saws are turned off and allowed to cool before being refueled. Do not overfill saws by ensuring a small size fuel can is used which the worker can maintain good control over during refueling. Place equipment on a spill pad for refueling. Visually inspect refueling point to ensure overfill is not done. Do not fill to capacity; leave space for expansion in the tank. Do not smoke in or near refueling areas. Do not refuel in back of a pickup truck. Have a fire extinguisher present at the refueling site and ensure workers are trained in their use.	L
	Strains to workers from use of tools, such as weed cutters.	Maintain steady pace when using tools, and take adequate rest periods. If possible, rotate tasks among the workers. Use appropriate tools for the task, and maintain them in good condition.	M
	Punctures, cuts, scrapes, from vegetation debris such as sharp limbs	Remove limbs that present a puncture hazard in areas being worked in. When removing limbs using saw, watch where you are going and do not walk backwards.	M
	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
	Lack of communication could lead to a delayed response in an emergency.	Ensure that each work team has a cellular telephone, or access to a cellular telephone, for emergency communication. A work team may substitute a 2-way radio for a cellular phone if the other radio party has access to a phone. If more than one team at a time is working, ensure that there is	M

AHA #4 – Job/Task: Vegetation Clearing and Grubbing (includes mulching)			
Job Steps	**Hazards**	**Controls**	**RAC**
		communication between the work teams and project management. Use the buddy system.	
3. Moving debris and vegetation to staging area to be mulched or disposed of offsite, loading of logs or stumps onto trucks for removal from site (if performed)	Workers could experience strains from manually moving materials and equipment.	Direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift more than 50 pounds alone. Encourage a steady, sustainable work pace. Use heavy equipment (e.g., excavator with thumb) to move and stack log or stump debris.	M
	Log stacks or stumps in pile could roll and injure personnel	Provide log restraints on sides of haul vehicles and storage areas to contain logs if they shift. Do not allow personnel to enter or work around stump piles. Keep personnel away from log stacking operations and stage and load logs on level ground if possible. Do not ever walk on top of stacked logs or stump piles.	M
	Workers could experience eye hazards.	Safety glasses are the minimum required eye protection for all work areas. Locate a portable emergency eye wash at each work area. Flush objects from eyes; do not rub. Wear face shield when using brush cutting equipment.	M
	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2– Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Lack of communication could lead to a delayed response in an emergency.	Ensure that each work team has a cellular telephone, or access to a cellular telephone, for emergency communication. A work team may substitute a 2-way radio for a cellular phone if the other radio party has access to a phone. If more than one team at a time is working, ensure that there is communication between the work teams and project management. Use the buddy system.	M
4. Using wood chipper to mulch debris (if performed onsite)	Improper use and inspection of equipment	Inspect equipment before use and service in accordance with manufacturer's recommendation. Have service and operations manual onsite and review. Only trained and experienced workers will use chippers. Know where the emergency kill switch is located and know the procedures to safely shut down the equipment. Follow manufacturer instruction on size and diameter of debris the chipper can handle and the feed rate. Do not force materials into chipper or they could become lodged, creating a hazard for removal.	M
	Eye and face hazards from debris feed or mulch discharge	Wear safety glasses and face shield when performing the feed of debris. Barricade the discharge area to keep personnel from walking in this area or the discharge chute.	M

AHA #4 – Job/Task: Vegetation Clearing and Grubbing (includes mulching)			
Job Steps	**Hazards**	**Controls**	**RAC**
Using wood chipper to mulch debris (if performed onsite) (continued)	Cuts, scrapes, and hand injuries from handling debris	Wear leather work gloves when handling debris. Only pick up and handle as much debris as can be fed into the chipper at a time.	M
	Potential for serious injury such as amputation or death if worker places body parts into chipper	Never reach into a chipper to dislodge or remove debris while it is running. If not running, always ensure to follow and implement all required lockout and tagout of hazardous energies per manufacturer's requirements. Train workers in how to perform proper energy isolation prior to any placement of body or even tools into rotating or cutting/auger areas.	H
	Strains to workers from handling and feeding debris	Maintain steady pace when using tools, and take adequate rest periods. If possible, rotate tasks among the workers. Use appropriate tools for the task, and maintain them in good condition. Stretch and take breaks and rotate tasks amongst the team.	M
	Noise could cause hearing loss while using chippers	Hearing protection is required when sound levels exceed 84 dBA continuously. Rotate tasks to avoid long periods of exposure. SSHO to monitor noise levels in work area as required assessing adequacy of hearing protection for users and those in the area who may be performing other tasks.	M
	Debris could kick back on worker performing feed of debris	Stand to the side of the chute, not directly in front of the chute when loading debris. Do not push debris, let machine take it.	M
	Contact with poisonous plants or oils from poisonous plants	Evaluate the vegetation removal tasks to determine if poisonous plants were present and how they were handled. Do not chip this vegetation if found. If plants were present on trees or as vegetation on ground, wear ivy block cream, wear long pants and shirt. Have Technu or Zanfel on hand. Be sure to wash hands before touching face. Avoid handling with leather work gloves without wearing additional disposable gloves as oils may remain on gloves and re-contaminate any user to the hazard.	M

AHA #5 – Job/Task: Vegetation Clearing (includes mulching)		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
1. Vehicles	Drivers must have current state-issued driver's license.	Receipt inspection by SS. Daily and before use by operator. Use equipment safety checklist.
2. Mobile construction equipment and cutting tools	Only trained equipment operators may operate mobile construction equipment.	Receipt inspection by SS. Operator qualification by SS. Inspect all equipment upon arrival at site and on each day of use. Use equipment checklist. Have operations manual onsite and be familiar with proper use of equipment and attachments.
3. Cutting tools - chainsaw	Specific training for power and hand tools will be provided. Review operators' manual for each tool and ensure that directions are followed.	Inspect before each use. Maintain as per manufacturer's recommendation.
4. First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	First aid kits must be inspected weekly as required by OSHA. Fire extinguishers must be inspected monthly. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.
5. Wood Chipper	Specific training for power and hand tools will be provided. Review operators' manual for each tool and ensure that directions are followed.	Inspect before each use. Maintain as per manufacturer's recommendation.
6. Industrial hygiene monitoring equipment (e.g., WBGT)	SSHO must be familiar with use/limitations of the monitoring equipment, calibration procedures, and industrial hygiene strategy.	Calibration and function checks before use.

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
EHS – environmental health and safety
EM – Engineer Manual
UXO – unexploded ordnance
MEC – munitions and explosives of concern
mph – miles per hour
MPPEH – material potentially presenting an explosives hazard
OSHA – Occupational Safety and Health Administration
PE – Professional Engineer
PPE – personal protective equipment
RAC – Risk Assessment Code
RSOR – Radiological Safety Officer's Representative
SPF – sun protection factor
SS – Site Superintendent
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
UL – Underwriters Laboratories

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #5

Job/Task: Backfill and Site Restoration (including seeding)	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**

Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine

Contract Number: N62470-13-D-8007

Date Prepared: September, 2013

Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist

Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #5 – Job/Task: Backfill and Site Restoration (including seeding)

Job Steps	Hazards	Controls	RAC
1. Remove materials and equipment from work areas and consolidate for offsite removal and demobilization, including erosion controls (after site stabilization has been achieved).	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M

AHA #5 – Job/Task: Backfill and Site Restoration (including seeding)			
Job Steps	**Hazards**	**Controls**	**RAC**
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
Remove materials and equipment from work areas and consolidate for offsite removal and demobilization, including erosion controls (after site stabilization has been achieved). (continued)	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Workers could experience strains from manually moving materials and equipment.	Direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift more than 50 pounds alone. Encourage a steady, sustainable work pace. Use equipment as much as possible to maneuver heavy or awkward items.	M
	Slips, trips, and falls	Work areas can be slippery and materials can be in the way. Use caution when walking on slopes and especially when carrying tools as falls with tools can injure the person. Follow good housekeeping practices with materials in the worksite.	M
	Punctures, cuts, scrapes, from cutting and removing materials	Wear leather work gloves when handling cutting tools and removing temporary fence posts. If knives are used, they will be retractable blade. Never carry a knife in a pocket on one's body. Always cut away from the body. Do not allow posts to remain in place after removal of materials as these are puncture hazards. Identify and avoid pinch points. Maintain communication with others involved in material handling.	M
	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
	Exposure to poison ivy or oak.	Look for and avoid contact with these plants. Wear long sleeve shirts and pants. Wear disposable gloves Wear an "ivy blocker" and have Technu® or Zanfel post-exposure washing agent available. Refer to Health and Safety Guideline (HSG) 2-8 in the CRL for details.	M
	Failure to observe and prepare for encounter with insects or rodents could cause injury to worker.	Observe for insects or rodents. Apply DEET as necessary. Avoid placing hands in concealed areas. Wear protective gloves. Use tools wherever possible to dislodge objects first, before placing hands low to ground to move objects.	M
	Workers could be injured by high winds of sudden storms.	Ensure that all debris/materials are secured. Shut down operations when wind speed is greater than 25 mph sustained or lesser based on potential hazards (e.g., tree limbs could fall) or lightning within 10 miles. Monitor the	M

AHA #5 – Job/Task: Backfill and Site Restoration (including seeding)			
Job Steps	**Hazards**	**Controls**	**RAC**
		local weather report daily and as necessary for any severe weather warnings. Know the procedures to follow in the event of severe weather emergencies. Have a lightning detector on hand.	
Remove materials and equipment from work areas and consolidate for offsite removal and demobilization, including erosion controls (after site stabilization has been achieved). (continued)	Eye injuries with dust or debris	Workers will wear safety glasses. Locate a portable emergency eye wash at each work area. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust on roads. Implement and adhere to the Dust Control Plan during any soil related activities.	M
	Use of hand tools such as shovels, hammers, and rakes improperly could cause injuries	Use the right tool for the job. Inspect tools before use. Do not use defective tools. Wear gloves when using any pounding tools or shovels and rakes.	M
2. Backfill and compact soil over disturbed areas to meet grade at site (where applicable	Construction equipment or dump trucks hauling, moving, or compacting soil could cause injury to personnel on the ground	Workers operating construction equipment or dump trucks will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Equipment rollover potential	Operate safely on inclines. Do not exceed manufacturer's safety guidelines for operation on slopes. Operate up and down slopes rather than across slopes. All equipment will have rollover protection systems.	M
3. Broadcast seed in disturbed areas	Inhalation of fertilizer or contact with fertilizer mixture in seed or lime	Review MSDS with work crew for fertilizer and lime (or hydroseeding mixture). Wear leather work gloves when handling seed mixture and lime. Avoid inhalation of dust during mixing of seed and fertilizer and avoid skin contact. Brush off material if it gets on you, followed by washing of skin, including arms and hands after use with soap and water. Do not allow lime to become wet or stay on skin as sweat can cause it to hydrate and become caustic, which can cause burns.	M

AHA #5 – Job/Task: Backfill and Site Restoration (including seeding)			
Job Steps	**Hazards**	**Controls**	**RAC**
Broadcast seed in disturbed areas (continued)		Broadcast from upwind direction and do not broadcast toward anyone. If hydroseeding methods are used, a qualified and experienced subcontractor will be used to broadcast seed mixture.	
	Dust or particles, including lime could enter one's eye during broadcasting	Broadcast downwind and never upwind. Wear safety glasses. Locate emergency eyewash in area where this material will be handled. Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	M

AHA # 5– Activity/Work Task: Backfill and Site Restoration (including seeding)		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current state-issued driver's license.	Daily vehicle inspection by drivers. Receipt inspection by SS.
Heavy Equipment	Operators will be qualified and experienced operators for use of the equipment they operate	Receipt inspection by SS. Daily inspection by operator.
Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used
Industrial hygiene monitoring equipment (e.g., WBGT)	SSHO must be familiar with use/limitations of the monitoring equipment, calibration procedures, and industrial hygiene strategy.	Calibration and function checks before use.

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
EHS – environmental health and safety
EM – Engineer Manual
mph – miles per hour
NTRL – Nationally Recognized Testing Laboratory
OSHA – Occupational Safety and Health Administration
PE – Professional Engineer
PPE – personal protective equipment
RAC – Risk Assessment Code
SPF – sun protection factor
SS – Site Superintendent
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
UL – Underwriters Laboratories

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

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Activity Hazard Analysis (AHA) #6

Activity/Work Task: Asphalt Paving	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007	**Severity**	**Probability**
Date Prepared: September, 2013		Frequent / Likely / Occasional / Seldom / Unlikely
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist	Catastrophic	**E** / **E** / **H** / **H** / **M**
	Critical	**E** / **H** / **H** / **M** / **L**
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager	Marginal	**H** / **M** / **M** / **L** / **L**
	Negligible	**M** / **L** / **L** / **L** / **L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #6 – Activity/Work Task: Asphalt Paving			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Prepare to pave disturbed area with new or recycled hot asphalt	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators familiar with the safe operation and shutdown of the equipment. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Delineate work areas where potential for contact with the public could occur.	M
	Defective equipment could cause injury to workers or damage to other equipment.	Inspect all equipment when it arrives on-site. All equipment must be certified as operable by a competent mechanic. Any equipment that does not pass inspection must not be used.	M
	Asphalt emulsion could enter storm drains or catch basins or damage could occur to adjacent monitoring wells	Identify, cover and protect storm drains and catch basins as well as sewer manholes if present prior to application of asphalt. Identify and protect any monitoring wells and adjacent areas from damage by equipment.	L
	The public or pedestrians could be injured by construction equipment operating in area	Ensure that the work area is properly barricaded and defined to ensure the public or unauthorized personnel do not enter work zone. Follow the Traffic Control Plan. Stage a spotter in the area for all backing operations and to re-direct traffic if required. Site Superintendent to coordinate activity with other tenants through the CSO Officer and NTR.	M
	Slips, trips, and falls could lead to injuries	Keep work areas free of debris and equipment in work paths. Follow good housekeeping in work areas. Correct hazards when seen, such as holes or other trip hazards.	M
	Ergonomic hazards such as sprains, strains, or back injury from lifting or repetitive actions	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist. Only pivot and turn with the feet while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some folks) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task.	M
2. Apply asphalt layer to exposed soil to match existing grade	Working with hot asphalt emulsion – chemical exposure or burns.	Wear proper personal protective equipment (head, ear, eye, foot, and hand protection). The National Asphalt Pavement Association recommends: 1. Chemical goggles and an 8-inch minimum-size face shield. 2. Loose clothing in good condition with collars closed and cuffs buttoned at the wrist. 3. Glove gauntlets that extend up the arm worn loosely so that they can be easily flipped off if covered with hot asphalt.	M

AHA #6 – Activity/Work Task: Asphalt Paving			
Job Steps	**Hazards**	**Controls**	**RAC**
Apply asphalt layer to exposed soil to match existing grade (continued)		4. Boots with tops at least 6 inches high and laced without openings through which asphalt could reach skin. 5. Cuffless pants that extend over tops of boots.	
	Asphalt vapors are combustible when heated; cutbacks and emulsifiers may be flammable.	Use a fire protection program that includes the following elements developed by the National Asphalt Pavement Association: 1. Prohibit smoking except in designated areas. 2. Keep asphalt distributors clean and free from asphalt accumulations. Before spraying, shut off burners. 3. Keep exterior parts of distributor truck exhaust system clean to remove debris that could ignite and fall in path of the spray bar. 4. Be prepared to shut off the distributor spray bar. 5. Have a minimum 40:BC fire extinguisher present.	M
	Eye injuries from application of asphalt	Wear safety glasses with side shields at all times when working. If splash hazards exist, wear goggles and 8-inch minimum sized face shield. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	M
	Elevated temperature could cause physical hazards and exposure to burns or heat stress	Monitor ambient temperature to ensure that employees drink plenty of fluids and use work/rest cycles to avoid heat exhaustion. Monitor for heat stress as described in EHS 4-6 (pulse, body temperature).	M
	Noise could cause hearing loss and make it hard to communicate	Hearing protection is required when sound levels exceed 84 dBA continuously. This rule applies to personnel working near or on heavy equipment and any other sources of loud noise.	M

AHA #6 – Activity/Work Task: Asphalt Paving		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current state-issued driver's license.	Daily vehicle inspection by drivers. Receipt inspection by SS.
Heavy equipment, trucks, pavers, rollers	Operators will be qualified and experienced operators for use of the equipment they operate	Receipt inspection by SS. Daily inspection by operator.
Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used

Abbreviations and Acronyms:

APP – Accident Prevention Plan
CSO – Caretaker Site Office
EHS – Environmental, Health, and Safety
MSDS – Material Safety Data Sheet
OSHA – Occupational Safety and Health Administration
NRTL – Nationally Recognized Testing Laboratory
SSHO – Site Safety and Health Officer
SS – Site Superintendent

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

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Activity Hazard Analysis (AHA) #7

Job/Task: Equipment and Material Removal and Radiological Surveys in Buildings	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007	**Severity**	**Probability**
Date Prepared: September 2013		Frequent / Likely / Occasional / Seldom / Unlikely
Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist	Catastrophic	**E / E / H / H / M**
	Critical	**E / H / H / M / L**
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, Safety and Health Manager	Marginal	**H / M / M / L / L**
	Negligible	**M / L / L / L / L**

Notes: (Field Notes, Review Comments, etc.)
In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP/SSHP. TtEC Corporate Safety Programs and the EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #7 – Job/Task: Equipment Removal and Radiological Surveys in Buildings

Job Steps	Hazards	Controls	RAC
1. Removal of equipment material from buildings, building preparation prior to surveys	Heavy equipment operations (as required)	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. Equipment shall be inspected before being placed into service and at the beginning of each shift. Machinery and mechanized equipment shall be operated only by designated personnel. It is prohibited to get off or on any equipment while it is in motion.	M

AHA #7 – Job/Task: Equipment Removal and Radiological Surveys in Buildings			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Removal of equipment material from buildings, building preparation prior to surveys (continued)		Machinery or equipment requiring an operator shall not run unattended. Machinery or equipment will not be operated in a manner that will endanger persons or property, nor will the safe operating speeds or loads be exceeded. All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being performed. End-loader buckets and similar equipment will be either fully lowered or blocked when being repaired or when not in use. All self-propelled construction equipment shall be equipped with a back-arm alarm.	
	Exposure to potentially contaminated dust in building	Use a light mist of water to suppress dust. SSHO will monitor conditions for visible dust. Use a fan to increase ventilation if needed.	L
	Contact with moving equipment	If a skidsteer or other moving equipment is used, ground personnel shall wear reflective vests and maintain eye contact with operators.	M
	Noise	Noise levels above 85 dBA mandates the use of hearing protection.	M
	Illumination	If buildings do not have adequate lighting to meet a minimum illumination standard of 55 lm/ft^2 for indoor construction areas, additional temporary lighting will be supplied. Bulbs shall be protected from breakage by guards. Lights shall not be suspended by their electric wires. Replace broken bulbs immediately. Electric lighting operated in wet or conductive conditions shall be operated at 12 volts or less.	L
	Ergonomic injuries	Perform a stretching routine prior to any physical activity to loosen and prepare muscles. Use proper lifting techniques to prevent excess strain on back and use mechanical moving means wherever possible. If loads over 50 lbs. must be lifted manually, use two or more people. Do not twist at the waist while lifting.	M
	Existing utilities in buildings may be energized	Review plans, check valves, and use detection equipment to verify that any existing utilities are off before disconnecting or cutting, if needed.	M
	Asbestos pipe insulation may be present	If asbestos is present and requires removal, a separate Abatement Plan and AHAs will be prepared.	L
	Slips, trips, and falls	Determine best access route before transporting debris. Always maintain a clear path out of the building. Identify any fall hazards and establish guardrails or some other means of eliminating the hazard. Never work above others where materials may fall down on them.	M

AHA #7 – Job/Task: Equipment Removal and Radiological Surveys in Buildings			
Job Steps	**Hazards**	**Controls**	**RAC**
Removal of equipment material from buildings, building preparation prior to surveys (continued)	Hand abrasions, cuts	Use mechanical means where possible to reduce physical contact with debris. Use the proper type of gloves when contact is required. Leather work gloves are required to avoid scrapes, minor cuts, and splinters. If there is the potential for puncture wounds, use gloves or glove liners made specifically to prevent punctures.	M
	Potential for fires; hot work (if required)	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. The extinguisher must be properly rated for the type and amount of flammable material present. An extinguisher with a minimum rating of 4-A:60-B:C will be readily accessible within 75 feet at all times during work activities. No hot work activity will take place without a Hot Work Permit issued and all permit conditions met prior to beginning the activity. A properly rated extinguisher and person designated as fire watch must be present during hot work and for at least 30 minutes after the completion of the hot work. Hot work taking place inside buildings may cause a dangerous atmosphere, and the SHM must be consulted prior to work commencing. Air monitoring, enhanced ventilation and upgraded PPE may be required.	M
	Heavy equipment, generator use inside buildings and hazardous atmosphere	If any combustion power equipment is used inside buildings, there is a potential for a hazardous atmosphere to be created. Carbon monoxide (CO) could build up to dangerous levels and therefore constant CO monitoring must take place. Generators must be placed outside buildings, away from entrances or windows. Equipment should never be left running or run longer than is necessary. Open all doors and windows to maximize ventilation through the building. Exhaust fans may be required to increase ventilation. Consult the SSHO when using combustion equipment indoors. Personnel working inside buildings where fuel powered equipment is used inside the building will be continuously monitored for CO by use of either person CO detectors (e,g. Monitox®) or the area will be continuously checked for CO.	M
	Elevated work platform use for material or equipment removal (if required)	Refer to step 3 below for use of elevated work platforms	M
2. Radiological Surface Surveys	Slips and trips, lighting	Sufficient lighting (55 lm/ft^2) must be maintained in all areas of the survey location to avoid injury from unseen dips in the ground or other uneven walking surfaces. Remove, mark, cover or otherwise identify trip hazards. Cover all holes with substantial material and identify as a hole underneath the	M

AHA #7 – Job/Task: Equipment Removal and Radiological Surveys in Buildings			
Job Steps	**Hazards**	**Controls**	**RAC**
Radiological Surface Surveys (continued)		cover.	
	Scrapes, cuts, punctures	Radiological surveying requires running instruments over the wall or floor surface. Nails, other hardware, or sharp objects could be sticking out and may cause cuts, scrapes, or puncture wounds. Visually inspect the area carefully before beginning surveys. Use leather work gloves where injury is possible.	M
	Exposure to radiological contamination	Adhere to the requirements of the radiation work permit and guidance of the RSOR to avoid exposure. Radiological PPE requirements will be stated on the RWP and TSPs. All personnel must be issued and wear a dosimetry badge.	
	Biological hazards	The buildings will be cleared of debris prior to radiological surveys taking place; however, insects and animals may still take refuge inside. Inspect the work area for evidence of animal presence. Never touch, attempt to hold, or kill wildlife. Contact your supervisor or the SSHO for guidance if observed. Wear work gloves to minimize potential contact.	
	Muscle strains, back injury	Use proper lifting practices when moving survey equipment. If moving a heavy load, get someone to help you or use mechanical means. Pay attention to how you position your body while conducting the survey. Maintain a comfortable posture and minimize twisting of the torso. Participate in a stretching routine before beginning physical activity.	
	Compressed gas cylinders	Radiological survey instruments use compressed argon gas to function. While this gas is not flammable, the compressed nature is still hazardous. Cylinders must always be secured in an upright position. Remove the regulator and screw the cap back on before moving the cylinder or use a regulator protective cover. Cylinders must be stored in the designated safe storage area when not in use.	
	Elevated work platform use for survey (if required)	Refer to separate AHA for use of elevated work platforms	M

AHA #7 – Job/Task: Equipment Removal and Radiological Surveys in Buildings		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Hand tools, PPE, heavy equipment, generator	Only qualified persons may operate equipment. Operators' manuals must be reviewed and be available on-site. Only DMV-licensed personnel will operate trucks. Petroleum-fired equipment use inside buildings must be constantly monitored for CO buildup. Consult the SSHO before starting.	Daily and before use. Use inspection checklists for equipment. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
First-aid kits and other emergency equipment	Personnel require training to use emergency equipment and first-aid kits. These personnel must be familiar with this plan, the inspection criteria for the equipment, and how the equipment is used. The SSHO provides direction on the use of the equipment.	Initially and at least weekly thereafter or after the kit is used and restocked (29 CFR 1926.50[d][2]). First-aid kits must be filled per EM 385-1-1 Table 3-1. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.
Radiological survey equipment	Only qualified RSTs are allowed to operate radiological survey equipment and must do so in accordance with TtEC NRC license.	Daily and before use. Calibrate in accordance with manufacturer's instruction and RWPs procedures.
Elevated work platforms	EWP operators and users must be trained in its safe use including reviewing the user manual as per EM 385-1-1 22.L.04. Petroleum-fired equipment use inside buildings must be constantly monitored for CO buildup. Consult the SSHO before starting. Competent person (TBD) must inspect fall protection used in support of EWP.	Daily and before use. Use inspection checklists for equipment. Inspect fall protection equipment before using EWP.

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CFR – *Code of Federal Regulations*
CIH – Certified Industrial Hygienist
CO – carbon monoxide
CTO – Contract Task Order
dBA – decibels, A-weighted
DMV – Department of Motor Vehicles
EM – Engineer Manual
EWP – Elevated Work Platform
MSDS – material safety data sheet
NTRL – Nationally Recognized Testing Laboratory
PPE – personal protective equipment
RAC – Risk Assessment Code
RSOR – Radiological Support Officer Representative
RWP – radiological work plan
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
TtEC – Tetra Tech EC, Inc.
TSP – Task Specific Plan

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

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Activity Hazard Analysis (AHA) #8

Job/Task: Radiological Surface Surveillance	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP/SSHP. TtEC Corporate Safety Programs and the EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures. Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #8 – Job/Task: Radiological Surface Surveillance			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Unload equipment from vehicle.	Lifting instruments from the vehicle could cause strain to worker.	Use proper lifting techniques such as keeping the back straight, lifting with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. Use hand truck if needed. For loads greater than 50 pounds, use two people to lift.	L
2. Move survey equipment.	Handling of instruments could cause strain to worker.	Carry instruments as required by manufacturers of instruments. Use straps when provided and adjust for comfort. Use care when walking so that there are no sudden jerks or missteps that can cause a worker to strain to maintain control of instrument. Get assistance from other workers if several instruments must be carried. For loads greater than 50 pounds, use two people to carry.	L
3. Surface screening of soils, debris, and building components	Workers could be exposed to radiological contamination	Radiological Survey Technicians (RSTs) will do all radiation work following the TtEC NRC license, Radiological Management Plan, and Task Specific Plans. Radiation work areas will be established by RSTs and unauthorized personnel will be kept out. Dose monitoring, PPE, and ALARA precautions as specified in the Radiation Management Plan will be followed an implemented by the Radiation Safety Officer's Representative on this project for all radiological survey work. Control all radiological waste material in accordance with the Radiation Management Plan	M
	Improper screening could allow radiological materials to be spread or missed	Quality control procedures for conducting the various surveys performed on this project will be defined and followed by the RSOR and RSTs, including any verification sampling performed. Instruments will be properly calibrated by RST daily before use and as otherwise required. Work methods will include screening of soil and building components to minimize potential for missing or misinterpreting results of screening.	L
4. Haul excavated soil and/or any contaminated debris to radiological waste bins	Trucks, dollies, or other material handling equipment could strike workers or other objects causing injury or damage. Bin may not be placed where it is required to be positioned.	Use trained spotters to guide the truck or other equipment driver/operator to the proper position over the bin. Ground workers must always have direct eye contact with the truck/equipment operator. Try to bring the bin to the location of removal to minimize travel distance with contaminated materials. Ensure containment in load transport equipment.	L
	Trucks or other equipment improperly loaded could cause loss of material or truck to handle unsafely or tip over.	Never overload a truck or other equipment. Ensure load is evenly placed in bins.	M
	Trucks or equipment could drive fast and generate dust or spill contaminated	Drive at speeds that do not cause material to be lost or dust to be generated. Use dust suppression techniques such as fine water mist. Cover loads during	L

AHA #8 – Job/Task: Radiological Surface Surveillance			
Job Steps	**Hazards**	**Controls**	**RAC**
	soil/debris.	transit if necessary. Try to bring the bin to the location of removal to minimize travel distance with contaminated materials.	
5. Dump soil out of excavator buckets or other equipment hauling contaminated soil	While dumping load, dust could be generated.	Use dust suppression techniques such as fine water mist. Dump load slowly and as close to the bin as possible. Adhere to the requirements of the Dust Control Plan.	L
	Trucks or equipment could strike workers or other objects causing injury or damage. Load may not be placed where it is required to be positioned.	Use trained spotters to guide the truck driver to the proper position. Ground workers must always have direct eye contact with the truck operator.	M
6. Use EWP to survey soil remaining in excavation or test pit	EWP could tip over if too close to excavation/test pit edge. Workers could fall out of EWP if they fail to wear a full body harness. Workers getting on or off the EWP could be too close to the edge of the excavation and fall into the excavation.	Use a rough terrain style lift for outdoor work. Ensure the work area is level and stable to support the lift. Use all appropriate manufacturers' instruction and operating manual to position and secure and use the lift. All workers operating the man lift must be trained on the use of the lift. Training must be documented in the file. When in the basket of the lift, workers must wear a personal fall arrest system consisting of full-body harness and lanyard. They must attach the lanyard to the designated anchorage point in the basket. Workers should get on and off the lift at least 6 feet from the edge of the excavation.	M
	EWP could tip over when being driven over uneven surfaces. Workers could be thrown out of the lift.	Ensure the path of travel has been inspected for ruts and debris. When moving the lift, it is best if it is not extended and if the lift platform is over the main body of the equipment. Workers must wear a personal fall arrest system consisting of a full-body harness and lanyard that limits a fall to no more than 2 feet. They must attach the lanyard to the designated anchorage point in the basket.	M
	Workers could fall out of the EWP if they lean over the sides or climb the guardrails of the lift platform.	Workers will not lean over any guardrail. Workers will not climb guardrails or use any object in the lift cage to climb to a higher height. Climbing on ladders, foot stools, buckets, etc. is not permitted.	M
	EWP could tip over if there is too much weight on the lift platform, or if weight is not evenly distributed. Lift could tip over if objects are lifted or carried outside the lift platform cage.	Ensure that the weight limits of the platform are not exceeded. Never carry any objects outside the cage. Do not use the lift to lift objects to higher levels unless the entire object is inside the cage, the weight is evenly distributed, and the combined weight of personnel and the object does not exceed the weight limitations of the lift.	M
7. Use utility vehicle to tow the array over the surface of the ground	Utility vehicles used and operated improperly can cause injury to personnel.	Operators of utility vehicles will be trained and qualified as operators on the specific equipment used. Operators will review and be familiar with the manufacturer's operating manual and follow the limitations specified for safe operation. Have the operator's manual onsite. Inspect the utility vehicle each	M

AHA #8 – Job/Task: Radiological Surface Surveillance			
Job Steps	**Hazards**	**Controls**	**RAC**
Use utility vehicle to tow the array over the surface of the ground (continued)		day before use. Do not operate if damaged or defective. Travel at slow speeds. No horseplay is allowed. Utility vehicles will not travel on public roadways unless they follow and are equipped for street operation and only to the extent necessary to move from site to site. Obey all local traffic rules and regulations when in operation.	
	Uneven or steep terrain could cause equipment to rollover or be unstable	Prior to surveys, clearing and grubbing will be done to ensure a relatively smooth operating area. Operate equipment up and down any grade rather than side slope. Know the limitations of the equipment for operation on slopes. Wear seat belt at all times. Use equipment that has a cage for rollover protection.	M
	Backing of towed array or operation of utility vehicle around ground crew could cause injury	Ensure workers wear high visibility vest around operating equipment. Drivers will use spotters to back up trailers and equipment. Operate at slow speeds and be aware of where other persons are working.	M
8. Mark suspected radioactive material, if necessary.	Use of spray paint to mark suspected radioactive material could expose worker to paint or fumes.	Follow manufacturers' instructions on use of paint. Review MSDSs. Never point spray paint canisters at another person.	L
	When carrying flags or stakes, worker could trip and impale body.	Carry flags or stakes in leather or canvas bag that is puncture-proof and carry bag to side of body. Ensure that all tips are pointed toward ground at all times.	M
	Installation of wooden stakes presents puncture and splinter hazards.	Keep stake tip pointed at ground. Wear leather gloves. Use caution when using tools to pound in stakes.	

AHA #8 – Job/Task: Radiological Surface Surveillance		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Radiological survey instruments	Survey instruments must be calibrated and checked.	Daily or before use by the operator who is a properly trained RST.
Mule or small tractor, towed array (if required)	Operator must receive training or have had experience using the vehicle. Operator must review operator's manual, which must be available on-site.	Inspect the vehicle as required by the operator's manual. Inspect the towed array, especially all connections and the frame, daily before use.
EWP	Follow manufacturer's operating manual for daily inspection. Ensure that all operators and users are trained in the requirements for use and the safety precautions specified by the manufacturer. Competent person (TBD) must inspect fall protection equipment daily before use.	Upon delivery to site, daily before use.
First-aid kits and other emergency equipment	Personnel require training to use emergency equipment and first-aid kits. These personnel must be familiar with this plan, the inspection criteria for the equipment, and how the equipment is used. The SSHO provides direction on the use of the equipment.	Initially and at least weekly thereafter or after the kit is used and restocked (29 CFR 1926.50[d][2]). First-aid kits must be filled per EM 385-1-1 Table 3-1. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CFR – *Code of Federal Regulations*
CIH – Certified Industrial Hygienist
CSP – Certified Safety Professional
EM – Engineer Manual
MSDS – material safety data sheet
PPE – personal protective equipment
RAC – Risk Assessment Code
RPP – Radiation Protection Plan
RSOR – Radiation Safety Officer's Representative
RST – Radiation Safety Technician
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
TtEC – Tetra Tech EC, Inc.

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #9

Job/Task: Removal of Radiological Hotspots in Buildings	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007	**Severity**	**Probability**
Date Prepared: September 2013		Frequent / Likely / Occasional / Seldom / Unlikely
Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist	Catastrophic	**E / E / H / H / M**
	Critical	**E / H / H / M / L**
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, Safety and Health Manager	Marginal	**H / M / M / L / L**
	Negligible	**M / L / L / L / L**

Notes: (Field Notes, Review Comments, etc.)
In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP/SSHP. TtEC Corporate Safety Programs and the EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #9 – Job/Task: Removal of Radiological Hotspots in Buildings

Job Steps	Hazards	Controls	RAC
1. Removal of radiological hotspots from buildings and building materials or surfaces	*Not all hazards are able to be ascertained at this time and this AHA will be updated based upon field conditions, location of hotspots, and site-specific hazards prior to beginning this task.*	*This AHA requires site and task-specific updates as required to address radiological hotspot removal in buildings. This AHA addresses general hazards and precautions.* *A separate AHA has been prepared to address concrete hotspot removal using a concrete scabbler.*	

AHA #9 – Job/Task: Removal of Radiological Hotspots in Buildings			
Job Steps	**Hazards**	**Controls**	**RAC**
Removal of radiological hotspots from buildings and building materials or surfaces (continued)	Heavy equipment operations (as required)	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. Equipment shall be inspected before being placed into service and at the beginning of each shift. Machinery and mechanized equipment shall be operated only by designated personnel. It is prohibited to get off or on any equipment while it is in motion. Machinery or equipment requiring an operator shall not run unattended. Machinery or equipment will not be operated in a manner that will endanger persons or property, nor will the safe operating speeds or loads be exceeded. All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being performed. End-loader buckets and similar equipment will be either fully lowered or blocked when being repaired or when not in use. All self-propelled construction equipment shall be equipped with a back-up alarm.	M
	Exposure to potentially contaminated dust in building	Use a light mist of water to suppress dust. SSHO will monitor conditions for visible dust. Use a fan to increase ventilation if needed.	L
	Noise	Noise levels above 85 dBA mandates the use of hearing protection.	M
	Illumination	If buildings do not have adequate lighting to meet a minimum illumination standard of 55 lm/ft^2 for indoor construction areas, additional temporary lighting will be supplied. Bulbs shall be protected from breakage by guards. Lights shall not be suspended by their electric wires. Replace broken bulbs immediately. Electric lighting operated in wet or conductive conditions shall be operated at 12 volts or less.	L
	Ergonomic injuries	Perform a stretching routine prior to any physical activity to loosen and prepare muscles. Use proper lifting techniques to prevent excess strain on back and use mechanical moving means wherever possible. If loads over 50 lbs. must be lifted manually, use two or more people. Do not twist at the waist while lifting.	M
	Existing utilities in buildings may be energized	Review plans, check valves, and use detection equipment to verify that any existing utilities are off before disconnecting or cutting, if needed.	M

AHA #9 – Job/Task: Removal of Radiological Hotspots in Buildings			
Job Steps	**Hazards**	**Controls**	**RAC**
Removal of radiological hotspots from buildings and building materials or surfaces (continued)	Asbestos may be present	If any asbestos is suspected in survey areas, an Asbestos Abatement Plan and separate AHA will be developed.	L
	Slips, trips, and falls	Determine best access route before transporting debris. Always maintain a clear path out of the building. Identify any fall hazards and establish guardrails or some other means of eliminating the hazard. Never work above others where materials may fall down on them.	M
	Hand abrasions, cuts	Use mechanical means where possible to reduce physical contact with debris. Use the proper type of gloves when contact is required. Leather work gloves are required to avoid scrapes, minor cuts, and splinters. If there is the potential for puncture wounds, use gloves or glove liners made specifically to prevent punctures.	M
	Use of power tools and hand tools could cause injury	Select and use the right tool for the job. Be familiar with safe operation and use of the tool as well as tool limitations per manufacturer's instruction. Wear appropriate PPE when using tools, which includes gloves, hard hat, safety glasses, and leather work gloves. Select and use power tools that are rated by a Nationally Recognized Testing Laboratory. Use a ground fault circuit interrupter for electric powered tools. Ensure cords are in good condition and properly rated and have 3 prongs unless tool is double insulated. Operate tools with guards in place and do not bypass guards. *Other analysis may be required specific to the hand and power tools that will be utilized.*	M
	Potential for fires; hot work (if required)	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition. The extinguisher must be properly rated for the type and amount of flammable material present. An extinguisher with a minimum rating of 4-A:60-B:C will be readily accessible within 75 feet at all times during work activities. No hot work activity will take place without a Hot Work Permit issued and all permit conditions met prior to beginning the activity. A properly rated extinguisher and person designated as fire watch must be present during hot work and for at least 30 minutes after the completion of the hot work. Hot work taking place inside buildings may cause a dangerous atmosphere, and the SHM must be consulted prior to work commencing. Air monitoring, enhanced ventilation and upgraded PPE may be required.	M

AHA #9 – Job/Task: Removal of Radiological Hotspots in Buildings			
Job Steps	**Hazards**	**Controls**	**RAC**
Removal of radiological hotspots from buildings and building materials or surfaces (continued)	Heavy equipment, generator use inside buildings and hazardous atmosphere	If any combustion power equipment is used inside buildings, there is a potential for a hazardous atmosphere to be created. Carbon monoxide (CO) could build up to dangerous levels and therefore constant CO monitoring must take place. Generators must be placed outside buildings, away from entrances or windows. Equipment should never be left running or run longer than is necessary. Open all doors and windows to maximize ventilation through the building. Exhaust fans may be required to increase ventilation. Consult the SSHO when using combustion equipment indoors.	M
	Elevated work platform use for material or equipment removal (if required)	Refer to separate AHA for use of elevated work platforms when used to perform these tasks.	M
	Exposure to radiological contamination	Adhere to the requirements of the radiation work permit and guidance of the RSOR to avoid exposure. Radiological PPE requirements will be stated on the RWP and TSPs. All personnel must be issued and wear a dosimetry badge. Manage LLRW in accordance with the Radiological Work Plan and TSPs.	M
	Biological hazards	The buildings will be cleared of debris prior to radiological surveys taking place; however, insects and animals may still take refuge inside. Inspect the work area for evidence of animal presence. Never touch, attempt to hold, or kill wildlife. Contact your supervisor or the SSHO for guidance if observed. Wear work gloves to minimize potential contact.	
	Compressed gas cylinders	Radiological survey instruments use compressed argon gas to function. While this gas is not flammable, the compressed nature is still hazardous. Cylinders must always be secured in an upright position. Remove the regulator and screw the cap back on before moving the cylinder or use a regulator protective cover. Cylinders must be stored in the designated safe storage area when not in use. Argon gas is a simple asphyxiant and is heavier than air. Ensure cylinders are turned totally off when removing or exchanging.	

AHA #9 – Job/Task: Removal of Radiological Hotspots in Buildings		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Hand tools, PPE, heavy equipment, generator	Only qualified persons may operate equipment. Operators' manuals must be reviewed and be available on-site. Only DMV-licensed personnel will operate trucks. Petroleum-fired equipment use inside buildings must be constantly monitored for CO buildup. Consult the SSHO before starting.	Daily and before use. Use inspection checklists for equipment. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
First-aid kits and other emergency equipment	Personnel require training to use emergency equipment and first-aid kits. These personnel must be familiar with this plan, the inspection criteria for the equipment, and how the equipment is used. The SSHO provides direction on the use of the equipment.	Initially and at least weekly thereafter or after the kit is used and restocked (29 CFR 1926.50[d][2]). First-aid kits must be filled per EM 385-1-1 Table 3-1. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.
Radiological survey equipment	Only qualified RSTs are allowed to operate radiological survey equipment and must do so in accordance with TtEC NRC license.	Daily and before use. Calibrate in accordance with manufacturer's instruction and RWPs procedures.
Elevated work platforms	EWP operators and users must be trained in its safe use including reviewing the user manual as per EM 385-1-1 22.L.04. Petroleum-fired equipment use inside buildings must be constantly monitored for CO buildup. Consult the SSHO before starting. Competent person (TBD) must inspect fall protection used in support of EWP.	Daily and before use. Use inspection checklists for equipment. Inspect fall protection equipment before using EWP.

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CFR – *Code of Federal Regulations*
CIH – Certified Industrial Hygienist
CO – carbon monoxide
CTO – Contract Task Order
dBA – decibels, A-weighted
DMV – Department of Motor Vehicles
EM – Engineer Manual
EWP – Elevated Work Platform
MSDS – material safety data sheet
NTRL – Nationally Recognized Testing Laboratory
PPE – personal protective equipment
RAC – Risk Assessment Code
RSOR – Radiological Support Officer Representative
RWP – radiological work plan
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
TtEC – Tetra Tech EC, Inc.
TSP – Task Specific Plan

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #10

Activity/Work Task: Excavations (test pits) and Trenching	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #10 – Activity/Work Task: Excavations (test pits) and Trenching

Job Steps	Hazards	Controls	RAC
1. Operation of heavy equipment, general	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform	M

AHA #10 – Activity/Work Task: Excavations (test pits) and Trenching			
Job Steps	**Hazards**	**Controls**	**RAC**
		work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high visibility safety vest.	
2. Excavate soil and load out into trucks (as applicable) and work around excavator and soil trucks	Workers could be struck by or against heavy equipment or trucks.	Establish and follow a traffic control plan. Wear reflective high-visibility vests. Avoid equipment swing areas and designated traffic routes. Make eye contact with operators before approaching equipment or trucks. Understand and review posted hand signals. Use spotters and flaggers, as necessary, to direct trucks, as well as any nearby traffic. Ground workers need to stand a safe distance from the excavator, (especially the counterweight). Maintain eye contact with the operator. Be aware of the swing radius of the excavator.	M
	Noise from operating equipment.	Wear hearing protection when working on the ground in the vicinity of the excavator.	M
	Contact with underground utilities.	Perform utility locate, marking, and verification prior to performing intrusive operations. Call National One Call – 811. Contact base to review as-builts and gather further information regarding other potential utility installations.	M
	Potential for finding buried items that are hazardous or unanticipated contamination	If any item is discovered that may be munitions related, buried cylinders, unanticipated waste that may be hazardous, work will stop and the find will be reported so that appropriate safety precautions can be put into place to handle the item or have it removed or further evaluated. Notify the SSHO and SHM.	M
	Contact with heavy equipment around excavation or soil staging areas being actively worked	Heavy equipment will be idled or shut down with bucket on the ground prior to entry into any soil handling area, including excavation.	L
	Fugitive dust during soil handling	Dust suppression is available in the form of a water truck with spray/mist capability. This will be used onsite to wet down soil and roadways, laydown areas to keep dusts down. Follow the Dust Control Plan.	L
	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical	M

AHA #10 – Activity/Work Task: Excavations (test pits) and Trenching			
Job Steps	**Hazards**	**Controls**	**RAC**
Excavate soil and load out into trucks (as applicable) and work around excavator and soil trucks (continued)		attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust on roads and in laydown areas. Follow Dust Control Plan.	
	Accidental falls into excavation if the area around the excavation or trench is not properly managed and controlled.	Stay 6 feet away from edge where hazard of 6 feet fall or greater exists. Excavation will be safe sloped or barricaded as required and also barricaded when left open and unattended. Barricade open excavations as required by EM 385-1-1, 25.B.01.	M
	Improperly planned and executed entry into excavations can present engulfment or cave-in hazards and confined space hazards	Currently there is no anticipated need to enter any excavation to accomplish the survey, sampling, and investigation tasks. Sampling and surveys will be accomplished without placement of personnel in excavations or trenches; however personnel, under oversight of the excavation competent person, may enter shallow excavations less than 4 feet in depth, if required. Entry into excavations that are greater than 4 feet in depth present confined space hazards and would require an update to this AHA as well as implementation of the Confined Space Program requirements, preparation of a site specific confined space entry procedure, and meeting of specific training of personnel and monitoring requirements. If excavations will exceed 5 feet in depth and be entered, a written Excavation Plan will be developed in accordance with EM 385 1-1 25.A.01a. The Excavation Competent Person (TBD) will evaluate excavations and conduct inspections daily based on depth, soil type and conditions, and other factors related to excavation safety.	M
	Cave in of the sidewalls could occur	Spoil piles will be staged a minimum of 2 feet from the edge of the excavation.	M
	Inhalation hazards due to potential hazardous materials, including low-level volatile organic compounds in the	The SSHO will monitor the workers breathing zones during excavation and trenching at sites where volatile organics could be present using a MiniRAE™ or equivalent PID. Action levels in the APP will be used to	M

AHA #10 – Activity/Work Task: Excavations (test pits) and Trenching			
Job Steps	**Hazards**	**Controls**	**RAC**
Excavate soil and load out into trucks (as applicable) and work around excavator and soil trucks (continued)	breathing zone of workers due to potential soil contamination in some of the sites to be surveyed or test pitted.	establish potential for exposure and to prescribe the proper controls. All field data from monitoring will be maintained and recorded. For other potential low level site contaminants, dust control will be maintained to keep potential exposures below the PEL during soil handling tasks such as excavation and trenching. Follow the Dust Control Plan. Stop operations when winds exceed 25 mph or less if dust emissions cannot be controlled.	
	Contact with potential contaminants in soil and potential spread of contaminants to other areas	Three zones of control will be established for performing excavations in contaminated areas (EZ, CRZ, and SZ). Wear PPE specified in the APP under SSHO direction based on potential for contact with contaminated soil at each site and each worker's task. Appropriate PPE may include disposable coveralls, boots with boot covers (or steel to PVC boots), nitrile or latex gloves, safety glasses, and hard hat. Avoid stirring up dust. Control dust generation with light water mist to keep visible dust from being generated. Follow the Dust Control Plan. Appropriate means of decontamination will be provided for workers exiting the area if boots, gloves, or clothing becomes contaminated with soil. SSHO will determine the appropriate level of decontamination based on site conditions. Workers will keep contact with potentially contaminated soil to a minimum. A hand washing station will be located in the support zone for workers to wash hands before leaving the area to go on break. In addition to workers, any contaminated tools or equipment will also undergo appropriate level of decontamination to prevent the spread of potential contaminants. Truck tires will be cleaned and decontaminated as appropriate before trucks leave site and enter a roadway. Tarp loads before they leave the site.	L
	Drivers of trucks could be injured by loads as they are being placed in trucks.	Prohibit truck drivers from standing near trucks as they are being loaded. Prohibit truck drivers from sitting in the cab of trucks as they are being loaded, unless the truck is equipped with a cab protector (FOPS)	M
	Potential falls during tarping of truck	Workers will not climb trucks to tarp the load. Use automatic tarping devices.	M
	Heat Stress	SSHO to monitor for signs and symptoms of heat stress in accordance	M

AHA #10 – Activity/Work Task: Excavations (test pits) and Trenching			
Job Steps	**Hazards**	**Controls**	**RAC**
Excavate soil and load out into trucks (as applicable) and work around excavator and soil trucks (continued)		with EHS 4-6, Temperature Extremes. Heat stress can be exacerbated when wearing chemical protective suits and respirators. Use the buddy system to observe your buddies. Take breaks as required to rest (work/rest schedules) and drink plenty of fluids and electrolytes.	

AHA #10 – Activity/Work Task: Excavations (test pits) and Trenching		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Excavator and haul trucks	Trained and experienced operators will operate heavy equipment.	Receipt inspection by SS Daily inspection by users/operators. Task observation of operators by SS.
Water Truck (if used)	Trained and experienced operators will operate the water truck.	Receipt inspection by SS Daily inspection by users/operators. Task observation of operators by SS
Geophysical equipment and DGPS units (if used)	Only qualified geophysical technicians trained in care and use of this equipment	Receipt inspection by geophysical lead. Daily inspection and any required function and/or QC check by user.
Monitoring Equipment (e.g. MiniRAE™)	Trained and qualified individuals will operate monitoring equipment either the SSHO or under the supervision of the SSHO	Receipt inspection by SSHO. Daily calibration in accordance with manufacturer specification for all sensors equipped and in use (organic vapors).
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used

Abbreviations and Acronyms:

APP – Accident Prevention Plan
CRZ – Contamination Reduction Zone
EZ – Exclusion Zone
FOPS – Falling object protection system
SSHO – Site Safety and Health Officer
SS – Site Superintendent
SZ – Support Zone
PPE – personal protective equipment
PID – photoionization device
SHM – Safety and Health Manager

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #11

Job/Task: Geophysical Surveys	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**

Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine

Contract Number: N62470-13-D-8007

Date Prepared: September, 2013

Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist

Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site or electronically for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #11 – Job/Task: Geophysical Surveys			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Conduct geophysical surveys using EM 61 or equivalent and global positioning system equipment	Workers could be injured by slips, trips, or falls in the survey area.	Visually inspect work areas and mark, barricade, or eliminate slip, trip, and fall hazards, if feasible. Use care in the work area; look for depressions and obstructions. Allow employees to work only on walking/working surfaces that have the strength and integrity to support employees safely. Workers need to pay attention to where they step when handling the geophysical equipment. Often workers are looking at instruments and not where they are walking. Work carefully in non-level or sloped areas. Wear sturdy work boots. If working adjacent to open excavations, ensure barricades are in place to keep workers at least 6 feet from edge if excavation is 6 feet or more in depth.	M
	Potential to encounter debris on surface that could be MEC missed during prior surface clearance activities or exposure to areas that have not been surveyed and surface cleared	Have UXO technician available and onsite to evaluate any debris found during surveys that could be MEC/MPPEH. Ensure geophysical staff has MEC awareness training. Do not handle or remove debris until debris is positively identified and confirmed to be non-munitions related. Ensure the site boundaries have been clearly defined for where the DGM surveys will be conducted and confirm that MEC surface clearance has been performed. Otherwise MEC surface clearance must be performed prior to DGM surveys in those areas.	M
	Heat stress	Monitor for heat stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing impermeable protective clothing. Monitor each other for signs and symptoms of heat stress	M
	The improper handling of instruments can cause strain to workers.	Carry instruments as required by the manufacturer of the instrument. Use straps when provided, and adjust for comfort. Use care when walking so that there are no sudden jerks or missteps that can cause the worker to strain or to lose control of the instrument. Get assistance from other workers if several instruments must be carried.	M
	Using geophysical or positioning instrumentation incorrectly could result in poor data collection that could impact other related tasks following the survey.	Ensure geophysical staff are trained in the proper use and calibration or function-checking of geophysical and positioning equipment. Perform function checks daily and document.	L

AHA #11 – Job/Task: Geophysical Surveys			
Job Steps	**Hazards**	**Controls**	**RAC**
Conduct geophysical surveys using EM 61 or equivalent and global positioning system equipment (continued)	Biological hazards such as insects could cause disease or bites. Poisonous plants.	Use DEET insect repellant as necessary. Avoid contact with poisonous plant materials and check area to see if these plants may be present prior to doing surveys – discuss sighting of poisonous plants with vegetation removal staff. If such plants are present, wear long sleeve shirts and pants. Use an ivy blocker and have appropriate wash solutions available. Refer to Health and Safety Guideline 2-8 in the CRL for details.	M
	Workers could be struck by vehicles in traffic areas.	Wear high-visibility reflective vests. Post an observer, as needed, when using instruments and when workers are occupied with instrumentation. Use traffic control or barricades, if necessary, to keep other vehicles away from workers.	M
	The use of spray paint to mark survey grids could expose employees to paint fumes, or to the paint itself.	Follow manufacturers' instructions on the use of paint. Review the appropriate MSDS. Never point paint toward another person. Do not spray paint into the wind.	M
	Workers could experience eye hazards.	Safety glasses are the minimum required eye protection for all work areas. Locate a portable emergency eye wash at each work area. Flush objects from eyes; do not rub.	M

AHA #6 – Job/Task: Geophysical Surveys		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current State-issued driver's license. Trained and authorized personnel will operate utility vehicles (EM 385-1-1, 18.J.02).	Receipt inspection by SS. Daily vehicle inspection by operator.
Geophysical equipment and positioning units	Only qualified geophysical technicians trained in care and use of this equipment	Receipt inspection by geophysical lead. Daily inspection and any required function and/or QC check by user.
Hand tools	Training in use of power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Remove damaged tools from service and tag out of service or discard.
Industrial hygiene monitoring equipment (e.g., WBGT)	Personnel must be familiar with use/limitations of the monitoring equipment, calibration procedures, and industrial hygiene strategy. SSHO to implement.	Calibration and function checks before use.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
DGM – digital geophysical mapping
DGPS – Differential Global Positioning System
EHS – environmental health and safety
EM – Engineer Manual
MEC – munitions and explosives of concern
MSDS – Material Safety Data Sheet
OSHA – Occupational Safety and Health Administration
RAC – Risk Assessment Code
SSHO – Site Safety and Health Officer
SS – Site Superintendent
WBGT – wet bulb globe temperature
UXO – unexploded ordnance

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

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Activity Hazard Analysis (AHA) #12

Activity/Work Task: Chemical Soil Sampling	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #12 – Activity/Work Task: Chemical Soil Sampling

Job Steps	Hazards	Controls	RAC
1. Operation of heavy equipment, general	Construction equipment could cause injury to samplers if equipment is operating in the vicinity or if soil samples will be obtained from within excavator bucket.	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment	M

AHA #12 – Activity/Work Task: Chemical Soil Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
		and must remain visible to the operator. Wear high visibility safety vest.	
Operation of heavy equipment, general (continued)	Samplers could be struck by or against heavy equipment or trucks.	Establish and follow a traffic control plan. Wear reflective high-visibility vests. Avoid equipment swing areas and designated traffic routes. Make eye contact with operators before approaching equipment or trucks. Understand and review posted hand signals. Use spotters and flaggers, as necessary, to direct trucks, as well as any nearby traffic. Ground workers need to stand a safe distance from the excavator, (especially the counterweight). Maintain eye contact with the operator. Be aware of the swing radius of the excavator.	M
	Noise from operating equipment.	Wear hearing protection when working on the ground in the vicinity of the excavator.	M
2. Setup of sampling equipment and materials at sample location	Contact with heavy equipment around excavation could occur if samples are collected from bucket of excavator	Heavy equipment will be idled or shut down with bucket on the ground prior to entry to collect soil from bucket. Make eye contact with operator.	M
	Fugitive dust during soil handling	Dust suppression is available in the form of a water truck with spray/mist capability in and around excavations and soil handling operations. Follow the Dust Control Plan.	L
	Ergonomic hazards such as sprains, strains, or back injury from lifting or repetitive actions	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist and turn while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some workers) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task.	M
	Exposure to poison ivy or oak if vegetation is present in sampling area.	As area is inspected, identify any “suspicious” vegetation that may be poison oak. Mark these areas with warning tape or spray paint. Avoid contact with these plants. Wear long sleeve shirts and pants. Wear disposable gloves Wear an “ivy blocker” and have Technu® or Zanfel post-exposure washing agent available. Refer to Health and Safety Guideline (HSG) 2-8 in the CRL for details.	M
	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for	M

AHA #12 – Activity/Work Task: Chemical Soil Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Setup of sampling equipment and materials at sample location (continued)		flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust on roads and in laydown areas. Follow Dust Control Plan.	
	Improper use of tools could injure workers.	Inspect all tools for damage before use. Do not use damaged tools (mark and tag "out of service"). Select hand tools to minimize following stressors: chronic muscle contraction or steady force; extreme or awkward finger/hand/arm positions; repetitive forceful motions; or excessive gripping, pinching, or pressing with hands and fingers. Wear leather work gloves when using tools consistent with the hazard.	M
	Preservation sample chemicals may be flammable, toxic, or corrosive (acids or bases) and could get on skin or into eyes.	Ensure an MSDS is available and reviewed for any sampling preservation chemicals and that appropriate PPE (e.g., sampling gloves) are worn when using the chemicals. Samplers will be familiar with proper use of the preservative chemical. As sampling will be within an exclusion zone, there is no smoking, chewing gum, eating, etc. within this zone. Wash hands immediately if material gets on skin. Report potential exposure to SSHO. Wear safety glasses with side shields at all times when sampling. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object and flush for full 15 minutes. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	M
	Handling sharp objects or using hand or sample tools or knives could cause cuts, punctures, or scrapes	Wear leather work gloves when handling materials that may be sharp or have sharp edges. Be familiar with the proper use and limitations of hand tools. Report even minor injuries to your supervisor for evaluation. Have a first aid kit available and have a minimum of 2 persons with first aid and CPR training onsite. Never carry a knife in one's pocket. Ensure knives have retractable blades.	M
	Polyethylene sheeting (if placed on ground) can be slippery.	Wear boots with traction. Use caution when maneuvering on or around polyethylene sheeting, especially if sheeting is wet.	L

AHA #12 – Activity/Work Task: Chemical Soil Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Setup of sampling equipment and materials at sample location (continued)	Slips, trips, and falls	Pay attention to where you are walking. Locate and mark surface debris that could present a trip hazard. Store and stage tools and equipment properly and follow good worksite housekeeping practices.	M
	Failure to observe and prepare for encounter with insects or rodents could cause injury to worker.	Observe for insects and rodents. Apply DEET as necessary. Avoid placing hands in concealed areas. Wear protective gloves. Use tools wherever possible to dislodge objects first, before placing hands low to ground to move objects.	M
	Accidental falls into excavation if the area of sampling is around the excavation or trench and it is not properly managed and controlled.	Stay 6 feet away from edge where hazard of 6 feet fall or greater exists (currently excavation depth is anticipated to be up to 5 feet only). Excavation will be safe sloped or barricaded as required and also barricaded when left open and unattended. Barricade open excavations as required by EM 385-1-1, 25.B.01.	M
	Improperly planned and executed entry into excavations can present engulfment or cave-in hazards and confined space hazards	Currently there is no anticipated need to enter any excavation to accomplish the sampling tasks. Sampling will be accomplished without placement of personnel in excavations or trenches that are deeper than 4 feet; however personnel, under oversight of the excavation competent person, may enter shallow excavations less than 4 feet in depth, if required. Entry into excavations that are greater than 4 feet in depth present confined space hazards and would require an update to this AHA as well as implementation of the Confined Space Program requirements, preparation of a site specific confined space entry procedure, and meeting of specific training of personnel and monitoring requirements. If excavations will exceed 5 feet in depth and be entered (currently not anticipated), a written Excavation Plan will be developed in accordance with EM 385 1-1 25.A.01a. The Excavation Competent Person (SSHO) will evaluate excavations and conduct inspections daily based on depth, soil type and conditions, and other factors related to excavation safety.	M
	Cave in of the sidewalls could occur causing sampler to fall or equipment to fall into excavation	Spoil piles will be staged a minimum of 2 feet from the edge of the excavation, 3 feet is preferable. Sampler should stage materials and equipment at more than 3 feet from the excavation edge, even for excavations 4 feet deep or less.	M

AHA #12 – Activity/Work Task: Chemical Soil Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Setup of sampling equipment and materials at sample location (continued)	Inhalation hazards due to potential hazardous materials, including low-level volatile organic compounds in the breathing zone of sampler due to potential soil contamination in some of the sites to be sampled.	The SSHO will monitor the workers breathing zones during excavation and trenching and sampling at sites where volatile organics could be present using a MiniRAE™ or equivalent PID. Action levels in the APP will be used to establish potential for exposure and to prescribe the proper controls. All field data from monitoring will be maintained and recorded. For other potential site contaminants, dust control will be maintained to keep potential exposures below the PEL during soil handling tasks such as excavation and trenching. Follow the Dust Control Plan. Stop operations when winds exceed 25 mph or less if dust emissions cannot be controlled.	M
	Contact with potential contaminants in soil and potential spread of contaminants to other areas during or after sampling	Three zones of control will be established for performing excavations and sampling in contaminated areas (EZ, CRZ, and SZ). Wear PPE specified in the APP under SSHO direction based on potential for contact with contaminated soil at each site and each worker's task. Appropriate PPE may include disposable coveralls, boots with boot covers (or steel to PVC boots), nitrile or latex gloves, safety glasses, and hard hat. Avoid stirring up dust. Control dust generation with light water mist to keep visible dust from being generated. Follow the Dust Control Plan. Appropriate means of decontamination will be provided for samplers exiting the area if boots, gloves, or clothing becomes contaminated with soil. SSHO will determine the appropriate level of decontamination based on site conditions. Workers will keep contact with potentially contaminated soil to a minimum. A hand washing station will be located in the support zone for workers to wash hands before leaving the area to go on break. In addition to workers, any contaminated tools or equipment will also undergo appropriate level of decontamination to prevent the spread of potential contaminants.	L
	Heat Stress	SSHO to monitor for signs and symptoms of heat stress in accordance with EHS 4-6, Temperature Extremes. Heat stress can be exacerbated when wearing chemical protective suits and respirators. Use the buddy system to observe your buddies. Take breaks as required to rest (work/rest schedules) and drink plenty of fluids and electrolytes.	M
	Manually moving sample coolers could	Use proper lifting techniques such as keeping the back straight, lifting	L

AHA #12 – Activity/Work Task: Chemical Soil Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Setup of sampling equipment and materials at sample location (continued)	cause strain	with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. Use hand truck when handling more than one box at a time. Try to pack shipping boxes (sample coolers) so that each box does not exceed 50 pounds. For loads greater than 50 pounds, use two people to carry.	
	Contents of sample containers could leak, causing exposure to worker and possibly to people handling shipping box.	Ensure that each sample container top is securely tightened. Pack each container in a manner to prevent damage to container during handling of shipping box (cooler) and during transportation to the laboratory. Ensure cooler has no drain vent or that drain vent is sealed. Try to avoid use of ice, rather use gel ice packs that do not melt.	L

AHA #12 – Activity/Work Task: Chemical Soil Sampling		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Excavator (as required to collect samples from within excavations	Trained and experienced operators will operate heavy equipment.	Receipt inspection by SS Daily inspection by users/operators. Task observation of operators by SS.
Water Truck (if used)	Trained and experienced operators will operate the water truck.	Receipt inspection by SS Daily inspection by users/operators. Task observation of operators by SS
Geophysical equipment and DGPS units (if used)	Only qualified geophysical technicians trained in care and use of this equipment	Receipt inspection by geophysical lead. Daily inspection and any required function and/or QC check by user.
Monitoring Equipment (e.g. MiniRAE™)	Trained and qualified individuals will operate monitoring equipment either the SSHO or under the supervision of the SSHO	Receipt inspection by SSHO. Daily calibration in accordance with manufacturer specification for all sensors equipped and in use (organic vapors).
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used

Abbreviations and Acronyms:

APP – Accident Prevention Plan
CRZ – Contamination Reduction Zone
EZ – Exclusion Zone
SSHO – Site Safety and Health Officer
SS – Site Superintendent
SZ – Support Zone
PPE – personal protective equipment
PID – photoionization device
SHM – Safety and Health Manager

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

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Activity Hazard Analysis (AHA) #13

Activity/Work Task: Groundwater Sampling	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007	**Severity**	**Probability**
Date Prepared: September, 2013		Frequent / Likely / Occasional / Seldom / Unlikely
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist	Catastrophic	**E / E / H / H / M**
	Critical	**E / H / H / M / L**
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager	Marginal	**H / M / M / L / L**
	Negligible	**M / L / L / L / L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #13 – Activity/Work Task: Groundwater Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Park vehicle at well	Vehicle could hit someone or something	Workers operating company vehicles will have a valid state issued driver's license. Any Commercial Driver's License (CDL) truck and trailers will be operated by CDL qualified drivers. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use parking brake when parked. Use chocks when parked on inclines. Use dedicated spotter and standard hand signals for backing operations. Wear high visibility vest when working around operating vehicle traffic. Coordinate with NTR, Caretaker Site Officer, and Midcoast Redevelopment Reuse Authority as required to identify travel and traffic patterns and to delineate work areas. Wear high visibility vest when working around traffic.	M
2. Unloading sampling equipment and material from vehicle and setting equipment up	Ergonomic hazards such as sprains, strains, or back injury from lifting or repetitive actions	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist and turn while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some folks) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task.	M
	Slips, trips, and falls could lead to injuries	Keep work areas free of debris and equipment in work paths. Follow good housekeeping in work areas. Correct hazards when seen, such as holes or other trip hazards. If they cannot be removed, they must be marked.	M
2. Remove well cover and cap and sample the well	Lifting of well cover could cause back strain	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist and turn while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some folks) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task. Get assistance if cover is too heavy or it is too difficult to handle because cover is wedged or impaired	M
	Cover, if hinged, could fall and cause pinch point or strike worker	If cover is on hinges, ensure that cover is secured in upright position by latching or tie-off to prevent cover from falling on worker.	L
	Improper use of tools could injure workers.	Inspect all tools for damage before use. Do not use damaged tools (mark and tag "out of service"). Select hand tools to minimize following stressors: chronic muscle contraction or steady force; extreme or awkward finger/hand/arm positions; repetitive forceful motions; or excessive gripping, pinching, or pressing with hands and fingers. Wear leather work gloves when using tools consistent with the hazard.	M

AHA #13 – Activity/Work Task: Groundwater Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Remove well cover and cap and sample the well (continued)	Handling sharp objects or using hand tools or knives could cause cuts, punctures, or scrapes	Wear leather work gloves when handling materials that may be sharp or have sharp edges. Be familiar with the proper use and limitations of hand tools. Report even minor injuries to your supervisor for evaluation. Have a first aid kit available and have a minimum of 2 persons with first aid and CPR training onsite. Never carry a knife in one's pocket. Ensure knives have retractable blades.	M
	Worker could be exposed to chemical contaminants when opening well cover, and when measuring depth to water and sampling	SSHO will monitor each well head and sampler breathing zone using a photoionization device (PID) to assess the potential for organic vapors. Action levels as specified in the APP will be used to determine exposure potential. SSHO will document the monitoring. Samplers will establish three zones of control around the work area, including exclusion zone, contamination reduction zone, and support zone. If splash hazards exist, wear goggles and face shield. Keep face away from opening of the well. Wear nitrile gloves when handling sampling equipment. The intent of PPE is to prevent contact with groundwater that may have low levels of tetrachloroethene (although these contaminants are low in concentration, they still can be absorbed by skin or cause irritation to skin). Decontaminate exteriors of sample containers and equipment. Avoid spills. Ensure spill cleanup supplies are available. Have a hand washing station available for use when leaving site for breaks. Doff and properly stow and dispose of used personal protective equipment.	M
	Splash hazards to face and eyes or foreign object in eye.	If splash hazards exist, wear goggles and face shield. Set up portable eyewash for flushing of eye to try to remove object. Use the eyewash for the full 15-minutes, regardless if you feel that the object has been removed. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	M
	Preservation sample chemicals may be flammable, toxic, or corrosive (acids or bases) and could get on skin or into eyes.	Ensure an MSDS is available and reviewed for any sampling preservation chemicals and that appropriate PPE (e.g., sampling gloves) are worn when using the chemicals. Samplers will be familiar with proper use of the preservative chemical. As sampling will be within an exclusion zone, there is no smoking, chewing gum, eating, etc. within this zone. Wash hands immediately if material gets on skin. Report potential exposure to SSHO. Wear safety glasses with side shields at all times when sampling. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object and flush for full 15 minutes. Notify supervisor so eye can be	M

AHA #13 – Activity/Work Task: Groundwater Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Remove well cover and cap and sample the well (continued)		monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	
	Polyethylene sheeting (if placed on ground) can be slippery.	Wear boots with traction. Use caution when maneuvering on or around polyethylene sheeting, especially if sheeting is wet.	L
	Lifting of well cover could cause back strain when covers are replaced. Pinch points when well cover is replaced	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist and turn while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some folks) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task. Get assistance if cover is too heavy or it is too difficult to handle. Keep hands out of pinch points between cover and well casing. Wear leather work gloves.	M
	Manually moving sample coolers could cause strain	Use proper lifting techniques such as keeping the back straight, lifting with legs, limiting twisting, and getting help when moving bulky/heavy materials and equipment. Use hand truck when handling more than one box at a time. Try to pack shipping boxes (sample coolers) so that each box does not exceed 50 pounds. For loads greater than 50 pounds, use two people to carry.	L
	Contents of sample containers could leak, causing exposure to worker and possibly to people handling shipping box.	Ensure that each sample container top is securely tightened. Pack each container in a manner to prevent damage to container during handling of shipping box (cooler) and during transportation to the laboratory. Ensure cooler has no drain vent or that drain vent is sealed. Try to avoid use of ice, rather use gel ice packs that do not melt.	L

AHA #13 – Activity/Work Task: Groundwater Sampling		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current state-issued driver's license.	Daily vehicle inspection by drivers. Receipt inspection by SS.
Sampling equipment	Samplers will be qualified and experienced in use of the equipment and sample pumps (if used) they operate	Daily inspection by sampler.
Monitoring Equipment (e.g. MiniRAE™)	Trained and qualified individuals will operate monitoring equipment either the SSHO or under the supervision of the SSHO	Receipt inspection by SSHO. Daily calibration in accordance with manufacturer specification for all sensors equipped and in use (organic vapors on PID).
Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.

Abbreviations and Acronyms:

APP – Accident Prevention Plan
EHS – Environmental, Health, and Safety
MSDS – Material Safety Data Sheet
NRTL – Nationally Recognized Testing Laboratory
OSHA – Occupational Safety and Health Administration
PID – photoionization detector
NRTL – Nationally Recognized Testing Laboratory
SSHO – Site Safety and Health Officer
SS – Site Superintendent

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #14

Job/Task: Direct Push Soil Boring and Sampling	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine		
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site or electronically for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling

Job Steps	Hazards	Controls	RAC
1. Inspect work areas prior to bringing direct push rig onsite	Workers could be injured by slips, trips, or falls in the area	Work areas will be visually inspected and pre existing slip, trip, and fall hazards will be marked, barricaded, or eliminated as is feasible. Work areas will be kept neat and in an orderly state of housekeeping.	M
	Rig could contact overhead power lines or other structures if present.	Ensure travel route for rig and rig placement location is free from overhead hazards. If overhead hazards do exist, ensure they are marked on drawings and communicated to the driller. Ensure direct push rig does not travel with mast raised. SSHO to work with driller to ensure mast and other equipment maintains adequate clearances at all times if overhead utilities are present and know what the voltage of lines is. The work site and the analysis of the route of travel will be covered at the pre-activity safety briefing along with this activity hazard analysis.	M

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Inspect work areas prior to bringing direct push rig onsite. (continued)	Direct push rig must set up on solid ground and be leveled	Ensure there are no buried structures below the rig and that the rig is able to level and stabilize, including outriggers, to perform the direct push operations at each location	M
	Potential for underground utilities in area of direct push operations	The proposed direct push area will be evaluated through proper utility locates, marking, and geophysical checks to ensure lack of hazardous utilities. Call National One Call: 811. Review facility as-builts and survey site for indications of previous installed utilities.	M
	Improper inspection of rig could cause workers to be exposed to hazards associated with operating and mechanical devices.	The rig and all associated equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. Equipment will be inspected before use and the beginning of each shift. Faulty or unsafe equipment will be tagged and removed from service. No faulty equipment or damaged items will be allowed in the work area. Verify the emergency shutdown system that consists of trip wires located at the right and left rear of the rig (located on each side – one for the driller and one for the driller's helper). Ensure that each wire shuts down the system when the trip wire is pulled or pushed. Inspect the brakes and tire pressure on the direct push rig. Inspect all cables on the rig. Inspect all hydraulic and pneumatic hoses. Ensure outriggers function within full range.	M
2. Direct push operations – set up work area and move rig into position	Failure to set up the work area properly could cause exposure to potential hazards such as electrocution, damaging of underground utilities, or tip-over of rig in unstable soil conditions.	The direct push rig will not be moved into any work area until the work area has been reviewed and the route of travel to any work site has been assessed for hazards (overhead lines, stability of roads and ground). Ensure that outriggers have stable ground in placement. Use cribbing mats as necessary.	M
	Damage to existing utilities in vicinity or contact with utilities. Ensure utility locates are performed.	Personnel will contact a service facilities engineer before working near utilities. (One call- 811 also contacted) Site access is to be provided by client. Ensure that the weight of rig on ground is evenly distributed and is not so heavy as to risk damaging underground lines that may be near the surface. Ensure proper distance from overhead lines.	M

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Direct push operations – set up work area and move rig into position (continued)	Vehicle may move if not properly set up	Use spotter to properly position vehicle. Set brakes and place wheel chocks under front wheels of mobile rig. Extend stabilizer jacks and ensure that footing is sound. Inspect ground to ensure that it can support the weight of the outriggers. Use cribbing in areas where condition of soil is. Ensure vehicle is level to the vertical and horizontal planes.	M
	When raising mast, rig may not install properly due to the condition of rig and connecting cables.	Inspect all components of rig and mast to determine condition. Make all repairs before raising rig.	M
	When raising rig, mast could come in contact with, or close proximity to, overhead power lines, causing electrocution of workers.	Mast and other equipment must be at least 15 feet from any overhead utility lines. Verify the voltage of any overhead power lines. If any lines are above 50 kilovolt (kV), the clearance distance must be greater as required in EM 385 1-1. Do not travel with mast raised.	M
	Worker may become pinned between rig and other truck components or under truck rig if servicing rig from under the truck is required.	When any part of the rig or equipment is in motion, workers will stand a sufficient distance from the moving parts so that the worker is not pinned between the moving parts. Workers will not manually "guide" any moving part of the rig when it is raised up. Workers will not work under the rig or the truck. If work must be done under the truck or rig, the drill crew supervisor will contact the SSHO to ascertain a safe method for lockout of the equipment to ensure that adequate blocking is installed.	M
	High winds could destabilize rig. Mast could act as a conductor during a thunderstorm.	Check weather conditions and forecasts to determine if conditions are acceptable for use of rig. Do not operate the rig if winds exceed manufacturer's recommended tolerances. Never raise a mast in an area where lightning is within 10 miles of rig.	M
	Noise.	Hearing protection will be worn whenever rig is in operation.	M
	Pinch points.	Avoid placing hands in places close to moving machinery. Wear gloves as appropriate.	M
	Traffic in area of drilling.	Wear reflective high visibility safety vests. Barricade and mark drilling sites for visibility.	M
	Hazardous materials drillers use onsite could present hazard to workers using them	All hazardous material that the driller will bring onsite to use for the project (including bentonite) will have an MSDS and inventory will be submitted to the SSHO prior to bringing the material onsite. Crew using	L

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
		any hazardous materials will have had HAZCOM training. Only bring the minimal amount of hazardous material required to do the job onto the site. Provide sufficient PPE to users of the hazardous material as per the MSDS.	
3. Direct Push Operations – start up drill and perform drilling	Pressurized hydraulic lines could rupture, causing release of hot hydraulic fluid. Hot fluid can ignite from contact with engine. Hot fluid can burn workers. Fluid can cause environmental contamination.	Personnel will have been trained in the use of direct push equipment. Inspect all hydraulic lines before placing rig in service. Any damaged hoses or connections must be replaced before unit is used. Immediately shut down the equipment. Do not place body in front of any stream of pressurized fluid. Ensure that first aid kit is readily available to treat injured workers. A spill control kit consisting of shovel, absorbent material, and disposal drum must be available at the drilling location. As quickly as possible, berm the liquid to minimize the area over which the liquid spreads. Manage soil cuttings and fluids in accordance with the Waste Management Plan. Refer to EHS Procedure 6-2 “Drill Rigs” for added safety information.	M
	Contact with or other exposures to potentially contaminated soils and groundwater (contamination is not anticipated at the direct push sites, but is possible.	SSHO to monitor periodically at borehole and worker’s breathing zone for signs of volatile organic vapors using MultiRAE™ PID sensor to ensure worker safety and protection from potential contaminants. If contamination is detected, SSHO will recommend additional levels of protection as required. The APP lists action levels. Soils may contain metal and other contaminants so workers will wear PPE (gloves and coveralls) Do not generate dust. Use dust control techniques such as water mist. Direct push crew will wear goggle and face shield if splash hazards exist and raingear as required to keep potential site contaminants off work clothing. Hand washing facility will be nearby for workers to use before going on break. A contamination reduction zone will be established adjacent to the exclusion zone for decontamination.	M
	Air hoses or hydraulic hoses under pressure could suddenly release and whip and hit workers, causing severe injury.	Do not disconnect air hoses and compressors until hose line has been bled. Visually inspect all connection of any lines under pressure. Use safety clamps (whip checks) to connect each side of connection to the other in the event the connection breaks. (The safety clamps will keep the hoses from whipping under the sudden release of pressure.) Tie back or attach hoses wherever possible to minimize the length of hose that could whip around in the event that there is a sudden release of pressure.	M
	Failure of sample device or direct push rod while under pressure	Ensure appropriate guards are in place and persons are positioned outside of the shields in case of sudden failure while in operation.	M

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Direct Push Operations – start up drill and perform drilling (continued)	Strains from manually moving materials, equipment, and drums.	Personnel will be directed to use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help in moving bulky or heavy materials and equipment. Mechanical equipment will be used as much as possible. Use care when handling augers or drill rods. Avoid standing under any load. Get help for lifting any item that weighs 50 pounds or more.	M
	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust.	M
	The mast could be used to lift other objects as it is being raised, causing potential failure of the mast.	Masts shall be used in a manner specified by the manufacturer and should never be loaded beyond their capacity.	M
	Cold or heat stress and weather hazards	Properly dress for the weather. SSHO to monitor weather and implement heat stress and cold stress controls as specified in the APP. Provide breaks for personnel to get either into cool or warm environment. Encourage a steady work pace. Ensure adequate drinking water is available. Know the signs and symptoms of exposure and keep an eye on your partner. EHS 4-6, Temperature Extremes, will be implemented by the SSHO.	L
	Workers could climb mast and expose themselves to a fall hazard.	Climbing on the mast is not allowed.	M
	Workers could place hands into moving parts of the rig, or loose clothing could become entangled in moving machine parts, both of which could cause injury.	Chains, sprockets, direct push rod assembly and moving parts will be guarded. Workers will not wear loose clothing or any jewelry. Workers will not place their hands or any part of their body between the direct push rod and the drill plate. Workers should never place themselves in a position where they can come in contact with the moving rods. The operator will verbally alert all workers and visually ensure that all workers are clear from dangerous parts of equipment before starting or	M

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling			
Job Steps	**Hazards**	**Controls**	**RAC**
Direct Push Operations – start up drill and perform drilling		engaging equipment. Workers will avoid contact with any moving parts. Means will be provided to guard against employee contact with moving parts, such as setting up a barricade in perimeter of auger or using an electronic brake activated by a presence-sensing device.	
	Workers could injure themselves by cleaning the rods while they are moving	Direct push rods and sampling devices will be cleaned only when they are stopped and in neutral. They will not be restarted until the worker has given a verbal all clear to the operator and the operator has visually determined that the worker is clear of the device. Workers will use only long-handled shovels to remove soil from the direct push rod.	M
	Workers could trip or fall by the borehole.	Cap and flag open boreholes. All open boreholes left unattended will be protected as an open excavation.	M
	Improper IDW management can lead to spills and poor housekeeping	Properly containerize, mark, and label IDW in accordance with the Waste Management Plan so it can be tracked for further sampling and disposal. Keep containers closed unless actively adding waste. Use containers that are in good condition and not rusted, dented, or leaking, with positively closing lids.	L
	Pinch points.	Avoid placing hands close to moving machinery. Wear gloves as appropriate. Keep constantly alert.	M

AHA #14 – Job/Task: Direct Push Soil Boring and Sampling		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current State-issued driver's license.	Receipt inspection by SS Daily vehicle inspection by operator.
Direct Push Rig	Drivers must have current state-issued driver's license. Only trained equipment operators may operate equipment. Qualified operators will be identified upon assignment. All drillers and driller's helpers must have documented training on use of drill rig and associated equipment.	Receipt inspection by equipment supervisor and SSHO. If serviced or repaired, a copy of the certification by the mechanic that the vehicles meet EM 385-1-1 requirements. Daily equipment inspection by operators. An operator's manual for the drill rig must be available at the job site.
Geophysical equipment and DGPS units	Only qualified geophysical technicians trained in care and use of this equipment	Receipt inspection by geophysical lead. Daily inspection and any required function and/or QC check by user.
Hand tools	Training in use of power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Remove damaged tools from service and tag out of service or discard.
Monitoring Equipment (e.g. MiniRAE™)	Trained and qualified individuals will operate monitoring equipment either the SSHO or under the supervision of the SSHO	Receipt inspection by SSHO. Daily calibration in accordance with manufacturer specification for all sensors equipped and in use (organic vapors on PID).
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
DGPS – Differential Global Positioning System
EHS – environmental health and safety
EM – Engineer Manual
HAZCOM – Hazard Communication
IDW – investigation derived waste
MSDS – Material Safety Data Sheet
OSHA – Occupational Safety and Health Administration
PID – photoionization device
RAC – Risk Assessment Code
SSHO – Site Safety and Health Officer
SS – Site Superintendent
QC – quality control
WBGT – wet bulb globe temperature

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #15

Job/Task: Install Monitoring Wells and Injection Points	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site or electronically for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points

Job Steps	Hazards	Controls	RAC
1. Inspect work areas prior to bringing drill rig onsite.	Workers could be injured by slips, trips, or falls in the area	Work areas will be visually inspected and pre existing slip, trip, and fall hazards will be marked, barricaded, or eliminated as is feasible. Work areas will be kept neat and in an orderly state of housekeeping.	M
	Drill rig could contact overhead power lines or other structures if present.	Ensure travel route for rig and rig placement location is free from overhead hazards. If overhead hazards do exist, ensure they are marked on drawings and communicated to the driller. Ensure drill rig does not travel with mast raised. SSHO to work with driller to ensure mast and other equipment maintains adequate clearances at all times if overhead utilities are present and know what the voltage of lines is. The work site and the analysis of the route of travel will be covered at the pre-activity safety briefing along with this activity hazard analysis.	M

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points			
Job Steps	**Hazards**	**Controls**	**RAC**
Inspect work areas prior to bringing drill rig onsite. (continued)	Drill rig must set up on solid ground and be leveled	Ensure there are no buried structures below the rig and that the rig is able to level and stabilize, including outriggers, to perform the drilling at each location	M
	Potential for underground utilities in area of drilling	The proposed drilling area will be evaluated through proper utility locates, marking, and geophysical checks to ensure lack of hazardous utilities. Call National One Call: 811. Review facility as-builts and survey site for indications of previous installed utilities.	M
	Improper inspection of rig could cause workers to be exposed to hazards associated with operating and mechanical devices.	The rig and all associated equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. Equipment will be inspected before use and the beginning of each shift. Faulty or unsafe equipment will be tagged and removed from service. No faulty equipment or damaged items will be allowed in the work area. Verify the emergency shutdown system that consists of trip wires located at the right and left rear of the drill (located on each side – one for the driller and one for the driller's helper). Ensure that each wire shuts down the system when the trip wire is pulled or pushed. Inspect the brakes and tire pressure on the drill rig. Inspect all cables on the rig. Inspect all hydraulic and pneumatic hoses. Ensure outriggers function within full range.	M
2. Drilling operations – set up work area and move rig into position	Failure to set up the work area properly could cause exposure to potential hazards such as electrocution, damaging of underground utilities, or tip-over of rig in unstable soil conditions.	The drilling rig will not be moved into any work area until the work area has been reviewed and the route of travel to any work site has been assessed for hazards (overhead lines, stability of roads and ground).	M
	Damage to existing utilities in vicinity or contact with utilities. Ensure utility locates are performed.	Personnel will contact a service facilities engineer before working near utilities. Site access is to be provided by client. Ensure that the weight of rig on ground is evenly distributed and is not so heavy as to risk damaging underground lines that may be near the surface. Ensure proper distance from overhead lines.	M

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points			
Job Steps	**Hazards**	**Controls**	**RAC**
Drilling operations – set up work area and move rig into position (continued)	Vehicle may move if not properly set up	Use spotter to properly position vehicle. Set brakes and place wheel chocks under front wheels of mobile rig. Extend stabilizer jacks and ensure that footing is sound. Inspect ground to ensure that it can support the weight of the outriggers. Use cribbing in areas where condition of soil is. Ensure vehicle is level to the vertical and horizontal planes.	M
	When raising mast, rig may not install properly due to the condition of rig and connecting cables.	Inspect all components of rig and mast to determine condition. Make all repairs before raising rig.	M
	When raising rig, mast could come in contact with, or close proximity to, overhead power lines, causing electrocution of workers.	Mast and other equipment must be at least 15 feet from any overhead utility lines. Verify the voltage of any overhead power lines. If any lines are above 50 kilovolt (kV), the clearance distance must be greater as required in EM 385 1-1. Do not travel with mast raised.	M
	Worker may become pinned between rig and other truck components or under truck rig if servicing rig from under the truck is required.	When any part of the rig or equipment is in motion, workers will stand a sufficient distance from the moving parts so that the worker is not pinned between the moving parts. Workers will not manually "guide" any moving part of the rig when it is raised up. Workers will not work under the rig or the truck. If work must be done under the truck or rig, the drill crew supervisor will contact the SSHO to ascertain a safe method for lockout of the equipment to ensure that adequate blocking is installed.	M
	High winds could destabilize rig. Mast could act as a conductor during a thunderstorm.	Check weather conditions and forecasts to determine if conditions are acceptable for use of rig. Do not operate the rig if winds exceed manufacturer's recommended tolerances. Never raise a mast in an area where lightning is within 10 miles of rig.	M
	Noise.	Hearing protection will be worn whenever drill rig is in operation.	M
	Pinch points.	Avoid placing hands in places close to moving machinery. Wear gloves as appropriate.	M
	Traffic in area of drilling.	Wear reflective safety vests. Barricade and mark drilling sites for visibility.	M
	Hazardous materials drillers use onsite could present hazard to workers using them	All hazardous material that the driller will bring onsite to use for the project (including bentonite) will have an MSDS and inventory will be submitted to the SSHO prior to bringing the material onsite. Crew using	L

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points			
Job Steps	**Hazards**	**Controls**	**RAC**
Drilling operations – set up work area and move rig into position (continued)		any hazardous materials will have had HAZCOM training. Only bring the minimal amount of hazardous material required to do the job onto the site. Provide sufficient PPE to users of the hazardous material as per the MSDS.	
3. Drilling Operations – start up drill and perform drilling	Pressurized hydraulic lines could rupture, causing release of hot hydraulic fluid. Hot fluid can ignite from contact with engine. Hot fluid can burn workers. Fluid can cause environmental contamination.	Personnel will have been trained in the use of drilling equipment. Inspect all hydraulic lines before placing rig in service. Any damaged hoses or connections must be replaced before unit is used. Immediately shut down the equipment. Do not place body in front of any stream of pressurized fluid. Ensure that first aid kit is readily available to treat injured workers. A spill control kit consisting of shovel, absorbent material, and disposal drum must be available at the drilling location. As quickly as possible, berm the liquid to minimize the area over which the liquid spreads. Manage drill cuttings and fluids in accordance with the Waste Management Plan. Refer to EHS Procedure 6-2 “Drill Rigs” for added safety information.	M
	Contact with or other exposures to potentially contaminated soils and groundwater (contamination is not anticipated at the drill sites, but is possible.	SSHO to monitor periodically at borehole and worker’s breathing zone for signs of volatile organic vapors using MultiRAE™ PID with LEL sensor to ensure worker safety and protection from potential contaminants. If contamination is detected, SSHO will recommend additional levels of protection as required. The APP lists action levels. Drilling crew will wear goggle and face shield if splash hazards exist and raingear as required to keep potential site contaminants off work clothing. Hand washing facility will be nearby for workers to use before going on break. A contamination reduction zone will be established adjacent to the exclusion zone for decontamination.	M
	Air hoses or hydraulic hoses under pressure could suddenly release and whip and hit workers, causing severe injury.	Do not disconnect air hoses and compressors until hose line has been bled. Visually inspect all connection of any lines under pressure. Use safety clamps (whip checks) to connect each side of connection to the other in the event the connection breaks. (The safety clamps will keep the hoses from whipping under the sudden release of pressure.) Tie back or attach hoses wherever possible to minimize the length of hose that could whip around in the event that there is a sudden release of pressure.	M
	Strains from manually moving materials, equipment, and drums.	Personnel will be directed to use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help in moving bulky or heavy materials and equipment. Mechanical equipment will be used as much as possible. Use care when handling augers or drill rods. Avoid standing under any load.	M

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points			
Job Steps	**Hazards**	**Controls**	**RAC**
		Get help for lifting any item that weighs 50 pounds or more.	
Drilling Operations – start up drill and perform drilling (continued)	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust.	M
	The mast could be used to lift other objects as it is being raised, causing potential failure of the mast.	Masts shall be used in a manner specified by the manufacturer and should never be loaded beyond their capacity.	M
	Cold or heat stress and weather hazards	Properly dress for the weather. SSHO to monitor weather and implement heat stress and cold stress controls as specified in the APP. Provide breaks for personnel to get either into cool or warm environment. Encourage a steady work pace. Ensure adequate drinking water is available. Know the signs and symptoms of exposure and keep an eye on your partner. EHS 4-6, Temperature Extremes, will be implemented by the SSHO.	L
	Workers could climb drill mast and expose themselves to a fall hazard.	Climbing on the mast is not allowed.	M
	Workers could place hands into moving parts of the rig, or loose clothing could become entangled in moving machine parts, both of which could cause injury.	Chains, sprockets, and moving parts will be guarded. Workers will not wear loose clothing or any jewelry. Workers will not place their hands or any part of their body between the drill auger or rod and the drill plate. Workers should never place themselves in a position where they can come in contact with the moving drill rods or augers. The operator will verbally alert all workers and visually ensure that all workers are clear from dangerous parts of equipment before starting or engaging equipment. Workers will avoid contact with any moving auger. Means will be provided to guard against employee contact with auger, such as setting up a barricade in perimeter of auger or using an electronic brake activated by a presence-sensing device.	M

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points			
Job Steps	**Hazards**	**Controls**	**RAC**
Drilling Operations – start up drill and perform drilling (continued)	Workers could injure themselves by cleaning the augers while they are rotating.	Augers will be cleaned only when they are stopped and in neutral. They will not be restarted until the worker has given a verbal all clear to the operator and the operator has visually determined that the worker is clear of the auger. Workers will use only long-handled shovels to remove soil from the auger.	M
	Workers could trip or fall by the borehole.	Cap and flag open boreholes. All open boreholes left unattended will be protected as an open excavation.	M
	Improper IDW management can lead to spills and poor housekeeping	Properly containerize, mark, and label IDW in accordance with the Waste Management Plan so it can be tracked for further sampling and disposal. Keep containers closed unless actively adding waste. Use containers that are in good condition and not rusted, dented, or leaking, with positively closing lids.	L
	Pinch points.	Avoid placing hands close to moving machinery. Wear gloves as appropriate. Keep constantly alert.	M

AHA #15 – Job/Task: Install Monitoring Wells and Injection Points		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current State-issued driver's license.	Receipt inspection by SS Daily vehicle inspection by operator.
Drill Rig	Drivers must have current state-issued driver's license. Only trained equipment operators may operate equipment. Qualified operators will be identified upon assignment. All drillers and driller's helpers must have documented training on use of drill rig and associated equipment.	Receipt inspection by equipment supervisor and SSHO. If serviced or repaired, a copy of the certification by the mechanic that the vehicles meet EM 385-1-1 requirements. Daily equipment inspection by operators. An operator's manual for the drill rig must be available at the job site.
Hand tools	Training in use of power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Remove damaged tools from service and tag out of service or discard.
Monitoring Equipment (e.g. MiniRAE™)	Trained and qualified individuals will operate monitoring equipment either the SSHO or under the supervision of the SSHO	Receipt inspection by SSHO. Daily calibration in accordance with manufacturer specification for all sensors equipped and in use (organic vapors on PID).
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
EHS – environmental health and safety
EM – Engineer Manual
HAZCOM – Hazard Communication
IDW – investigation derived waste
MSDS – Material Safety Data Sheet
OSHA – Occupational Safety and Health Administration
PID – photoionization detector
RAC – Risk Assessment Code
SSHO – Site Safety and Health Officer
SS – Site Superintendent
QC – quality control

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #16

Job/Task: Ethyl Lactate Injection	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site or electronically for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #16 – Job/Task: Ethyl Lactate Injection

Job Steps	Hazards	Controls	RAC
1. Pre-survey area that injection trailer will drive over.	Vehicle could run over unstable surface ground or hazards.	Mark all physical hazards. Weight of trailer can be significant; verify stability of all routes of travel.	M
2. Inspect injection trailer, equipment.	Improper inspection of equipment could cause workers to be exposed to hazards associated with operating mechanical devices.	Ensure that the trailer and all associated equipment are inspected by a competent person and that the equipment is in safe operating condition. Inspect equipment, including brakes, tire pressure, cables, and hydraulic and pneumatic hoses, before use and at start of each shift. Tag and remove from service faulty or unsafe equipment. Verify that emergency shutdown systems (at least two) are clearly marked, and all site workers know locations. Verify that shutdown systems work properly when trip wires are pulled or pushed. Operator's manual must be available and reviewed prior to operation.	M

AHA #16 – Job/Task: Ethyl Lactate Injection			
Job Steps	**Hazards**	**Controls**	**RAC**
2. Set up work area and move injection tooling into position.	Failure to review site layout plan could cause exposure to potential hazards such as electrocution, damage to underground utilities, or tipping trailer over in unstable soil conditions.	Do not move injection trailer into any work area until site layout plan has been completed and route of travel to any work site has been assessed for hazards (overhead lines and stability of roads and ground). At the pre-activity safety briefing, discuss site layout plan and analysis of route of travel, along with AHAs. Use a spotter for positioning as necessary. Set brake and place wheel chocks under front wheels of mobile rig. Extend stabilizer jacks and ensure sound footing. Vehicle must be level to vertical and horizontal planes. Do not position wheels (loads) or trailer over manholes, vaults, valve boxes, etc. Do not place trailer within 15 feet of any overhead electrical lines.	M
	Injection tooling could contact overhead lines, including power lines, if it is transported with rig raised, causing electric shock.	Never move the trailer when the mast is extended.	M
	Vehicle may move if not properly set up.	Use spotter to properly position vehicle. Set brakes and place wheel chocks under front wheels of mobile rig. Extend stabilizer jacks, and ensure sound footing. Ensure that ground can support weight of unit and any outriggers. Use cribbing of specified size and strength as required by manufacturer, if necessary. Vehicle must be level to the vertical and horizontal planes.	M
	When positioning injector, injector may not install properly due to the condition of injector and connecting cables.	Inspect all components of injector to determine condition. Make all repairs before position.	M
	When raising injector, mast could come into contact with, or be in close proximity to, overhead power lines causing electrocution of workers.	The mast and other equipment must be at least 15 feet from any overhead utility lines. Verify the voltage of any overhead power lines. If any lines are above 50 kV, the clearance distance must be greater. Refer to EM 385 1-1 for voltages above 50 kV.	M
	Vehicle may move if not properly set up	Use spotter to properly position vehicle. Set brakes and place wheel chocks under front wheels of mobile rig. Extend stabilizer jacks and ensure that footing is sound. Inspect ground to ensure that it can support the weight of the outriggers. Use cribbing in areas where condition of soil is. Ensure vehicle is level to the vertical and horizontal planes.	M
	Workers may become pinned between injector and other truck components, or workers could be pinned under truck injector if injector must be serviced from under the truck.	When any part of the injector or equipment is in motion, workers will stand far enough away from the moving parts so as not to be pinned between them. Workers will not manually guide any moving part of the injector when it is raised up. Workers will not work under the injector or	M

AHA #16 – Job/Task: Ethyl Lactate Injection			
Job Steps	**Hazards**	**Controls**	**RAC**
Set up work area and move injection tooling into position. (continued)		under the trailer. If work must be done under the injector or trailer, the crew supervisor will contact the SHSS to ascertain a safe method for lock-out of the equipment to ensure that adequate blocking is installed.	
	High winds could destabilize equipment. Equipment could act as a conductor during a thunderstorm.	Check weather conditions and forecasts to determine if conditions are acceptable for use of injection equipment. Do not operate the injector if winds exceed manufacturer's recommended tolerances. TtEC policy requires an evaluation anytime wind exceeds 25 miles per hour.	M
	Excessive noise exposure could cause hearing loss.	When necessary, earplugs will be worn.	M
	Workers could be exposed to pinch points.	Avoid placing hands close to moving machinery. Wear gloves, as appropriate.	M
	Noise.	Hearing protection will be worn whenever drill rig is in operation.	M
	Pinch points.	Avoid placing hands in places close to moving machinery. Wear gloves as appropriate.	M
	Traffic in area of injection could injure workers because vehicles fail to see to workers or workers fail to see the vehicles.	Wear high-reflective safety vests. Barricade and mark drilling sites for visibility. Use a flagger, if necessary, to direct traffic away from drilling areas.	M
	Hazardous materials drillers use onsite could present hazard to workers using them	All hazardous material that the driller will bring onsite to use for the project (including bentonite) will have an MSDS and inventory will be submitted to the SSHO prior to bringing the material onsite. Crew using any hazardous materials will have had HAZCOM training. Only bring the minimal amount of hazardous material required to do the job onto the site. Provide sufficient PPE to users of the hazardous material as per the MSDS. Ethyl lactate is a liquid with a flash point of 141° F. Ensure that there are no spark generating equipment or sources of fire and heat. Have spill control materials readily available.	L
3. Startup of injection trailer and perform injection.	Unqualified operators and personnel in area do not have knowledge of hazards.	Ensure that personnel are trained in use of equipment. Ensure that the operator has current certifications to operate the equipment. Ensure that a 1A-10-B:C dry chemical ABC fire extinguisher is readily available. Ensure that a spill-control kit is available at injection location. Ensure that there is a first-aid kit, eyewash, and an emergency air horn nearby.	M
	Pressurized hydraulic lines could rupture, causing release of hot hydraulic fluid. Hot fluid could ignite if contact is made with	Inspect all hydraulic lines before placing rig in service. Any damaged hoses or connections must be replaced before unit is used. Immediately shut down equipment if lines rupture. Ensure that a 20-pound dry	M

AHA #16 – Job/Task: Ethyl Lactate Injection			
Job Steps	**Hazards**	**Controls**	**RAC**
Startup of injection trailer and perform injection. (continued)	an engine. Hot fluid could burn workers. Fluid could cause environmental contamination.	chemical ABC fire extinguisher is readily available. Ensure that a spill-control kit is available at drilling location. If rupture occurs, as quickly as possible, berm the liquid to minimize the area over which the liquid spreads. Ensure that all pressurized lines have whip checks.	
	Contact with or other exposures to potentially contaminated soils and groundwater (tetrachloroethene or benzene at low levels is possible)	SSHO to monitor periodically at borehole and worker's breathing zone for signs of volatile organic vapors using MultiRAE™ PID with LEL sensor to ensure worker safety and protection from potential contaminants. If contamination is detected, SSHO will recommend additional levels of protection as required. The APP lists action levels. Drilling crew will wear goggle and face shield if splash hazards exist and raingear as required to keep potential site contaminants off work clothing. Hand washing facility will be nearby for workers to use before going on break. A contamination reduction zone will be established adjacent to the exclusion zone for decontamination.	M
	Air hoses or hydraulic hoses under pressure could suddenly release and whip and hit workers, causing severe injury.	Do not disconnect air hoses and compressors until hose line has been bled. Visually inspect all connection of any lines under pressure. Use safety clamps (whip checks) to connect each side of connection to the other in the event the connection breaks. (The safety clamps will keep the hoses from whipping under the sudden release of pressure.) Tie back or attach hoses wherever possible to minimize the length of hose that could whip around in the event that there is a sudden release of pressure.	M
	Strains from manually moving materials, equipment, and drums.	Personnel will be directed to use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help in moving bulky or heavy materials and equipment. Mechanical equipment will be used as much as possible. Use care when handling augers or drill rods. Avoid standing under any load. Get help for lifting any item that weighs 50 pounds or more.	M
	Contact with ethyl lactate injection product could cause exposure issues	Review MSDS for injection fluid with all workers. Decontaminate injection implements after use (or cover contaminated parts when moving to the next injection site). Avoid exposure to dust. Use dust control as necessary and possible. Nitrile gloves will be used when handling ethyl lactate or tools contaminated with product. Determine if PPE is contaminated (based on exposure to contaminants). Place contaminated PPE in a separate, properly labeled, container. Discard other PPE as approved by the SSHO. Do not place face or head over hole.	M

AHA #16 – Job/Task: Ethyl Lactate Injection			
Job Steps	**Hazards**	**Controls**	**RAC**
Startup of injection trailer and perform injection. (continued)	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust.	M
	Cold or heat stress and weather hazards	Properly dress for the weather. SSHO to monitor weather and implement heat stress and cold stress controls as specified in the APP. Provide breaks for personnel to get either into cool or warm environment. Encourage a steady work pace. Ensure adequate drinking water is available. Know the signs and symptoms of exposure and keep an eye on your partner. EHS 4-6, Temperature Extremes, will be implemented by the SSHO.	L
	Workers could climb drill mast and expose themselves to a fall hazard.	Climbing on the mast is not allowed.	M
	Workers could trip or fall by the borehole.	Cap and flag open boreholes. All open boreholes left unattended will be protected as an open excavation.	M
	Improper IDW management can lead to spills and poor housekeeping	Properly containerize, mark, and label IDW in accordance with the Waste Management Plan so it can be tracked for further sampling and disposal. Keep containers closed unless actively adding waste. Use containers that are in good condition and not rusted, dented, or leaking, with positively closing lids.	L
	Pinch points.	Avoid placing hands close to moving machinery. Wear gloves as appropriate. Keep constantly alert.	M

AHA #16 – Job/Task: Ethyl Lactate Injection		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current State-issued driver's license.	Receipt inspection by SS Daily vehicle inspection by operator.
Injection trailer	Drivers must have current state-issued driver's license. Only trained equipment operators may operate equipment. Qualified operators will be identified upon assignment. All drillers and driller's helpers must have documented training on use of drill rig and associated equipment.	Receipt inspection by equipment supervisor and SSHO. If serviced or repaired, a copy of the certification by the mechanic that the vehicles meet EM 385-1-1 requirements. Daily equipment inspection by operators. An operator's manual for the drill rig must be available at the job site.
Hand and power tools	Training in use of power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Remove damaged tools from service and tag out of service or discard. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Monitoring Equipment (e.g. MiniRAE™)	Trained and qualified individuals will operate monitoring equipment either the SSHO or under the supervision of the SSHO	Receipt inspection by SSHO. Daily calibration in accordance with manufacturer specification for all sensors equipped and in use (organic vapors on PID).
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
DGPS – Differential Global Positioning System
EHS – environmental health and safety
EM – Engineer Manual
HAZCOM – Hazard Communication
IDW – investigation derived waste
MSDS – Material Safety Data Sheet
NTRL – Nationally Recognized Testing Laboratory
OSHA – Occupational Safety and Health Administration
PID – photoionization device
RAC – Risk Assessment Code
SSHO – Site Safety and Health Officer
SS – Site Superintendent
QC – quality control

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #18

Job/Task: Install multi-layer landfill cap	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**

Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine

Contract Number: N62470-13-D-8007

Date Prepared: September 2013

Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist

Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest. Additional PPE as specified below.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
	General and Specific Hazards and Tasks	*This AHA will be updated as necessary based on the site-specific hazards and tasks that will be performed for installation of the cap based upon the specification and design.*	
1. Establish limits of cap area	Slips, trips, and falls	Pay attention to where you are walking. Locate and mark surface debris that could present a trip hazard. Store and stage tools and equipment properly and follow good worksite housekeeping practices.	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
Establish limits of cap area (continued)	Marking paint can be an inhalation hazard	Review MSDS for spray paint before use. Position upwind when spraying paint to mark limits.	L
	Contact with biting or stinging insects	Workers will apply DEET to work clothing following manufacturer's instructions as a preventative measure for biting insects as required. Workers with allergies will let the SSHO know using the medical data sheet and will carry their own prescription medication as applicable. First aid and medical attention as required.	L
2. Place subgrade soil	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental ground disturbance	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment at a slow enough speed to spread material in layers. Follow the design specifications.	M
	Noise could cause hearing loss while working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
3. Compact subgrade soil	Ground workers could come into contact with operating equipment such as a roller or sheepsfoot roller.	Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental ground disturbance	Workers operating construction equipment will be qualified, experienced, and designated operators. Compacting equipment will have least ground pressure and without vibration will be used to avoid cracking or displacing underlying soils. Follow the design specifications in the Work Plan.	M
	Noise could cause hearing loss while working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
	Equipment rollover potential	Operate safely on inclines. Do not exceed manufacturer's safety guidelines for operation on slopes. Operate up and down slopes. All equipment will have rollover protection systems.	M
4. Place sand venting layer (if required)	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental ground disturbance	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment at a slow enough speed to spread material in layers and provide aggregate trenching for gas venting system but not contact underlying soils. Follow the design specifications in the Work Plan.	M
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
5. Place and assemble collection piping system (if required)	Ground workers could come into contact with operating equipment.	Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Exposure to PVC cement during joining of the piping sections (if PVC cement is used)	Review MSDS with all workers doing this task and wear appropriate PPE including chemical protective gloves. Only use cement in well ventilated outdoor areas and position upwind. Do not leave cap on cement uncovered when not in use.	M
	Improper use of hand tools when cutting and joining PVC sections or moving aggregate around in trenches.	Use the right tool for the job. Inspect tools before use. Do not use defective tools. Workers will be trained in proper tool selection and use.	M
	Improper PPE use could result in cuts and scrapes	Wear leather work gloves when handling PVC ends and when using tools to cut PVC	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
Place and assemble collection piping system (if required) (continued)	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
	Workers could experience strains from manually moving materials and equipment.	Direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift more than 50 pounds alone. Encourage a steady, sustainable work pace. Use equipment as much as possible to maneuver heavy or awkward items.	M
	Slips, trips, and falls from poor housekeeping	All material and scrap will be placed into manageable piles to keep potential trip and fall hazards to a minimum.	M
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
6. Install geosynthetic clay layer (if required)	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental ground disturbance	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment at a slow enough speed to spread material in layers but not contact underlying soils. Follow the design specifications in the Work Plan.	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
7. Compact geosynthetic clay liner	Ground workers could come into contact with operating equipment.	Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental ground disturbance	Workers operating construction equipment will be qualified, experienced, and designated operators. Compacting equipment will have least ground pressure and without vibration will be used to avoid cracking or displacing underlying soils. Follow the design specifications in the Work Plan.	M
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
	Equipment rollover potential	Operate safely on inclines. Do not exceed manufacturer's safety guidelines for operation on slopes. Operate up and down slopes. All equipment will have rollover protection systems.	M
8. Installation of geomembrane barrier	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Workers could experience strains from manually moving materials and equipment.	Direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift more than 50 pounds alone. Encourage a steady, sustainable work pace. Use equipment as much as possible to maneuver heavy or awkward items.	M
	Workers could be crushed by rolls of geomembrane material if loads fall or roll downslope	Experienced personnel will place the geomembrane material. No person will stand below a suspended load or a load that could roll or shift on a slope.	M
	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
Installation of geomembrane barrier (continued)		out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	
	Workers could be injured by high winds of sudden storms.	Ensure that all debris/materials are secured. Shut down operations when wind speed is greater than 25 mph sustained or lesser based on potential hazards (e.g., handling of geomembrane could become difficult) or lightning within 10 miles. Monitor the local weather report daily and as necessary for any severe weather warnings. Know the procedures to follow in the event of severe weather emergencies. Have a lightning detector on hand.	M
	Construction equipment used improperly could lead to accidental ground disturbance or damage to liner	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment carefully and use a dedicated spotter for placement of materials. Follow the design specifications in the Work Plan.	M
	Slips, trips, and falls on geomembrane materials	Geomembrane can be slippery if workers walk on it especially if it is wet. Use caution when walking on slopes and especially when carrying tools as falls with tools can injure the person and could damage the membrane. Limit the amount of walking on this surface. Follow good housekeeping practices with rolls and other materials in the worksite. Ensure that debris and rocks that could trip workers once the cover is placed are removed prior to placement of the liner. Do not place liner over holes and other depression that could create a fall hazard.	M
	Punctures, cuts, scrapes, from cutting geomembrane materials	Wear leather work gloves when handling cutting tools. If knives are used, they will be retractable blade. Never carry a knife in a pocket on one's body. Always cut away from the body.	M
	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M
9. Place double-sided geocomposite layer (if required)	Hoisting and Rigging for unloading of materials or equipment (if used during this AHA)	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M
	Workers could experience strains from manually moving materials and equipment.	Direct personnel to use proper lifting techniques, such as keeping the back straight, lifting with the legs without twisting, and getting help when moving bulky/heavy materials and equipment. Encourage the use of lifting equipment and use of a hand-truck whenever possible. Employees will not lift	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
Place double-sided geocomposite layer (if required)		more than 50 pounds alone. Encourage a steady, sustainable work pace. Use equipment as much as possible to maneuver heavy or awkward items.	
	Workers could be crushed by rolls of geocomposite material if loads fall or roll downslope	Experienced personnel will place the geocomposite material. No person will stand below a suspended load or a load that could roll or shift on a slope.	M
	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Workers could be injured by high winds of sudden storms.	Ensure that all debris/materials are secured. Shut down operations when wind speed is greater than 25 mph sustained or lesser based on potential hazards (e.g., handling of geomembrane could become difficult) or lightning within 10 miles. Monitor the local weather report daily and as necessary for any severe weather warnings. Know the procedures to follow in the event of severe weather emergencies. Have a lightning detector on hand.	M
	Construction equipment used improperly could lead to accidental ground disturbance or damage to liner	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment carefully and use a dedicated spotter for placement of materials. Follow the design specifications in the Work Plan.	M
	Slips, trips, and falls on geocomposite materials	Geocomposite can be slippery if workers walk on it especially if it is wet. Use caution when walking on slopes and especially when carrying tools as falls with tools can injure the person and could damage the membrane. Limit the amount of walking on this surface. Follow good housekeeping practices with rolls and other materials in the worksite.	M
	Punctures, cuts, scrapes, from cutting geocomposite materials	Wear leather work gloves when handling cutting tools. If knives are used, they will be retractable blade. Never carry a knife in a pocket on one's body. Always cut away from the body.	M
	Workers could be exposed to extreme temperatures and sunburn.	Monitor for heat or cold stress in accordance with EHS 4-6, Temperature Extremes. Provide fluids and rest breaks during warm weather, and while wearing protective clothing. Wear broad-spectrum sunscreen lotion of SPF 15 or better.	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
10. Place protective soil cover	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental damage to geomembrane	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment at a slow enough speed to spread material in layers but not contact or damage underlying geomembrane layers. Compacting equipment with least ground pressure and without vibration will be used to avoid cracking or displacing underlying soils. Follow the design specifications.	M
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
11. Compact protective soil cover	Ground workers could come into contact with operating equipment.	Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	M
	Construction equipment used improperly could lead to accidental liner disturbance or tearing	Workers operating construction equipment will be qualified, experienced, and designated operators. Compacting equipment will have least ground pressure and without vibration will be used to avoid cracking or displacing underlying soils or liner material. Follow the design specifications in the Work Plan.	M
	Equipment rollover potential	Operate safely on inclines. Do not exceed manufacturer's safety guidelines for operation on slopes. Operate up and down slopes. All equipment will have rollover protection systems.	M
12. Place and lightly compact vegetative layer	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Workers working around construction equipment will stay	M

AHA # 18 – Job/Task: Install multi-layer landfill cap			
Job Steps	**Hazards**	**Controls**	**RAC**
Place and lightly compact vegetative layer (continued)		out of the swing radius and to enter the swing radius, must make contact with the operator and have operator acknowledgement prior to entry. Only personnel necessary to perform work tasks will be in controlled work zones around heavy equipment and must remain visible to the operator. Wear high-visibility vest when working around construction equipment.	
	Construction equipment used improperly could lead to accidental damage to geomembrane	Workers operating construction equipment will be qualified, experienced, and designated operators. Operate equipment at a slow enough speed to spread material in layers but not contact or damage underlying geomembrane layers. Compacting equipment with least ground pressure and without vibration will be used to avoid cracking or displacing underlying soils. Follow the design specifications in the Work Plan.	M
	Noise could cause hearing loss while using saws or working around operating heavy equipment	Hearing protection is required when sound levels exceed 84 dBA continuously.	M
	Equipment rollover potential	Operate safely on inclines. Do not exceed manufacturer's safety guidelines for operation on slopes. Operate up and down slopes. All equipment will have rollover protection systems.	M
13. Broadcast seed across vegetative layer	Inhalation of fertilizer or contact with fertilizer mixture in seed or lime	Review MSDS with work crew for fertilizer and lime. Wear leather work gloves when handling seed mixture and lime. Avoid inhalation of dust during mixing of seed and fertilizer and avoid skin contact. Brush off material if it gets on you, followed by washing of skin, including arms and hands after use with soap and water. Do not allow lime to become wet or stay on skin as sweat can cause it to hydrate and become caustic, which can cause burns.	M
	Dust or particles, including lime could enter one's eye during broadcasting	Broadcast downwind and never upwind. Wear safety glasses. Locate emergency eyewash in area where this material will be handled. Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt.	M

AHA # 18– Activity/Work Task: Install multi-layer landfill cap		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current state-issued driver's license.	Daily vehicle inspection by drivers. Receipt inspection by SS.
Heavy Equipment	Operators will be qualified and experienced operators for use of the equipment they operate	Receipt inspection by SS. Daily inspection by operator.
Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CA – chemical agent
CIH – Certified Industrial Hygienist
CRL – Corporate Reference Library
EHS – environmental health and safety
EM – Engineer Manual
MEC – munitions and explosives of concern
mph – miles per hour
MPPEH – material potentially presenting an explosives hazard
NTRL – Nationally Recognized Testing Laboratory
OSHA – Occupational Safety and Health Administration
PE – Professional Engineer
PPE – personal protective equipment
PVC – polyvinyl chloride
RAC – Risk Assessment Code
SPF – sun protection factor
SS – Site Superintendent
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
UL – Underwriters Laboratories

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #18

Job/Task: Asphalt Removal	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September 2013		
Prepared by (Name/Title): Jennifer L Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP/SSHP. TtEC Corporate Safety Programs and the EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #18 – Job/Task: Asphalt Removal

Job Steps	Hazards	Controls	RAC
1. Inspect area for utilities and clearance for heavy equipment.	Contact with underground or overhead utilities could cause injury to worker and damage to property or equipment.	Physically verify the location and depth of existing utilities prior to starting excavation through geophysical and utility survey. Protect all existing utilities during excavation. Perform excavation within 4 feet of existing utilities by hand and/or nonaggressive methods. Protect all underground utilities as soil is removed around or under the utility line, if excavation must be done around a utility line. Ensure all utility locate and verifications have been performed including Call Before You Dig.	M

AHA #18 – Job/Task: Asphalt Removal			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Inspect area for utilities and clearance for heavy equipment. (Continued)	Contact with overhead utilities could cause injury to worker and damage to property or equipment.	Ensure that area has been surveyed and that boom of heavy equipment will not contact overhead lines (15-foot clearance minimum required).	
2. Mobilize heavy equipment to site.	Failure to inspect equipment could contribute to equipment failure, causing damage or injury. Weight of equipment could cause collapse of underground structures due to weight of unit.	Ensure that inspection has been performed according to the manufacturer's instructions as well as EM 385-1-. Inspect travel route to ensure that ground can support weight of the equipment. Pay particular attention to system hydraulics.	M
3. Demolish asphalt either by lifting it up in pieces with excavator bucket or use of a breaker attachment.	Employees could be struck by asphalt as it is being broken up.	All employees must wear high-visibility vests. All ground workers must maintain eye contact with operator of equipment. Stay away from area where active breaking is being done.	L
	Radiological materials may be present under asphalt (e.g., in soil) in areas where radiological materials are a concern.	Monitor for radiological materials as required in the Radiation Work Plan and TSPs during removal and excavation of materials. Radiation Safety Officer will coordinate all required radiation surveying in accordance with established procedures for worker protection and surveying for contaminated materials. Follow the procedure in the Dust Control Plan to minimize generation of fugitive dusts.	L
	Chemical contamination may be present under asphalt (e.g., in soil) in areas where contamination exists	Follow the procedure in the Dust Control Plan to minimize generation of fugitive dusts. Review the site chemical hazards that are potentially present in the work area and the SSHO will ensure proper PPE is worn when handling potentially contaminated materials. Observe the underlying soils for signs of discoloration, staining, odor, etc. Take precautions to prevent runoff from exposed soil to adjacent areas with rain.	L
	Breaker attachment could be improperly installed and inadvertently fall off or cause injury or damage.	Ensure that breaker attachment is the equipment manufacturer-approved attachment. Ensure that all retention pins are properly seated and engaged and that all hydraulic hoses are connected properly. Never stand beneath elevated equipment.	M
	Noise from heavy equipment usage could cause hearing loss.	Hearing protection is required when sound levels exceed 84 dBA continuously. Usually this will only be for workers working in unenclosed cabs of heavy equipment or ground workers working near heavy equipment breaking concrete.	L
4. Haul debris off-site or place in stockpile.	Truckers and ground workers could be struck by load as it is loaded.	Prohibit truck drivers from standing near trucks as they are being loaded. Prohibit truck drivers from sitting in the cab of trucks as they are being loaded, unless the truck is equipped with a cab protector	M

AHA #18 – Job/Task: Asphalt Removal			
Job Steps	**Hazards**	**Controls**	**RAC**
Haul debris off-site or place in stockpile. (continued)	Trucks to enter streets and highway with loads could get dust and debris on roads.	Ensure dust generation is minimal by dropping the load as close as possible to the top of the truck. Use dust-control measures. Brush off trucks before they enter a paved road. Tarp truck or load truck in such a manner to prevent dirt and dust from getting onto paved roads. Ensure that debris will not come off truck as the material is transported.	

AHA #18 – Job/Task: Asphalt Removal		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Vehicles, pickup trucks	Only licensed personnel will operate vehicles.	Daily and before use. Use equipment safety checklist.
Heavy equipment (backhoe, excavator, dump trucks with breaker attachment)	Only qualified persons may operate equipment. Operators' manual must be reviewed and be available on-site.	Daily and before use. Use inspection checklists.
Equipment, power and hand tools	Specific training for power tools and hand tools will be provided.	Inspect all equipment and tools before each use. Inspect hand tools before each use following manufacturers' requirements. Discard or tag out-of-service any tools that are damaged. Do not use power tools that have frayed cords or exposed wiring. All power tools must have a grounding plug or be double-insulated. GFCI use for generator and any cords used. The SSHO will inspect electrical cords and connections daily. Inspect tools and power cords to ensure they are listed by a NRTL.
Radiological survey instruments	Survey instruments must be calibrated and checked.	Daily or before use.
First-aid kits and other emergency equipment	Personnel require training to use emergency equipment and first-aid kits. These personnel must be familiar with this plan, the inspection criteria for the equipment, and how the equipment is used. The SSHO provides direction on the use of the equipment.	Initially and at least weekly thereafter or after the kit is used and restocked (29 CFR 1926.50[d][2]). First-aid kits must be filled per EM 385-1-1 Table 3-1. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CFR – *Code of Federal Regulations*
CIH – Certified Industrial Hygienist
CSP – Certified Safety Professional
dBA – decibels, A-scale
EM – Engineer Manual
GFCI – ground fault circuit interrupter
mg/m^3 – milligrams per cubic meter
NTRL – Nationally Recognized Testing Laboratory
PPE – personal protective equipment
RAC – Risk Assessment Code
SSHO – Site Safety and Health Officer

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #19

Job/Task: Concrete Scabbling for Radiological Hotspot Removal	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**

Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine

Contract Number: N62470-13-D-8007

Date Prepared: September, 2013

Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist

Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP/SSHP. TtEC Corporate Safety Programs and the EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

E = Extremely High Risk

H = High Risk

M = Moderate Risk

L = Low Risk

AHA #19 – Job/Task: Concrete Scabbling for Radiological Hotspot Removal			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Use air powered scabbler to remove radiological surface contamination on concrete.	Silica dust and respirable dusts could be generated and inhaled by workers. Concrete is caustic when wet or when inhaled and mixed with moisture in lungs, eyes, mouth, nose, and throat or when mixed with sweat on the body.	Air handling equipment to remove and evacuate dusts and/or wetting of concrete when cutting will be engineering controls used to control dusts during concrete scabbling indoors. Workers will wear Tyvek suits for protection of clothing and skin from concrete dust. Respiratory protection decisions will be based on results of dust monitoring by SSHO in accordance with the APP monitoring plan. Use a respirable aerosol to monitor for respirable dust. If dust level exceeds 0.1 mg/m^3 a full face respirator with P-100 cartridges will be used,	M
	Scabbler could cause injury to workers if improperly used and noise.	Use in accordance with manufacturer instructions and train employees on proper use of this equipment. Often workers using scabblers are too close to the work (especially their face is too close), so workers need to stand back as the tool is used. This should be addressed in the operator's manual. Hearing protection is required when sound levels exceed 84 dBA continuously. Working indoors with or around scabbler equipment requires use of hearing protection.	M
	Flying debris or tool parts such as hoses could strike worker in face, eyes, or body.	Wear safety goggles and face shield when cutting or jackhammering on concrete (dust and debris protection for eyes and face). Wear hard hat. Use tool in accordance with manufacturer instructions. Couple and secure air hoses so they do not uncouple and strike worker. All guards on equipment must be in place and used properly. Workers shall be trained in use of equipment and power tools.	M
	Contact with underground utilities below or in channels within the concrete could cause injury to personnel.	Physically verify the location and depth of existing utilities prior to starting excavation through geophysical and utility survey. Protect all existing utilities during excavation. Perform excavation within 4 feet of existing utilities by hand and/or nonaggressive methods. Protect all underground utilities as soil is removed around or under the utility line, if excavation must be done around a utility line. All power lines and other utilities should be disconnected (or blocked out, locked out and tagged before work begins	M

AHA #19 – Job/Task: Concrete Scabbling for Radiological Hotspot Removal		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Equipment (including scabbler), power and hand tools	Specific training for power tools and hand tools will be provided.	Inspect all equipment and tools before each use. Inspect hand tools before each use following manufacturers' requirements. Discard or tag out-of-service any tools that are damaged. Do not use power tools that have frayed cords or exposed wiring. All power tools must have a grounding plug or be double-insulated. GFCI use for generator and any cords used. The SSHO will inspect electrical cords and connections daily. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords
Monitoring equipment such as MiniRam for total dust monitoring	Specific training and experience in use and calibration of equipment. Designation by SHM for such duties. SSHO is qualified.	Calibrate meters following manufacturer instructions and follow monitoring plan in the APP. Stop operations and re-evaluate if thresholds are exceeded. Notify SHM for upgrades or downgrades to PPE and respiratory protection.
Radiological survey instruments	Survey instruments must be calibrated and checked by qualified RSTs.	Daily or before use as specified in Radiological Work Plans.
First-aid kits and other emergency equipment	Personnel require training to use emergency equipment and first-aid kits. These personnel must be familiar with this plan, the inspection criteria for the equipment, and how the equipment is used. The SSHO provides direction on the use of the equipment.	Initially and at least weekly thereafter or after the kit is used and restocked (29 CFR 1926.50[d][2]). First-aid kits must be filled per EM 385-1-1 Table 3-1. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
APP – Accident Prevention Plan
CFR – *Code of Federal Regulations*
CIH – Certified Industrial Hygienist
CSP – Certified Safety Professional
CTO – Contract Task Order
dBA – decibels, A-scale
EM – Engineer Manual
GFCI – ground fault circuit interrupter
mg/m^3 – milligrams per cubic meter
PPE – personal protective equipment
RAC – Risk Assessment Code
SSHO – Site Safety and Health Officer
NRTL – Nationally Recognized Testing Laboratory
TtEC – Tetra Tech EC, Inc.

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #20

Activity/Work Task: Demobilization and Waste Disposal	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007		
Date Prepared: September, 2013		
Prepared by: Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist		
Reviewed by: Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager		

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Notes: (Field Notes, Review Comments, etc.)

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP. EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Personal Protective Equipment for this AHA will consist of hard hat (when overhead safety hazards exist), safety toed boots, safety glasses with side shields, standard work uniform (long pants, ¾ length sleeve shirt). Hearing protection (as required). Work gloves worn when indicated, High visibility safety vest.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart
E = Extremely High Risk
H = High Risk
M = Moderate Risk
L = Low Risk

AHA #20 – Activity/Work Task: Demobilization and Waste Disposal			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Staging materials and loading materials for transfer offsite including removal of site trailer	Vehicle operations from Tt or other tenant operations and delivery vendors could cause injury to personnel or others onsite	Workers operating company vehicles will have a valid state issued driver's license. Any Commercial Driver's License (CDL) truck and trailers will be operated by CDL qualified drivers. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use parking brake when parked. Use chocks when parked on inclines. Use dedicated spotter and standard hand signals for backing operations. Wear high visibility vest when working around operating vehicle traffic. Coordinate with NTR, Caretaker Site Officer, and the Midcoast Redevelopment Reuse Authority as required to identify travel and traffic patterns. Wear high visibility vests when working around traffic.	M
	Construction equipment could cause injury to personnel	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Wear high visibility vests when working around construction equipment.	M
	Ergonomic hazards such as sprains, strains, or back injury from lifting or repetitive actions	Use mechanical lifting equipment or team lift when possible rather than by hand and tool methods. Do not bend at the waist, bend at the knees. Do not twist at the waist. Use your feet to turn while lifting. Keep the load centered and close to body. Do not lift more than 50 pounds (may be lesser for some folks) alone. Rotate tasks and take breaks when performing repetitive tasks and try to find the best position possible to perform the task.	M
	Slips, trips, and falls could lead to injuries	Keep work areas free of debris and equipment in work paths during the move. Follow good housekeeping in work areas. Correct hazards when seen, such as holes or other trip hazards. If they cannot be removed, they must be marked. When trailer is removed, stairs should not be removed until the last of personnel are done inside the trailer. As soon as trailer is removed, trailer tie-down anchors and leftover cribbing will be removed from the ground and the ground smoothed to match existing grade.	M
	Electrical hazards during disconnect from trailer power and other use of cords or generators for temporary power.	All electrical disconnects will be done by a certified electrician. Ensure that power cords are inspected and in good condition for use, that GFCIs are used properly, and portable generators are not overloaded. Ensure any power tools used are in good working condition and have third prong on cord or are double insulated. All live work requires arc flash protection. Contact SHM if there will be any live work so that additional precautions can be identified and incorporated into this AHA.	M
	Pinch points and crush hazards	The site trailer cribbing will be removed without placement of personnel under the trailer when trailer is elevated. Trailer will be lowered when no persons have	M

AHA #20 – Activity/Work Task: Demobilization and Waste Disposal			
Job Steps	**Hazards**	**Controls**	**RAC**
Staging materials and loading materials for transfer offsite including removal of site trailer (continued)		body parts or hands near trailer. When trailer is back on wheels, wheels will be chocked until it is time to move trailer.	
	Handling sharp objects or using hand tools could cause cuts, punctures, or scrapes	Wear leather work gloves when handling materials that may be sharp or have sharp edges. Be familiar with the proper use and limitations of hand tools. Report even minor injuries to your supervisor for evaluation. Have a first aid kit available and have a minimum of 2 persons with first aid and CPR training onsite. Use care in removing tie-down straps as they are sharp and when cut can "spring" out and injure a worker.	M
	Construction equipment could strike overhead power lines	The travel path, staging, and other locations where mobile equipment with booms will be operated will be evaluated for potential overhead lines. The SSHO will establish the required clearance distances that are required (minimum of 15 feet) and areas to be avoided will be marked and communicated. The voltage of power lines must be known to determine if greater than 15 feet clearance is required.	M
	Cold or heat stress and weather hazards	Properly dress for the weather. SSHO to monitor weather and implement heat stress and cold stress controls as specified in the APP and implement EHS 4-6, Temperature Extremes during the project. Provide breaks for personnel to get either into cool or warm environment. Encourage a steady work pace. Ensure adequate drinking water is available. Know the signs and symptoms of exposure and keep an eye on your partner.	L
	Eye injuries from dust or debris or struck by	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Wash eye for 15 minutes. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust.	M
	Wind could make materials hard to handle	Avoid handling materials that could respond like a sail (e.g., plywood) in wind. Position vehicles so that doors do not get caught by the wind when opened. Hang onto door when opening and closing in high wind. Open and close doors carefully in the wind and only open one door at a time. Evaluate shutting down tasks if winds exceed 25 mph and are presenting a hazard.	L
	Hoisting and Rigging for unloading of materials or equipment (if used during this	Refer to AHA 2 – Hoisting and Rigging, which will be followed in addition to this AHA.	M

AHA #20 – Activity/Work Task: Demobilization and Waste Disposal			
Job Steps	**Hazards**	**Controls**	**RAC**
Staging materials and loading materials for transfer offsite including removal of site trailer (continued)	AHA)		
	Noise could cause hearing loss and make it hard to communicate	Hearing protection is required when sound levels exceed 84 dBA continuously. This rule applies to personnel working near or on heavy equipment and any other sources of loud noise.	M
	Lack of proper illumination in work areas could cause hazards to not be recognized or eye strain	During demobilization, if lighting has been disconnected, temporary lighting such as portable bright lumen flashlights may be necessary if ambient lighting is not sufficient, especially within the trailer. Work during daylight hours or provide adequate lighting source for work areas to minimize potential for injuries to occur from lack of visibility.	L
	Fall hazards (falls from heights of 6 feet or greater)	No person will climb upon any equipment, shipping container, building, trailer, etc. where there is exposure to a fall of 6 feet or greater (no proper guarding and rails in place) without a means of fall protection designed by a Competent Person. At the present time, there is no fall protection plan in place to cover this task. A fall protection plan would need to be developed and implemented prior to doing the activity.	M
	Head injuries from struck by or falling objects	Wear hard hat when overhead hazards exist and when working in areas with operating construction equipment.	M
2. Load out of waste debris	Construction equipment could strike overhead power lines	The travel path, staging, and other locations where mobile equipment with booms will be operated will be evaluated for potential overhead lines. The SSHO will establish the required clearance distances that are required and areas to be avoided will be marked and communicated.	M
	Eye injuries from dust or debris or struck by objects, fugitive dusts	Wear safety glasses with side shields at all times when working. If something enters the eye, do not rub. Set up portable eyewash for flushing of eye to try to remove object. Notify supervisor so eye can be monitored. If object still irritates or stays in the eye, seek medical attention as soon as possible. Follow up with eye exam is recommended any time an object gets into an eye since it is necessary to ensure object does not remain, even if it cannot be felt. To keep dust down, travel at slower speeds on unpaved roads and laydown areas. If required, water mist can be used to control dust. Truckloads must be tarped before leaving the site.	L
	Fall hazards (falls from truck or equipment)	No person will climb upon any equipment or up on or near dump truck bed where there are no hand rails or ladder. Tarping will be done via mechanical tarp deployers on the truck rather than by operator climbing up on loads.	M
	Construction equipment and trucks could cause injury to	Workers operating construction equipment will be qualified and designated operators. Operate at safe speeds and obey local traffic speeds and rules.	M

AHA #20 – Activity/Work Task: Demobilization and Waste Disposal			
Job Steps	**Hazards**	**Controls**	**RAC**
Load out of waste debris (continued)	personnel	Wear seat belt while seated. Use dedicated spotter and standard hand signals for backing operations. Construction equipment will have backup alarms installed. Wear high visibility vest when working around construction equipment and vehicles.	
	Vehicle operations from Tt or other tenant operations and dump trucks could cause injury to personnel or others onsite	Workers operating company vehicles will have a valid state issued driver's license. Any Commercial Driver's License (CDL) truck and trailers will be operated by CDL qualified drivers. Operate at safe speeds and obey local traffic speeds and rules. Wear seat belt while seated. Use parking brake when parked. Use chocks when parked on inclines. Use dedicated spotter and standard hand signals for backing operations. Wear high visibility vest when working around operating vehicle traffic. Coordinate with NTR, Caretaker Site Officer, and the Midcoast Redevelopment Reuse Authority as required to identify travel and traffic patterns. Wear high visibility vests when working around traffic.	M
3. Waste transport and disposal	Improper loading or securing of loads could lead to spill, damage, or injury	The transporter picking up the waste will be contacted to waste containers provided are proper for the site wastes. Loose loads will be covered before leaving the site.	M
	Improper disposal of waste.	TtEC and subcontractor personnel will not sign manifests unless contractually designated to do so. All project wastes are anticipated to be nonhazardous wastes but must be properly characterized for disposal and manifested to correct facility. Navy representative signs all waste documentation.	L

AHA #20 – Activity/Work Task: Demobilization and Waste Disposal		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Site vehicles	Drivers must have current state-issued driver's license.	Daily vehicle inspection by drivers. Receipt inspection by SS.
Heavy Equipment	Operators will be qualified and experienced operators for use of the equipment they operate	Receipt inspection by SS. Daily inspection by operator.
Hand and power tools	Training in use of hand and power tools by the SSHO or designee and review of operating manual. Use proper hand tool for the task.	Daily inspection by users/operators. Inspect tools and power cords to ensure they are listed by a NRTL. Inspect for damage to tool and to cords.
Fire extinguishers	Fire Extinguisher Training including use/limitations.	At least monthly by SSHO or designee.
First aid kits and other emergency equipment	Use of emergency equipment/first aid kits must be done by personnel familiar with this plan; use and inspection criteria of the equipment, and what the equipment is used for, are by or under direction of the SSHO.	Initially and at least weekly thereafter or after use for restocking. Eyewashes inspected weekly. Potable water changed weekly unless a preservative solution is used.

Abbreviations and Acronyms:

APP – Accident Prevention Plan
EHS – Environmental, Health, and Safety
MSDS – Material Safety Data Sheet
OSHA – Occupational Safety and Health Administration
NRTL – Nationally Recognized Testing Laboratory
SSHO – Site Safety and Health Officer
SS – Site Superintendent

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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Activity Hazard Analysis (AHA) #21

Job/Task: Use of Self-Propelled Elevating Work Platform (EWP)	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
Project Location: Remediation of Quarry, Building 7/10, Site 1/3 Landfill, and Radiological Remediation/Assessment at NAS Brunswick, Maine	**Risk Assessment Code (RAC) Matrix**	
Contract Number: N62470-13-D-8007	**Severity**	**Probability**
Date Prepared: November 2013		Frequent / Likely / Occasional / Seldom / Unlikely
Prepared by (Name/Title): Jennifer L. Peters, Sr. Environmental, Health, and Safety Specialist	Catastrophic	**E** / **E** / **H** / **H** / **M**
	Critical	**E** / **H** / **H** / **M** / **L**
Reviewed by (Name/Title): Roger Margotto, CIH, CSP, CHMM, Safety and Health Manager	Marginal	**H** / **M** / **M** / **L** / **L**
	Negligible	**M** / **L** / **L** / **L** / **L**

Notes: (Field Notes, Review Comments, etc.)

A self-propelled elevating work platform (TBD) will be used to access points at heights above ground level. The machine will meet ANSI specifications, and will be inspected and operated as specified in the manufacturer's operating instructions. All workers must have a certificate of training documenting that they have received training in the use of the equipment and that they meet requirements for the use of the equipment. The certificate is normally signed by the supervisor or project manager as required by OSHA.

In addition to the information listed in this AHA, all field personnel must review and be familiar with all provisions of the approved APP/SSHP. TtEC Corporate Safety Programs and the EM 385-1-1 will also be available on-site for review of specific materials and mitigation measures.

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (see above).

"Probability" is the likelihood to cause an incident, near miss, or accident and is identified as Frequent, Likely, Occasional, Seldom, or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and is identified as Catastrophic, Critical, Marginal, or Negligible.

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on the AHA. Annotate the overall highest RAC at the top of the AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

AHA #21 – Job/Task: Use of Self-Propelled Elevating Work Platform (EWP)			
Job Steps	**Hazards**	**Controls**	**RAC**
1. Inspect elevating work platform.	Failure to inspect properly could cause workers to use a defective unit causing injury to workers and possible damage to the equipment and nearby property.	The competent person (TBD) and the trained equipment operator will inspect the unit when it arrives on-site. Be sure to notify the NTR/RPM in advance of the estimated day and time of arrival. Inspect unit and perform a function test each day before use by following the manufacturer's pre-start inspection procedure. Use a form provided by the manufacturer or use a specific inspection form created for this project to document inspection.	L
2. Climb onto elevating work platform.	Worker could fall while climbing the unit. Worker could hit head on top rail as gate rail is lifted to crawl under top rail to gain access.	Normally workers enter the platform when it is positioned on the ground. Otherwise, follow manufacturer's instructions. Ensure EWP is on a firm, level surface. Use equipment footholds and handholds provided for safe access. Ensure footholds are kept free of mud or debris that could create a slip hazard. Do not carry materials since three points of contact must be made while climbing. Use one hand to hold rail up while crawling under rail gate. Wear hard hat. Wear work gloves to protect from pinch points. Ensure rails are closed and locked before raising or operating platform.	M
3. Carry and place needed work items and tools on platform.	Materials could be heavy, causing injury to worker when lifting. Weight of workers plus materials could exceed capacity of platform.	Workers will not lift loads heavier than 50 pounds without assistance. Ensure the rated capacity of the platform is not exceeded (stamped on plate on platform). Evenly distribute weight on work platform.	L
4. Position elevating work platform.	Unit could come in contact with overhead obstructions, such as nearby building parts, power lines, and communication lines. Equipment could tip over due to uneven ground, holes, or obstacles.	Inspect area before positioning the unit. Only position it on firm, level ground. Survey the work area according to EM 385-1-1 22.L.05(a) including checking for soft or unstable ground areas, drop-offs, holes, bumps, floor or ground obstructions.. Observe for overhead hazards, obstacles, uneven ground, and depressions. The expected path of travel of the EWP will be inspected by an engineer to evaluate stability of the ground and any other features (such as vault covers, manholes, buried features such as pipes, etc.). Identify all overhead lines. Know the voltages and heights of each line. Boom and/or the work platform must be a minimum of 15 feet from any line for voltages less than 200 kV. For voltages higher than 200 kV, consult EM 385-1-1, Table 11-1. Follow the manufacturer instructions for locking wheels to ensure the unit will not move once positioned.	M
5. Connect lanyard to full-body harness and to designated anchorage point inside work platform.	Failure to connect lanyard could cause worker to fall out of platform during use. Lanyard must by 12-foot free fall (FF) if anchorage point is below the dorsal D-ring.	The SSHO or other competent person will verify that each worker is wearing a full-body harness and that the lanyard connections are made before allowing the unit to be raised. The connection is made on the D-ring on the back of the full-body harness and the anchor point inside the platform. The anchor point is designated by the manufacturer. The anchor point is never the guardrail. Supervisors will monitor compliance throughout the day. The recommended	M

AHA #21 – Job/Task: Use of Self-Propelled Elevating Work Platform (EWP)			
Job Steps	**Hazards**	**Controls**	**RAC**
		approved lanyard is a self-retracting lifeline that does not allow a fall of more than 2-feet	
6. Operate platform.		Follow operating instructions. Supervisor review of operation. Ensure training of operators. Ensure that assigned ground person (likely the competent person or a supervisor) is also trained in operating the platform in the event the ground person has to use the controls on the ground to lower a unit that an operator may not be able to lower (due to equipment malfunction or operator injury).	M
7. Test operation of elevating work platform.	Failure to test platform before use could cause workers to be injured by malfunctioning equipment.	Follow manufacturer's operating instructions. Operator's manual must be available and on-site. At least one worker will be on the ground.	M
8. Raise platform.	Failure to clear above, on sides, and bottom of platform when raising, lowering, swinging, and telescoping could cause injury to worker, damage to platform, or other property. Wind can destabilize platform, especially at heights.	Always check clearances at all times. Communicate with ground supervisor. Do not operate EWPs in winds that equal or exceed 20 mph. Refer to operator's manual for wind limitations. Never place yourself between the platform rails and any overhead or side hazards.	M
9. Communicate with ground supervisor during elevation, moving, or lowering platform.	Failure to communicate with ground supervisor could cause lift to hit obstructions, other object, or people.	Verify that radios between ground supervisor and person on platform function before using platform. Supervisor must authorize move of platform on ground before equipment moves on ground.	M
10. Move elevating work platform.	Obstructions around machine and overhead. Uneven ground, holes, persons on ground.	Follow operating instructions. The manufacturer of the EWPs allows the unit to be moved with personnel in platform as long as boom is lowered and over the rear (drive) axle in line with direction of travel. Maintain communications with a ground supervisor.	M
11. Lower elevating work platform.	Could crush nearby workers or hit objects placed in area after machine was positioned.	Always keep the area under the machine and within 6 feet of the machine clear of people and objects.	L
12. Work from platform for radiological survey.	Workers may want to reach out or climb rails to gain access to points along the roof. Workers may attempt to leave platform to transfer to roof or another platform.	Workers must keep feet flat on platform; workers may rest one foot or the other on the toe rail when using the platform for work. However, workers must have both feet flat inside the platform whenever the platform or the unit is moved. Workers will not climb on rails. Workers will not use any ladders, step stools, or anything that raises their feet off the platform. Workers will never open the platform gate to transfer to other platforms or the roof, except in an emergency situation where rescue is necessary. In this case, workers will need a second lanyard so they can tie off to a rescue ladder (probably provided by fire rescue squad) before they disconnect from the platform they were on. Note: this is for emergencies only regarding the rescue of a worker where the lift cannot be brought back to ground level.	M

AHA #21 – Job/Task: Use of Self-Propelled Elevating Work Platform (EWP)			
Job Steps	**Hazards**	**Controls**	**RAC**
13. Exit elevating work platform. Remove lanyard. Climb off.	Worker attempts to walk the boom and could fall. Worker could fall off platform if platform is not on ground and lanyard is disconnected prematurely.	Never walk the boom. Use handholds and footholds for proper egress from unit or exit at ground level by placing platform on ground and turning off power to boom before disconnecting lanyard and opening gate.	M
14. Refuel EWP.	Fire, ignition of fuel, burns to workers.	Only refuel in open areas, at least 100 feet from buildings. Refueling will be conducted by the fuel subcontractor directly from their fuel truck. Do not smoke within 50 feet of refueling operations. Ensure a properly rated fire extinguisher is available at the refueling location. The fuel truck is supplied with a fire extinguisher. Call 911 for the fire department should a fire be ignited that cannot be easily extinguished.	M

AHA #21 – Job/Task: Use of Self-Propelled Elevating Work Platform (EWP)		
Equipment to be Used	**Training Requirements/Competent or Qualified Personnel Name(s)**	**Inspection Requirements**
Equipment – Snorkel TB-60 self-propelled elevating work platform, safety lanyard, and full-body harness	Specific training for use of elevating work platform will be provided or worker already has documented training. Workers must have received training on the use of fall protection equipment and how to wear a full body harness and where to connect the safety lanyard. Fall Protection Competent Persons: TBD Fall Protection Qualified Person: Roger Margotto	Inspect equipment before each use following manufacturers' requirements. Document inspection on an inspection form. Inspect lanyard and harness before each use. Ensure that any lanyard or harness that has been subjected to a fall is removed from service after it has been subjected to the stress.

Abbreviations and Acronyms:
AHA – Activity Hazard Analysis
ANSI – American National Standards Institute
APP – Accident Prevention Plan
CIH – Certified Industrial Hygienist
CSP – Certified Safety Professional
CTO – Contract Task Order
EM – Engineer Manual
EWP – elevating work platform
kV – kilovolt
mph – miles per hour
OSHA – Occupational Safety and Health Administration
RAC – Risk Assessment Code
SHM – Safety and Health Manager
SSHO – Site Safety and Health Officer
SSHP – Site Safety and Health Plan
TtEC – Tetra Tech EC, Inc.

AHA Signature Sheet

I have reviewed the above AHA and acknowledge the hazards involved with this work task and the controls that will help to minimize illness or injury during the tasks.

NAME	SIGNATURE	TITLE	DATE
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APPENDIX B

CORPORATE SAFETY AND HEALTH POLICY STATEMENT

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STATEMENT OF SAFETY AND HEALTH POLICY

TtEC is committed to ensuring the health, safety, and well-being of our employees and the communities in which we work, enhancing and protecting the environment, and providing quality services to our clients. Our Environmental, Safety, and Quality (ESQ) Policy provides the framework and underlying principles for our Environmental Management System and is an integral part of how we conduct business.

All TtEC associates have the right to work in a safe and healthful workplace as well as the responsibility to help create and work in a safe and environmentally protective manner:

- We will complete our work successfully, with a great deal of attention to health and safety by:
  - Incorporating pollution prevention and loss prevention principles into our work process.
  - Employing well-trained personnel who understand and have the knowledge to fulfill their ESQ responsibilities.
- We will fully comply with all laws and regulations pertaining to our business, as well as, company policies and procedures.
- We will commit ourselves to complying with the terms of our contracts and to meeting the four project objectives—knowing scope, budget, schedule, and level of quality.
- We will provide the level of quality our internal and external clients expected and pay for and use its attainment as our measure of success.
- We will safely and properly plan our work and work our plan.
- We will communicate and document the execution of our work.
- We will gather data and make decisions inclusively and involve employees and others affected by ESQ decisions inclusively.
- We will dedicate ourselves to continuous improvement by:
  - Establishing and periodically updating ESQ improvement objectives and targets.
  - Recognizing outstanding employee and project ESQ performance.

These commitments are defined in, and are fundamental to, our Client Service Quality®, Do It Right®, and Shared Vision®, Zero Incident Performance® operating philosophies.

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APPENDIX C

EHS PROGRAMS AND PROCEDURES

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Last Revision By: on
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Purpose: The purpose of this procedure is to identify minimum requirements, and to provide guidance to Tetra Tech EC, Inc. (TtEC) project personnel concerning the management of construction tools and equipment on a construction project incorporating the Corporate operating principles of 'Do It Right ®', 'Client Service Quality ®', and 'Shared Vision SM'.

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The purpose of this procedure is to identify minimum requirements, and to provide guidance to Tetra Tech EC, Inc. (TtEC) project personnel concerning the management of construction tools and equipment on a construction project incorporating the Corporate operating principles of 'Do It Right®', 'Client Service Quality®', and 'Shared

Vision^{SM}.

This procedure applies to all TtEC projects that include a construction, O&M, and/or UXO component, including remediation construction.

3.1 Definitions

3.1.1 Construction Equipment

For the purposes of this procedure, construction equipment shall mean heavy equipment, such as excavators, scrapers, off-road trucks, dozers, road graders, compactors, dredges, and cranes; light equipment, such as skid-steers, forklifts, generators, and light plants; and operating systems such as screens, crushers, conveyors, pugmills, mobile treatment plants, and pumps. Any discussion of construction equipment shall be understood not to include cars, pickup trucks, flatbed trucks, etc. registered for use on public roadways, which shall be called vehicles hereinafter. Also for the purposes of this procedure, construction equipment shall be synonymous with Contractor's Equipment, a term also commonly used in the construction industry to designate the types of equipment described above.

3.1.2 Terms

The terms "should, may, and might" as used in statements in this procedure are intended to denote a discretionary consideration; the terms "shall & must" are intended to impose a mandatory requirement. The terms "is, are, & will" as used in statements in this procedure are intended to denote discretionary or mandatory requirements that are addressed in other department/disciplines' procedures. However, nothing contained herein should be interpreted as to prohibit development and approval of project-specific procedures or plans that take exception to mandatory direction presented in this procedure provided that the appropriate level of approval (Executive Vice President of Construction, Business Line Executive Vice President, or the Vice President ESQ Services as appropriate) is obtained for deviations from such requirements.

3.1.3 Tools of the Trade

Specific hand tools and or equipment (e.g., manlifts, trucks, trenchers, and pumps) normally provided by or to workers for the performance of their particular work activity.

3.2 Roles & Responsibilities

3.2.1 Equipment Supervisor

Depending on the project's equipment needs, an individual may be designated as the Equipment Supervisor. Responsibilities of the Equipment Supervisor include:

- Determination of the equipment needs for the project;
- Providing input to the Work Plan concerning equipment;
- Identification of Contract and legal/regulatory requirements for mobilization of equipment on client facilities;
- Submittal of required certifications, inspection reports, and test reports for equipment;
- Arranging for the mobilization/demobilization of equipment in support of the project's schedule, providing required notices, such as mobilization details and dates, and obtaining Contractual or

legally required approvals for mobilization;

- Receipt inspection of equipment arriving at the site, including coordination of any client or third party inspection;
- Coordination with equipment yard personnel or vendors regarding equipment maintenance;
- Ensuring implementation of safe work practices for equipment utilization; and

  Assuring that the return of demobilized equipment is performed in accordance with the terms of the rental/lease/PO agreement and documented correctly, or, for TtEC owned equipment, that the equipment transfer form is completed and coordinated with the Equipment Manager; and
- All other responsibilities as assigned by the Project Manager or Site Superintendent.

3.3 Safe Operation Requirements for Tools

3.3.1 Manual T-Post Drivers

There shall be no use of manual fence post drivers, such as those typically used to drive T-posts, without prior approval from the Project Environmental Safety Manager (PESM) or the Vice President of Construction. Any approval of the use of such a tool shall require the implementation of an Activity Hazard Analysis (AHA) to identify and control the hazards presented by the tool. The AHA shall address appropriate PPE and position for the task in order to avoid injury to the worker.

3.3.2 Tools

The Site Superintendent shall determine the nature and quantity of tools required for the construction effort and shall ensure that adequate tools are provided in support of the schedule.

Tools may be assigned to workers or crews for the duration of their activities and shall be stored in gang boxes or other secured storage areas when not in use.

The Site Superintendent may designate certain tools to be issued from a tool control area on a daily basis. These tools should be signed out at the beginning of the work, returned to the tool control area at the end of the work, and signed back in.

3.3.3 Worker Provided Personal Tools

Workers may be required to provide personal tools of the trade for their particular work. Master mechanics, for example, may be required to provide tools required for repairs and maintenance of construction equipment and vehicles. Requirements for workers to provide their own tools shall be established based on the project requirements and shall be discussed at the Pre-Job Conference to be held in accordance with the requirements of the Labor Relations Guidelines LR-8, Pre-Job Conferences.

Any worker required or offering to provide personal tools shall be required to present a list of personal tools being provided upon reporting to the project site. The Site Superintendent shall inventory the tools against this list for verification that all listed tools have been provided. The list shall then be maintained for use in performing an inventory of the tools when the worker is to leave the site at the end of the worker's assignment and shall be the basis for any claims for loss or damage.

The Site Superintendent shall ensure that any personal tools brought onto the project site receive a safety inspection. The safety inspection shall include as a minimum, the items addressed in Section 3.3.4 of this procedure.

The Site Superintendent should ensure that secure, lockable facilities are provided for the storage of worker provided personal tools.

The worker shall be responsible for notification of lost or damaged tools immediately on discovery of the loss. The limits of the project's liability (if any) for loss or damage to personal tools provided by the workers should

be established at the Pre-Job Conference.

Use of personal tools, other than addressed above, either by manual or by TtEC nonmanual personnel, should not be allowed except as specifically authorized by the Project Manager or Site Superintendent. Project personnel should be notified that TtEC will not be liable for any theft, loss, or damage of unauthorized personal tools on the project site.

3.3.4 Tool Safety Inspection

OSHA 29 CFR Part 1926 Subpart I Tools – Hand and Power provides guidance for tool safety. All tools shall be inspected for the following minimum features by the person using the tool prior to starting the work:

- Proper general condition of tools, electrical cords, and air hoses;
- Presence and serviceability of guards and safety devices;
- Proper electrical grounding or double insulation protection;
- Power tools properly equipped with constant pressure switches;
- Tool retainers installed on pneumatic tools;
- Proper adjustment of the tool; and
- Confirming that the load rating of the tool is sufficient for the work to be performed.

Unsafe tools shall be removed from service and the Site Superintendent advised of the condition for corrective action. An Out of Service tag should be placed on all unsafe or defective tools to prevent their inadvertent use by others. These tools should be physically segregated from the acceptable tools.

3.3.5 Environmental Safety and Quality Policy Implementation

TtEC's Environmental Safety and Quality (ESQ) Policy, as included in Environmental Management System (EMS), shall be considered in the selection and utilization of construction equipment and vehicles for use in association with TtEC's construction projects.

Selection of the construction equipment and vehicles shall consider relevant TtEC-wide and project-specific significant environmental aspects, objectives, and targets, as defined in EMS and as identified by the Project Manager in the project management planning documents required under Project Initiations/Operations Procedure, PO-1, Project Management Planning.

Selection of construction equipment and vehicles may have significant impacts on the environment, either adverse or beneficial. Proper selection of the size and type of equipment and vehicles can reduce the adverse impacts from their operation.

Project procurement practices for construction equipment, parts, supplies, lubricants, and fuel shall be consistent with the principles of pollution prevention as discussed in the EMS and identified through the TIP process using CRL Procedure PO-2, Task Initiation. (For example, consideration should be given to such factors as rent versus buy options, disposable versus reusable filters, recycled versus virgin oils/fluids, recycling versus disposal of spent fluids and used parts, and fuel efficiency and economy of operation.)

Spent fluids, filters, and used parts shall be recycled to the extent practical, or otherwise disposed of in accordance with the environmental compliance elements of the Work Plan or EHS plan.

Proper utilization of construction equipment and vehicles can also reduce adverse impacts on the environment. (For example, it is TtEC's policy to not allow unattended equipment and vehicles to be left with motors running. This is not only a safety consideration; it reduces adverse environmental impacts and is generally cost effective due to reduced fuel consumption.)

3.3.6 Insurance

The Project Manager shall ensure that all construction equipment, including TtEC-owned or rental/lease equipment, is covered by appropriate insurance policies for the intended use of the equipment. Property insurance on construction equipment is normally arranged by TtEC if TtEC bears the risk of loss or if TtEC is required to arrange such insurance. However, all rented/leased construction equipment valued in excess of $100,000, and all cranes regardless of their value shall be reported to the Administration and Compliance Department via the 'Insurance Request for Leased Equipment' (Attachment 5, and available in Tetra Links and from procurement) for specific inclusion under the TtEC property insurance policy. The procurement representative should be contacted to ensure that this occurs in each case. Notification is not required for equipment valued under $100,000 except when the construction equipment provider requests a certificate of insurance be provided, or the equipment is a crane.

The Project Manager, usually through the designated procurement representative, should ensure that duplicate insurance coverage is not provided through the equipment provider since this will increase the rental rates. In those cases where the provider requires insurance certificates to verify coverage by TtEC, the procurement representative should be contacted to obtain the appropriate documentation.

A Vehicle Insurance Form (available from the Vehicle Insurance Coordinator, Tetra Links or procurement) shall be processed and sent to the Vehicle Insurance Coordinator for all vehicles (leased, rented, or owned) which are registered and operated off jobsites on public highways.

3.3.7 Receipt and Inspection

All construction equipment shall be subject to a receipt inspection by a competent person and any Contract or otherwise required additional person(s) prior to acceptance at the project site. The inspections and tests shall be in accordance with the manufacturer's recommendations. Most vendors provide a form for notation of any existing damage to the equipment to be filled out on receipt. The equipment should be inspected carefully to determine its condition, including any damage, missing or non-functional equipment. The agreement should be used as a basis to determine that everything required (e.g., the equipment, its condition, manuals, spares, documentation of inspections, and certifications) has been provided. All discrepancies should be noted on the form. A pre-inspection of the equipment prior to transport to the Project site should be considered. Particular attention shall be given to the following items:

- All safety equipment and its condition;
- Operator (when provided) certification for the equipment;
- Posted operating and safety instructions;
- All pollution control devices and their condition;
- Safe entry and egress, with steps, ladders, handholds, and platforms provided as required, including safe access to perform routine checks, maintenance, and refueling operations;
- Leaking fluids, such as hydraulic oil, engine oil, transmission fluid, and coolant;
- Deteriorated or cracked hydraulic and coolant hoses which could result in leaks or spills; and
- Presence of the manufacturer operation and maintenance manual.

Equipment or vehicles with deficient conditions relating to safety or protection of the environment shall not be placed into service until the deficiencies have been corrected and documented.

All construction equipment shall be subject to an operational check prior to acceptance at the project site. The operational check should verify that the equipment has the capability to function as intended or as required through the full range of its intended use.

Receipt of construction equipment shall be documented; with a copy of the receipt inspection report provided to the Equipment Supervisor and to the equipment purchase order file. Documentation should include

entries for date and time of receipt, condition of equipment, mileage or engine hours at time of receipt, information on next scheduled maintenance, and a record of operating and maintenance manuals received with the equipment. Photographs or a video record of the equipment on receipt should be taken if conditions are noted that would warrant further documentation.

Construction equipment providers will often include terms and conditions on receipt documentation to be signed when construction equipment is delivered to the project site. **Project personnel requested to sign this receipt documentation shall not sign any delivery forms unless authorized to do so be Legal of the Project Manager. Further, if they are required to sign delivery forms, they shall be instructed to cross out all terms and conditions, on both the front and back of the forms, before signing.** Alternately, the person receiving the construction equipment should enter the following statement in the immediate vicinity of their signature: "In lieu of the terms and conditions set forth on this document, the Original Purchase Order (or appropriate form of agreement) terms and conditions apply to the receipt of this item(s)." These actions are necessary to avoid acceptance of additional or different terms and conditions.

Construction equipment delivered to the project site should be accompanied with operating and maintenance manuals. Cranes and lifting equipment shall include certification of satisfactory completion of annual inspection and have load charts posted in the cab. Additionally, some construction equipment may be supplied with common replacement parts, such as filters and belts, and any specialized tools required for routine operation or maintenance. (i.e. forks, buckets, lift arms, and tool carries) These items should be carefully inventoried upon receipt, and documented on the receipt inspection report. Responsibility for protection and maintenance of the construction equipment shall be verified, and all measures necessary to protect the construction equipment from damage or loss will be instituted in accordance with the agreement, operating, and maintenance manuals or other instructions as appropriate.

Disposition requirements for construction equipment found to not be in accordance with the rental/lease/sale agreement when received shall be confirmed with the vendor immediately.

A sample Equipment/Vehicle Inspection Report is included as Attachment 1 to this procedure.

3.3.8 Protection from Environmental Extremes

Consideration shall be given to the environmental conditions to which the construction equipment will be exposed to during its time at the project site or during transportation. The manufacturer's instructions shall be reviewed and followed to ensure adequate protection from damage due to environmental conditions.

Adequate protection to the construction equipment's cooling system shall be verified by ensuring that the appropriate coolant/antifreeze mixture, as recommended by the manufacturer, has been used.

Appropriate procedures for operating or storing construction equipment, such as water treatment systems, shall be developed in accordance with the manufacturer's instructions. Measures such as draining and venting the system, providing auxiliary heat sources (e.g., heat tape), dry storage, shaft rotation, fluid levels, shall be taken to protect construction equipment subject to damage from environmental conditions.

Manufacturer's instructions concerning periodic operation of construction equipment shall be followed.

A means of ensuring that appropriate protective measures are instituted and performed as required should be implemented through the establishment of site procedures, logs, and/or checklists.

3.3.9 Equipment Inspections

All construction equipment shall be inspected daily (when in use) for safety and operability, including manufacturer's recommended daily inspections. The inspection form/checklist should note any deficiencies for correction and serve as documentation of the inspection performance. The Equipment Supervisor shall be notified of any deficiency immediately. A Daily Equipment Inspection form, a sample of which is included as Attachment 2 to this procedure, should be filled out at the start of the shift and provided to the Equipment Supervisor. Other supplemental forms which may be used in conjunction with Attachment 2 are the

equipment specific "Pre-operation Inspection" and/or "Function Tests" forms, which are normally supplied by the equipment manufacturer. This information is usually found in the equipment's Operation Manual.

Government property control procedures usually require the implementation of a vehicle utilization log for vehicles when used on government projects; other projects should also implement a similar system for logging use of these vehicles. The log should be kept in the vehicle and an entry made for each use, including name of the driver, purpose of the trip, starting mileage, ending mileage, fuel purchased, maintenance performed, and any damage incurred. The log sheets should be transmitted as required in the contract documents and the project's documentation plan. Copies of the log sheets will be maintained and filed as discussed in Section 3.3.12 of this procedure.

A separate Daily Equipment Inspection Report should be filled out for each shift if construction equipment is utilized on multiple shifts.

The Equipment Supervisor should use the information on Daily Equipment Inspection forms to schedule any repairs or preventive maintenance required for the equipment. Equipment with missing or defective safety features should not be put in service until repairs have been performed to bring the equipment into compliance with any applicable TtEC EHS Program and/or regulatory requirements.

Implementation of the daily equipment inspections should be the subject of periodic verification inspections performed by the Project Manager, Site Superintendent, and/or the Environmental and Safety Supervisor (ESS). These periodic inspections should include verification that the required maintenance is being performed in a timely manner to ensure that unsafe conditions or impacts to the environment (e.g., spills, releases, and discharges) are not created by delays in correcting deficiencies noted on the Daily Equipment Inspection Forms.

Rigging equipment, wire rope, nylon or KEVLAR slings and chokers shall be inspected by a competent person prior to use each shift; particular attention shall be paid to the rigging condition and presence of load/certification tags.

Cranes (weight handling equipment) shall be subjected to annual and certification inspections per OSHA guidelines. Mobile and crawler cranes shall be inspected on a monthly basis; a sample checklist form is included as Attachment 3 to this procedure.

Construction equipment to be demobilized shall be given a final inspection, similar to the receipt inspection, to identify and document, by means of written description and pictures, the condition of the equipment as it leaves the project site. Where possible, a concurrent inspection by the vendor is preferred. Additionally, some projects, particularly USACE projects, require a certificate of decontamination prior to the equipment leaving the site.

3.3.10 Operator Qualifications

TtEC employees operating vehicles or construction equipment on public rights of way shall be required to have in their possession a valid driver's license appropriate to the location where the item is being operated and containing the appropriate endorsement for the type of vehicle or construction equipment being operated. A Commercial Driver's License (CDL) may be required for operation of some construction equipment on public rights of way, or as a specific requirement of a client's safety program. In addition, individual states may require specific licenses or certifications for operators of certain equipment, such as forklifts, and hoisting equipment. Additionally, the client's safety program may include license or certification requirements for personnel operating equipment on their property. The contract documents should be reviewed carefully to ensure that any such requirements are incorporated into the project's Work Plan or EHS Plan. The Site Superintendent shall verify that the operator possesses the required license(s). Copies of licenses should be maintained in the on-site project employee file.

Any agreements for the rental or lease of vehicles or equipment should be reviewed for any provider's requirements for licensing or certification of operators to ensure that any such requirements are incorporated into the project's Work Plan or EHS Plan.

Operators shall be required to demonstrate their proficiency in operating the construction equipment to be assigned to them prior to being allowed to work. Crane operators shall have qualifications for the type of crane to be operated.

Operator proficiency may be demonstrated through a performance test such as those developed by the International Union of Operating Engineers, or by equipment manufacturers such as Caterpillar. These performance tests include exercises developed to demonstrate operator proficiency in various aspects of equipment operation, including daily operator inspections, ability to follow directions, ability to understand equipment limitations and operating guidelines, safety, and productivity. Also included are checklists that assist an observer in evaluating all of the various aspects of equipment operation. Attachment 4 is an example of Operator/Driver Observation Checklist.

Where it is not possible or practical to demonstrate operator proficiency through a performance test as described above, there should be a period of observation of the operator during the initial period of performance, whether the operator is a new employee or a current employee who is being assigned to a different type of equipment than previously operated on the project site. This observation may be performed by a knowledgeable member of the management team or a designated craft employee such as a foreman or steward. The above referenced checklists could be used for this observation in lieu of the performance test.

3.3.11 Refresher Training and Evaluation

Refresher training in relevant topics shall be provided to Crane (as defined by OSHA 1910.180(a) operators, and Powered Industrial Truck (PIT) as defined by OSHA 1910.178(a)(1) operators prior to be allowed to continue operating when:

The operator has been observed to operate the PIT/Crane in an unsafe manner.
The operator has been involved in an accident or near-miss incident.
The operator has received an evaluation that reveals that the operator is not operating the PIT/Crane safely.
The operator is assigned to operate a different type of PIT/Crane; or
A condition in the workplace changes in a manner that could affect safe operation of the PIT/Crane.

An evaluation of each PIT/Crane operator's performance shall be conducted at least once every three years.

Refresher training in relevant topics shall be provided to all other construction equipment operators when:

The operator has been observed to operate the equipment in an unsafe manner.
The operator has been involved in an accident or near-miss incident.
The operator has received an evaluation that reveals that the operator is not operating the equipment safely.
The operator is assigned to drive a different type of equipment; or
A condition in the workplace changes in a manner that could affect safe operation of the equipment.

The employer shall certify that each operator has been trained and evaluated. The certification shall include the name of the operator, the type of equipment, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

3.3.12 Repairs

All construction equipment shall be repaired as necessary and maintained in good working order. Repairs to rented/leased construction equipment shall be in accordance with the terms of the rental/lease agreement. Repairs to rented/leased and TtEC's construction equipment shall be documented and a record of the repairs maintained in the project files. Copies of the repair records are to be forwarded to the equipment yard for TtEC-owned equipment.

Construction equipment with deficiencies noted on the Daily Inspection Report should be repaired promptly.

The Equipment Supervisor, with input from the Environmental and Safety Supervisor as appropriate, should evaluate if a piece of equipment or a vehicle should be removed from service until the deficiency is corrected.

Construction equipment that develops a fluid leak such as engine oil, hydraulic oil, transmission fluid, or coolant shall be removed from service until the deficient condition has been corrected.

Construction equipment with missing or inoperable exhaust systems, including spark or flame arrestors, mufflers, and catalytic converters, shall be removed from service until the deficient condition has been corrected.

Tampering with, removal, modification, or otherwise rendering inoperable any pollution control device on construction equipment shall not be allowed except as specifically authorized by the equipment manufacturer or appropriate authority and the Project Manager or Superintendent's concurrence

Only trained, qualified personnel shall be allowed to repair equipment. The project's Work Plan should address repairs to equipment by designating required actions in the event of an equipment failure.

An Authorization for Capital Expenditure or Lease (AFCEL) is to be completed for all major repair work (i.e., $1500.00 and over) performed on TtEC-owned construction equipment in accordance with Accounting/Finance Procedure AF-8, Fixed Assets. (Note that on some construction equipment, the cost of a specific item, a replacement tire for example, may require the processing of an AFCEL due to the item cost.)

Costs for major repairs, as well as repairs for deficiencies, to TtEC-owned construction equipment shall be charged back to the project releasing the equipment if the need for repairs is identified within 30 days of the equipment's release and removal from a project and there are indications that the repairs are needed as the result of lack of maintenance or failure of the releasing project to otherwise keep the equipment in good working order.

No repair shall be undertaken for damage covered by an insurance claim until the damage is reported to the Administration and Compliance Department and the insurer approves the repairs.

3.3.13 Documentation and Record Keeping

A file shall be established and maintained for each operator which contains documentation that the operator has the proper qualifications, licenses/certificates, and training to perform his/her job function. Records may include training identified in EHS plans (e.g., OSHA, DOT, Waste Management training), vehicle operator licenses, results of site-administered proficiency testing, and any other special licenses/certificates required by state/local law or the client.

A file shall be established and maintained for each piece of construction equipment, and all records relating to that equipment shall be placed in the file, including the Receipt Inspection Report, annual inspections (for cranes), record of the date the equipment was first placed in service, Daily Equipment Inspection records, maintenance records, repair records, record of the last date that the equipment was in service, demobilization inspection report, and the decontamination certificate, if applicable. For ease of retrieval, all records pertaining to pieces of equipment should be maintained in separate folders for each piece of equipment.

Additional copies of inspection reports and records may be required to be maintained in other project files, such as the procurement files and/or the Environmental Health and Safety files, based on the project's Documentation Plan.

The Equipment Supervisor should ensure that complete and accurate record of equipment utilization, including a list of idle equipment, is provided to the Quality Control Site Manager on a daily basis for inclusion in the Quality Control Daily Report.

It may be useful to maintain equipment utilization information on a spreadsheet depending on the size of the project. Information such as equipment mobilization date, date of first use, utilization of equipment by rental

period (for example, if rental rate is based on hourly usage and is billed on a monthly cycle, there should be an entry for the number of hours the equipment was used in each billing period), scheduled equipment release date, actual release date, and demobilization date. This information may be useful in verification of vendor invoices, in review of production rates, for preparation of requests for change orders or equitable adjustment, or for backup for use in support of (or defense against) claims.

Copies of all maintenance and repair records for TtEC-owned construction equipment shall be forwarded to the TtEC Equipment Manager at the regional equipment yard on a periodic basis. This period should be monthly, and in no circumstances should it exceed quarterly. An Equipment Service Form is available from the Equipment Manager. This form shall be used to report unscheduled and preventative maintenance on TtEC-owned construction equipment.

The Equipment Manager produces a spreadsheet for TtEC-owned construction equipment that is distributed to the projects on a monthly basis. The Equipment Supervisor shall ensure that reports of mileage or meter readings and routine maintenance for all TtEC-owned construction equipment and vehicles assigned to the project are provided to the Equipment Manager for inclusion on the spreadsheet on a monthly basis. A Meter/Mileage Reading Update Form, available from the Equipment Manager, shall be used to report the required information.

The Equipment Supervisor should review the availability date included on the spreadsheet for TtEC-owned equipment and vehicles assigned to the project and inform the Equipment Manager of any required revisions to these dates.

The Equipment Supervisor shall complete an Equipment Transfer Report, available from the Equipment Manager, for all TtEC-owned construction equipment and vehicles to be mobilized to, and demobilized from the project. Copies of the Equipment Transfer Reports shall be provided to the Equipment Manager at the regional equipment yard.

There shall be no equipment disposal action (junk or sale) for TtEC-owned construction equipment or vehicles without prior notification and approval from the TtEC President.

4.1 Additional Considerations

4.1.1 Control of Government Property

Activities involving the use of Government property are to be controlled in accordance with Project Initiation/Operations Procedure PO-12, Government Property Control or by specific procedures negotiated with the Client in accordance with the contract's terms and conditions; such procedures shall be consulted where appropriate. Such activities may involve the handling or installation of Government property, whether furnished by the Government to TtEC or acquired by TtEC for use in the performance of work and for which the Government has retained title.

Government property may include construction tools and equipment purchased as a project cost, as well as permanent materials or equipment purchased for incorporation into the work. Project-specific procedures for control of Government property are to address issues relevant to the use, storage, inventory control, maintenance, and/or final disposition of the Government property.

4.1.2 Spill Control and Emergency Response Dedicated Tools and Equipment

The project's Emergency Response Plan, or Emergency Action Plan (refer to the Environmental, Health & Safety - Programs Procedure EHS 2-1, Emergency Preparedness, for discussion of when each is required) is to identify dedicated personal protective equipment and emergency response tools and equipment to be available for an emergency response to a spill or discharge of hazardous material.

Dedicated emergency response tools and equipment are to be segregated and identified for use in emergency response situations. In accordance with the requirements of EHS Procedure 2-1, Emergency Preparedness the use of dedicated emergency response tools or equipment for any other activity is not to be permitted.

4.1.3 Inventory Control

An individual should be designated as the Material Control Supervisor and should be responsible for inventory control of all tools issued from the tool control area. A log should be maintained for all tools issued and should record, as a minimum, the identification by name and employee number of the individual signing out the tool, the date and time the tool was signed out, the intended use of the tool (by area or system), an indication of when the tool is to be returned, and the time and date when the tool is returned.

Inventory control of tools assigned to individuals or crews should be performed on a daily basis as the tools are returned to the gang box or storage area. The crew foreman should be responsible for inventory control of tools assigned to the foreman's crew.

The Site Superintendent should immediately be made aware of any missing tools and should take the appropriate action to investigate and/or replace the missing tools.

4.1.4 Disposition of Tools at Project Completion

The Project Manager should make a determination of the disposition of tools remaining at the end of the project. The project may not be reimbursed by the client for the purchase of tools on certain cost reimbursable and lump sum projects. On other projects, a dollar value for individual tools may establish whether or not the client provides any reimbursement. The terms and conditions of the contract should provide direction as to the required disposition of the tools.

Tools for which the project has been reimbursed by the client are to be dispositioned in accordance with the client's preferences and the contract terms and conditions.

Tools purchased for the project as a project cost, and which are not to be turned over to the client, should be dispositioned by the Project Manager. Means of disposition may include, but not be limited to, declaring the tools surplus, sale of the tools, or providing the tools to another project. The Project Manager should consult with the appropriate Business Line Executive Vice Presidents, concerning disposition of project tools.

TtEC owned tools (i.e., not purchased as a project cost) should be dispositioned by the Project Manager based on consultation with the appropriate Business Line Executive Vice Presidents. Means of disposition of TtEC-owned tools may include, but not be limited to, declaring the tools surplus, sale of the tools, return of the tools to an equipment yard, or providing the tools to another project.

4.1.5 Company-Owned Equipment

TtEC utilizes regional equipment yard(s) for the temporary storage and maintenance of TtEC-owned construction equipment and vehicles when not currently assigned to a project. Available TtEC-owned equipment should be considered for support of a project's construction effort based on an analysis of the benefits to the project and/or TtEC. When evaluating TtEC owned equipment the requirements discussed in 4.1.6 below should be considered when making the equipment selection.

4.1.6 Rental/Lease Equipment

Agreements for rental/lease of construction equipment should be coordinated through an authorized procurement representative to ensure that appropriate terms and conditions are included in the agreement. The Scope of Work for the agreement should be developed and reviewed carefully, including review by the Site Superintendent or Equipment Supervisor for inclusion of sufficient detail in order to clearly define the

scope of work.

The Equipment Supervisor, or requisitioner if there is no designated Equipment Supervisor, should review the terms and conditions of all rental/lease agreements to determine that the following topics are adequately addressed:

- Receipt and return of the rental or leased equipment and any required accessories;
- Inspection and documentation of receipt and release;
- Provision of documentation required to be submitted, such as Occupational Safety and Health Administration (OSHA) accredited inspection reports, NDE reports, test reports (i.e. load test for cranes), typically annual inspections, and wire rope certification.
- Provision of all safety equipment and accessories, as required, such as fire extinguishers, seat belts, Roll Over Protection Structures (ROPS), Falling Object Protection Structures (FOPS), access steps, handholds, platforms, and anti two-block devices and load moment indicator (cranes);
- Provision of documentation demonstrating operator certification;
- Provision of Certificate of Compliance when required, for instance by NAVFAC P-307 Management of Weight Handling Equipment, Appendix P - Contractor Crane Requirements.
- Provision and requirements of routine and non-routine maintenance and repairs, including payment for labor, parts, filters, lubricants, and fluids;
- Documentation requirements for the above maintenance and repairs;
- Disposal/recycling requirements for used parts, filters, lubricants, and fluids;
- Items such as point of delivery, costs of delivery and return, rental charges during idle time, notification requirements for demobilization, and point of return;
- Appropriate rental rate provisions for straight time and overtime;
- Responsibility for damage to equipment;
- Insurance;
- Indemnification (if included);
- Payment for replacement of parts subject to normal wear and tear, such as tires, tracks, cutting edges, and teeth; and
- Documentation requirements required in support of invoices for basic rental rates and overtime rates, as well as labor, parts, filters, lubricants, and fluids.

Rental agreements should be structured to include normal wear and tear on the equipment in the basic rental rate. In all cases, there should be mutual agreement with the equipment vendor as to the condition of the equipment as it is delivered. This should include items such as the life expectancy of the parts subject to wear and tear, their condition on receipt (i.e., percentage of usable life remaining), and the expected condition on return of the equipment. There should be agreement on minor versus major repairs and on what constitutes normal wear and tear. Mutual agreement is essential to mitigate potential claims from vendors for excessive wear and tear.

4.1.7 Mobilization of Equipment

Mobilization of construction equipment may be a long lead time item and may require client or third party involvement or approvals to gain site access, depending on the required equipment. The Site Superintendent or Equipment Supervisor should determine the lead time required, including Contract submittal and advance notice/approval requirements, and plan for the mobilization of equipment to support the project's schedule.

Planning for mobilization of equipment should include a thorough review of Contract requirements for utilization of each equipment and site access requirements.

Documentation of certification, and OSHA compliant annual inspection, load testing, safety devices (e.g., anti two-block) installed, wire rope certification, and operator's certification for cranes (weight handling equipment) should be reviewed prior to initiating mobilization of cranes.

4.1.8 Equipment Maintenance

The Equipment Supervisor should be responsible for administration of a construction equipment maintenance program for the project. A spreadsheet of all TtEC-owned equipment, titled the Status of All Project Equipment, is maintained by the Construction Department providing notification of the scheduled maintenance requirements for each piece of equipment. Either this spreadsheet, or a project specific spreadsheet, should be maintained and statused on a periodic basis. Specific maintenance requirements may also be contained in specific contract negotiated property procedures or in other TtEC corporate procedures.

As construction equipment is received on site, it should be added to the spreadsheet for tracking of the required maintenance.

A review of the scheduled maintenance should be performed for all construction equipment to be used in the Exclusion Zone to determine the desirability of performing any upcoming scheduled maintenance prior to placing the equipment in service. It may be difficult and expensive to perform the maintenance under the conditions required in the Exclusion Zone, or to decontaminate the construction equipment in order to perform the maintenance under clean conditions. When the maintenance of equipment in the Exclusion Zone is anticipated, the Site Superintendent should ensure that qualified personnel are available with the appropriate medical clearances and certifications to work in the Exclusion Zone.

4.1.9 Construction Equipment Safe Operation Requirements

Standards for safe operation of equipment are contained in the documents identified herein, inclusive and in particular of the requirements for safe operation of lifting and rigging equipment and weight handling equipment. The Contract typically will specify certain documents/codes to be followed for the project. Accessibility of the identified documents is provided in section 5.0 References.

The United States Army Corps of Engineers (USACE) Safety and Health Requirements Manual, EM 385-1-1, Chapters 16, 17, and 18, provide guidance concerning the safe operation of construction equipment.

Safe operation of earth drilling equipment is addressed in the Environmental Health & Safety-Program Procedure EHS 6-2, Drill Rigs.

Safe operation of hand and power tools is addressed in OSHA standard 29CFR Part 1926 Subpart I.

Safe operation of cranes, derricks, hoists, elevators and conveyors is addressed in OSHA standard 29CFR Part 1926 Subpart N.

Safe operation of motor vehicles, mechanized equipment and marine operations is addressed in 29CFR Part 1926 Subpart O.

Rollover protective structures and overhead protection is addressed in 29CFR Part 1926 Subpart W.

The American Society of Mechanical Engineers (ASME) provides guidance in the B30 committee volumes – Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings.

The United States Department of Energy (DOE) provides guidance for safe lifting operations in Technical Standard DOE-STD-1090 – Hoisting and Rigging.

The United States Navy publication NAVFAC P-307 – Management of Weight Handling Equipment includes requirements for Contractor Cranes (see appendix P). Navy facilities issue Instructions

specific to particular facilities such as 'NAVSHIPYDPUGET INSTRUCTION 11262.4A' which provides requirements for weight handling equipment at all Navy facilities within the Puget Sound.

4.1.10 Demobilization of Equipment

Construction equipment should be demobilized when no longer required for the work. The Executive Vice President of Construction should be provided with a status of TtEC-owned construction equipment and scheduled release dates in order to coordinate availability of equipment with other projects.

The Project Manager or designee should request demobilization instructions from the Executive Vice President of Construction or designee to determine the location to receive TtEC-owned equipment.

Construction equipment leaving the Exclusion Zone of a remediation construction project will be decontaminated in accordance with the requirements of the Environmental Health & Safety-Programs, Procedure EHS 3-4, Site and Contamination Control, and the site specific EHS Plan.

Individual state regulations may require cleaning of construction equipment leaving a site, not limited to remediation construction, in order to control the spread of microorganisms contained in the soil. Such requirements are to be identified in the project EHS plans.

Please Describe Your Reference Here **Place Your Link in this Cc**

1. Accounting/Finance Procedure AF-8, Fixed Assets
2. ASME B30 committee publications "Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings" available at www.ihserc.com Note that this is a commercial subscription and requires a User ID and Password available from the TtEC Librarian
3. DOE Technical Standard DOE-STP-1090 Hoisting and Rigging available at www.directives.doe.gov (select the Tech Standards tab, select DOE Technical Standards, select Approved Standards and select DOE_STD_1090 from the menu)
4. Environmental, Health & Safety - Programs Procedure EHS 2-1, Emergency Preparedness
5. Environmental, Health & Safety -Programs Procedure EHS 3-4, Site and Contaminant Control
6. Environmental, Health & Safety -Programs Procedure EHS 6-2, Drill Rigs
7. Environmental Management System (EMS)
8. Labor Relations Guidelines LR-8, Pre-Job Conferences
9. NAVFAC P-307 Management of Weight Handling Equipment, Available via http://www.safetycenter.navy.mil/instructions/osh/navfacP307.pdf#search=%22NAVFAC%20P-307%22
10. The OSHA publications below are available at www.osha.gov/ select Regulations, select OSHA Regulations (Standards - 29 CFR), select Part 1926 Safety and Health Regulations for Construction
11. OSHA 29 CFR Part 1926 Subpart I Tools - Hand and Power
12. OSHA 29 CFR Part 1926 Subpart N Cranes, Derricks, Hoists, Elevators and Conveyors
13. OSHA 29 CFR Part 1926 Subpart O Motor Vehicles, Mechanized Equipment and Marine Operations
14. OSHA 20 CFR Part 1926 Subpart W Rollover Protection Structures Overhead Protection
15. OSHA 29 CFR Part 1910.178 Powered Industrial Trucks
16. OSHA 29 CFR Part 1910.180 Crawler Locomotive and Truck Cranes
17. Project Initiation/Operations Procedure PO-1, Project Management Planning
18. Project Initiation/Operations Procedure PO-2, Task Initiation
19. Project Initiation/Operations Procedure PO-12, Government Property Control

Please Provide a Description of the Attachment

1. Sample Equivalent/Vehicle Inspection Report

2. Sample Daily Equipment Inspection Form

3. Mobile and Crawler Crane Monthly Checklist

4. Operator/Driver Task Observation Checklist

5. Insurance Request for Leased Equipment

Place Your Attachments H


CP-7 Att-1 -mod 20090924.do


CP-7 Att-2 Daily Equip Insp_m


CP-7 Att-3 FJ.doc


CP-7 Att-4 Operator Observati


CP-7 Att-5 FJ.doc

NOTICE OF OWNERSHIP AND CONDITIONS OF USE

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Tetra Tech EC, Inc.
Proprietary Information

TETRA TECH EC, INC.

Equipment/Vehicle Inspection Report

Date: _____ Unit Number: _____ Description: _____

____ Miles or ____ Hours: _____ MFG: _____

Unit to be taken from: _____ to: _____

	Good	Satisfactory	Repair Req.	N/A		Good	Satisfactory	Repair Req.	N/A
1. Tires/Track % [1] _____	☐	☐	☐	☐	17. Interior	☐	☐	☐	☐
2. Brakes	☐	☐	☐	☐	18. Glass	☐	☐	☐	☐
3. Steering	☐	☐	☐	☐	19. Wipers/Review Mirrors	☐	☐	☐	☐
4. Undercarriage	☐	☐	☐	☐	20. Heater/AC/Defroster	☐	☐	☐	☐
5. Suspension	☐	☐	☐	☐	21. Safety Equipment/Belts	☐	☐	☐	☐
6. Engine	☐	☐	☐	☐	22. Signal Lights	☐	☐	☐	☐
7. Drive Train	☐	☐	☐	☐	23. Mounted Equipment	☐	☐	☐	☐
8. Fuel System	☐	☐	☐	☐	24. Mounted Attachments	☐	☐	☐	☐
9. Cooling System	☐	☐	☐	☐	25. Blade/Bucket	☐	☐	☐	☐
10. Electrical System	☐	☐	☐	☐	26. Boom	☐	☐	☐	☐
11. Exhaust System	☐	☐	☐	☐	27. Outriggers	☐	☐	☐	☐
12. Hydraulic System	☐	☐	☐	☐	28. Fire Ext./First Aid Kit [2]	☐	☐	☐	☐
13. Transmission	☐	☐	☐	☐	29. Horn/Backup Alarm	☐	☐	☐	☐
14. Clutch	☐	☐	☐	☐	30. Manufactuer Operating Manual	☐	☐	☐	☐
15. Body	☐	☐	☐	☐	31. Head/Tail/Brake Lights	☐	☐	☐	☐
16. ROP	☐	☐	☐	☐	32. Cleanliness _____	☐	☐	☐	☐

[1] Note estimated percentage of tread/track usefulness remaining

[2] Fire Ext./First Aid Kit and all items in the cab and or bed must be secured

Comments: _____

Inspected By: _____

DISTRIBUTION: (1) Sent with equipment (2) Equipment Supervisor (3) PO File (4) Originator

EQUIPMENT TRANSFER REPORT MUST ACCOMPANY THIS FORM

TETRA TECH EC, INC.

DAILY EQUIPMENT INSPECTION

PROJECT_____

MANUFACTURER TYPE _____

UNIT #_____MODEL _____ DATE _____

ENGINE HRS/MILEAGE _____ /_____ SHIFT _____

Check appropriate column and describe correction needed.

	If Good (✔)	NA	Correction Needed
Steering Mechanisms[1] *	_____	____	_____
Service Brakes [2]	_____	____	_____
Emergency Brakes[1]			
Parking Brake[1]	_____	____	_____
Transmission & Controls	_____	____	_____
Suspension & Springs	_____	____	_____
Hydraulic Leaks	_____	____	_____
Exhaust System	_____	____	_____
Warning Gauges	_____	____	_____
Windshield[1] & Wipers	_____	____	_____
Lights (Head & Tail)	_____	____	_____
Brake Lights[1]	_____	____	_____
Mirrors	_____	____	_____
Seat and Seat Belts[1] (w/ ROPS)	_____	____	_____
Tires/Tread[1]	_____	____	_____
Regular Horn	_____	____	_____
Audible Back-up Alarm[1]	_____	____	_____
Steps, Hand-holds	_____	____	_____
Fire Extinguisher	_____	____	_____
Engine Coolant	_____	____	_____
Engine Oil	_____	____	_____
Hydraulics & Operating Controls	_____	____	_____
Fenders/Mudflaps	_____	____	_____
Heater/defroster	_____	____	_____
All items in cab or bed secured	_____	____	_____
Cleanliness inside and outside	_____	____	_____

Remarks:

[1] Items required to be operational by OSHA 1926.602 before use.

[2] Service brake must be capable of stopping and holding equipment fully loaded. _____

_____ _____

Operator Name (Printed) Operator Signature

Review : Superintendent _____

Date Repairs or adjustments completed:_____

Equipment Supervisor/Mechanic:_____

TETRA TECH EC, INC.

MOBILE AND CRAWLER CRANE MONTHLY CHECKLIST

Crane Number / ID_____ **Date**_____

Project Name/No:_____

Item	Consideration		Comments
Crane Structure	Cracks, Corrosion, Deformation		
Foundations to support loads	Cracks, Settlement		
Booms	Cracks, Corrosion, Deformation		
Bolts & Rivets	Tightness, Corrosion		
Boom Angle Indicator & Chart	Accuracy, Visibility		
Load Indicator (s)	Accuracy		
Anti-Two Block Device	Functional		
Engine or Motor	Performance & Safety Compliance		
Chain & Sprocket	Wear and Stretch		
Pawls or Dogs	Wear, Cracks, Distortion		
Pins, Shafts & Axles	Wear, Cracks, Distortion		
Bearings & Rollers	Wear, Cracks, Distortion		
Gears	Wear, Cracks		
Tires & Wheels	Excessive Wear, Damage		
Wire Ropes/Lines	Condition, Lay		
Main Drum Brake	Function, Adjustment		
Lining	Excessive Wear		
Drum Braking Surface	Wear, Cracks, Distortion		
Linkage & Pins	Wear, Cracks, Distortion		
Actuating Cylinders & Fittings (if any)	Leakage or Deterioration		
Auxiliary Drum Brake	Function, Adjustment		
Lining	Excessive Wear		
Drum Braking Surface	Wear, Cracks, Distortion		
Linkage & Pins	Wear, Cracks, Distortion		
Actuating Cylinders & Fittings (if any)	Leakage or Deterioration		
3rd, Drum Brake (if any)	Function, Adjustment		
Lining	Excessive Wear		
Drum Braking Surface	Wear, Cracks, Distortion		
Linkage & Pins	Wear, Cracks, Distortion		
Actuating Cylinders & Fittings (if any)	Leakage or Deterioration		
Boom Hoist Brakes	Function, Adjustment		

MOBILE AND CRAWLER CRANE MONTHLY CHECKLIST

Crane Number / ID_____ **Date**_____

Project Name/No:_____

Item	Consideration		Comments
Lining	Excessive Wear		
Drum Braking Surface	Wear, Cracks, Distortion		
Linkage & Pins	Wear, Cracks, Distortion		
Actuating Cylinders & Fittings (if any)	Leakage or Deterioration		
Travel Brake or Locks	Function, Adjustment		
Lining	Excessive Wear		
Drum Braking Surface	Wear, Cracks, Distortion		
Linkage & Pins	Wear, Cracks, Distortion		
Actuating Cylinders & Fittings (if any)	Leakage or Deterioration		
Lead Block	Function		
Hooks	Cracks, Distortion		
Hook, Swivel	Cracks, Wear, Function		
Sheaves	Wear, Cracks, Distortion, Rope Fit		
Computers	Calibrated		
Counterweight System	Attaching Linkage OK		

/

Print Name Signature

TETRA TECH EC, INC.

OPERATOR/DRIVER TASK OBSERVATION CHECKLIST

Project Name _____ Project Number _____
Operator's Name _____ Observer's Name _____
Date of observation _____ Type/make of equipment operated _____

Operating Safety Observations		S	U	NA	Comments
A.	**Pre-use inspection prior to staring**				
1.	Conducts daily pre-use inspection.				
2.	Mounts & dismounts carefully-3 point contact.				
3.	Uses the seat belt all times while seated. Sounds horn before staring engine.				
4.	Checks equipment warning devices.				
5.	Checks hydraulic systems (if so equipped). Ensures system is filled and free from leakage.				
6.	Checks air system (if so equipped). Ensures all connections are tight.				
7.	Checks engine oil level. Ensures all plugs, filler caps, and other fittings are secure and not leaking.				
8.	Checks for broken, missing, excessively worn or damaged parts, and reports immediately.				
9.	Checks tires. Looks for serious cuts, bulges, irregularities and abnormal wear. Checks inflation pressures and keeps valve caps in place. Checks for tires rubbing.				
10.	For dump trucks, checks front wheel seal oil levels.				
11.	Checks fuel level and for fuel system leaks.				
12.	Coolant check—Should never open a hot system or pour cold coolant into radiator if the engine is very hot.				
13.	For safe visibility, cleans the windshield, mirrors and light lenses.				
14.	For articulating machines, checks to ensure that the steering frame lock or link have been removed and properly stored.				
15.	Checks for and maintains safe access to the cab (3 point contact). For safe mounting, clears the steps, grab rails, and floor and seat of mud and water.				
16.	Secures tools and keeps the floor free of debris.				
17.	For safe operation wipes steering wheel, foot pedals, hand levers and knobs clean of oil and grease.				
18.	Checks first aid kit and fire extinguisher. Reports missing items to the foreman or supervisor.				
19.	Checks equipment for warning tags.				
B.	**Starting**				
1.	Mounts & dismounts carefully-3 point contact.				
2.	Uses the seat belt at all times while seated. Sounds horn before starting engine.				
3.	Checks equipment warning devices.				
4.	Uses job specific PPE (e.g., hard hats, safety shoes, safety glasses, overalls, gloves, traffic vests, and ear protection).				
5.	Ensures the bowl, bucket, etc. is on the ground.				
6.	For starting, checks all controls to be sure they are in proper position.				
7.	Does not crank an electric starter for more than 30 seconds, Allows two minutes to cool prior to next attempt.				
8.	For steering safety, tests before moving. Turns the wheels to full left and full right.				
9.	Checks service and parking breaks for proper operation.				
10.	Checks the backup alarm.				
11.	Ensures head lamps and safety lighting are in working order.				

Operating Safety Observations	S	U	NA	Comments
C. Operation				
1. Before moving, places the bucket, bowl, blade, etc., into the transport position and secures all accessory equipment.				
2. Obeys traffic & other posted/published site safety practices & rules.				
3. Maintains control of equipment at all times.				
4. Gives right-of-way to loaded machines or trucks.				
5. Minimizes engine overspeed on downgrades & when shifting.				
6. Does not transport passengers without proper provisions.				
7. Does not engage in horseplay.				
8. Crosses ditches at an angle, proceeding slowly.				
9. Avoids large obstacles, deep holes & soft edges.				
10. Slows down before turning.				
11. Stays in gear on a downgrade.				
12. When running across a hillside, proceeds slowly. Never turns sharply uphill or downhill.				
13. Obeys flagmen & spotter signals.				
14. Maintains safe stopping distance behind other equipment.				
15. Shifting				
a. Always stops the machine/truck and runs the engine at low idle speed to shift from forward into reverse.				
b. Downshifts one speed range at a time.				
c. Applies the retarder and/or service brakes to reduce speed before entering sharp turns, fill areas, and downgrades.				
d. For machines, always leaves the shift lever in neutral position when stopped.				
16. Braking				
a. Avoids applying brake continuously on a downgrade unless system is so designed.				
b. Uses the engine for additional brake force-or, if so equipped, the auxiliary retarder.				
c. Anticipates grade and selects proper gear range accordingly.				
d. Brakes firmly in one application. Avoids fanning the brake pedal.				
e. Uses each brake system only for its intended purpose.				
17. Turning				
a. Does not cut corners too close when making sharp turns.				
b. Maintains engine speed high enough for normal steering.				
c. Downshifts when necessary or appropriate.				
d. For machines, carries the load as low as conditions permit to maintain stability.				
18. Hauling				
a. Regulates speed to road conditions. Reduces speed before turning. Avoids over speeding the engine.				
b. Downshifts when approaching a downgrade. Downshifts when necessary on an upgrade to avoid stalling the engine.				
c. Obeys traffic rules and spotters.				
19. Parking Precautions				
a. Selects level ground whenever possible.				
b. When parking on a grade, positions equipment at right angles to the slope; and sets parking brake if so equipped in addition to lowering bowl, bucket, etc.				
c. Parks a reasonable distance from other equipment.				
d. When parking on haul roads, picks the safest place, where the equipment is visible from both directions.				

Operating Safety Observations		S	U	NA	Comments
20.	Demonstrates proficiency through smooth operation of controls (e.g., speed of operation appropriate for the conditions, not jerky or hesitant).				
21.	Maintains eye contact with other operators, drivers, and ground personnel.				
22.	Responds appropriately to signals from flaggers, spotters, operators directing equipment movements.				
23.	Stops operation when ground personnel are out of line-of-sight.				
24.	Positions and orients machine for safe operation (e.g., safe distance from edge of excavations, tracks perpendicular to excavation, clear distance maintained to fixed obstructions).				
25.	Barricades, cones, tape set up to maintain clear zone within swing radius of counterweight.				
26.	Maintains safe work area (e.g., windrow at edge of stockpiles, safe slopes).				
D.	**Shutdown**				
1.	Lowers the bowl, bucket, etc. to the ground. Lowers and secures the bed on dump trucks.				
2.	Reduces engine speed. Sets parking brake.				
3.	On machines, places transmission in neutral and locks shift lever if so equipped.				
4.	Allows hot engine to cool gradually before stopping it.				
5.	Secures equipment to prevent unauthorized starting and movement.				
6.	Bleeds the air tanks, if so equipped.				
7.	Dismounting—doesn't jump off, uses handrails and steps, and faces the machine/truck when getting off.				
8.	Warning tags—attaches appropriate warning tags to steering wheel to prevent accidents.				
E.	**Overall Appraisal**				
	Overall appraisal of operator/driver				

S = Satisfactory
U = Unsatisfactory
NA = Non applicable
Note: For unsatisfactory observations also indicate the immediate corrective action taken (e.g., training, verbal or written warning, or reassignment).

Tetra Tech EC, Inc.
Insurance Request for Leased Equipment

FROM: LOCATION:

TO: Dan Fisher LOCATION: Morris Plains

1.	IS THIS ITEM A LICENSED VEHICLE? IF YES, PLEASE PROCESS THE "TTECIVEHICLE INSURANCE REQUEST FORM"	
2.	DATE FORM COMPLETED	
3.	REQUESTOR NAME, PHONE NUMBER AND OFFICE LOCATION	
4.	JOB SITE CONTACT (Name and Phone Number)	
5.	PROJECT NAME	
6.	LESSOR'S COMPLETE NAME AND ADDRESS	
7.	TERM OF THE LEASE (please be specific, i.e., 6/15/98 to 6/15/99)	
8.	TYPE OF EQUIPMENT & SERIAL NUMBER ****Please contact Dan Fisher ASAP regarding insurance for cranes****	
9.	DECLARED VALUE OF EQUIPMENT	
10.	CHARGE NUMBER (FOR VALUE OF EQUIPMENT OVER $500,000)	
11.	HAS LESSOR SPECIFICALLY REQUESTED LOSS PAYEE STATUS? IF YES, PLEASE SPECIFY DATE DUE.	

PO/Subcontract attached ☐
Terms and conditions attached ☐

If guidance is needed, please call Dan Fisher @ (973) 630-8198.
Version 6.

Last Revision By: on
Created By: **Cindy Leong** on

Purpose: The purpose of this program is to: (a) specify the types of events to be reported and investigated, including both safety and quality-related events; (b) define internal Tetra Tech EC, Inc.(TtEC) and external event notification requirements; (c) ensure proper management and follow-up of each
event; (d) meet regulatory notification and investigation requirements; (e) provide a mechanism to identify Environmental, Safety and Quality (ESQ) issues and areas for improvement and recognize job well done through the Zero Incident Performance® (ZIP) Slip.

Status:	Complete	**Approved By:**	John DeFeis
		Title:	Event Reporting and Investigation
Version Date - Type:	12/09/2009 - Revised	**Original Issue Date:**	02/01/95
Category:	Company Procedures	**Sections:**	ESQ - Environmental Health & Safety Programs
Sub-Category:	Departmental/Discipline	**Document Type:**	Procedure
Keyword Index:	EHS Compliance/Waste Management, Field Activities/Environmental H&S, EHS Compliance/Spill Reporting, Field Activities/Science, Operational Control, Training, EHS Compliance/Permits, Nonconformance and Corrective and Preventive Action	**Document Owner**	Skip Parry

1.0 PURPOSE

The purpose of this program is to:

a. Specify the types of events to be reported and investigated, including both safety and quality-related events.

b. Define internal Tetra Tech EC, Inc. (TtEC) and external event notification requirements.

c. Ensure proper management and follow-up of each event.

d. Meet regulatory notification and investigation requirements.

e. Provide a mechanism to identify Environmental, Safety and Quality (ESQ) issues and areas for improvement and recognize job well done through the Zero Incident Performance® (ZIP) Slip.

2.0 SCOPE

Event reporting requirements apply to all operations of TtEC and its subsidiaries (the "Company"), including subcontractor activities. The term “Event Reports” in this procedure encompasses Quality Event Reports (QERs), Near Miss, and EHS Event Reports.

3.0 MINIMUM REQUIREMENTS

3.1 Responsibilities

3.1.1 All Personnel

All personnel shall immediately report any event (see Section 4.1.1) to their supervisor. The report can be verbal or in writing.

Employees, including subcontractors, are required to participate in the investigation process as directed, and comply with corrective actions identified. Employees are also made aware of trends and may be asked to help develop lessons learned to prevent similar events from occurring.

3.1.2 Line Management

Line Management, including the Office Manager for office events and the Project Manager (PM) for project events shall:

a. Be responsible for all client notifications - (Prior to initiation of project field activities, the Project Manager shall coordinate with the client to determine the appropriate agency notification responsibilities and procedures).

b. Implement the appropriate internal notifications (see Table 1) as required by this program as soon as an event becomes known.

c. The supervisor responsible for directly overseeing the work shall ensure completion of the Event Report. The supervisor shall directly participate in the causal analysis investigation.

d. Ensure that corrective actions have been completed and properly documented.

3.1.3 Environmental Safety and Quality Personnel

Environmental Safety and Quality Personnel (Environmental Safety Coordinator, Environmental Safety Specialist, and Project Quality Control personnel) shall:

a. Ensure that all notifications are made promptly.

b. Ensure that all reports are fully completed.

c. Ensure that all insurance and workers compensation forms are completed and submitted as necessary.

d. Participate in event investigations of all Occupational Safety and Health Administration (OSHA)

recordable injuries/illnesses, spills, releases, and other investigations.

e. Communicate information about the event to applicable site and/or office employees.

3.1.4 Project Quality Control Manager

The Project Quality Control Manager shall review and approve QER investigation results, proposed remedial actions, determine the Event Risk in accordance with CRL Guideline HSG 2-7, Risk Prioritization, and identify the need to verify the effectiveness of corrective actions taken based on severity of Event Risk. The Project Quality Control Manager's evaluation of corrective action effectiveness should be summarized in the Comments section. Ineffective corrective actions should be elevated to the Director, Quality Programs for further evaluation and potential additional programmatic corrective actions.

3.1.5 Project Environmental and Safety Manager (PESM)

The PESM shall review and approve event investigation results, proposed remedial actions, determine the Event Risk in accordance with CRL Guideline HSG 2-7, Risk Prioritization, and identify the need to verify the effectiveness of corrective actions taken based on severity of Event Risk. The PESM's evaluation of corrective action effectiveness should be summarized in the Comments section. Ineffective correction actions should be elevated to the Director, EHS Services for further evaluation and potential additional programmatic corrective actions.

3.1.6 Director, EHS Services

The Director, EHS Services shall:

a. Notify OSHA of any injuries or illnesses occurring within OSHA jurisdiction as required.

b. Review/maintain log - which includes information on basis causes, immediate causes, and management control issues - of all investigations.

c. Distribute summaries of events with periodic management reports.

d. Communicate significant events to key personnel within the Company.

e. Review basic causes of Company events to identify trends.

f. Recommend EHS program modifications as necessary.

g. Immediately notify the Tetra Tech Health and Safety Manager of any serious accident and provide follow-up information on serious accidents.

h. Provide Monthly Injury Reports to the Tetra Tech Health and Safety Director.

3.2 Notifications

In addition to the reporting responsibilities specified in Section 3.1, the responsible supervisor is required to notify Work Care at 800-455-6155 (available 24 hours) of employee illness or injuries. Work Care's main office must be notified promptly of all injuries and illnesses so the affected employee receives prompt and appropriate medical advice. The call to Work Care must be made in addition to taking the affected employee to the local clinic. EHS 2-1, Emergency Preparedness, provides guidance for medical response and actions.

The responsible supervisor is also required to ensure notifications are made as outlined in Table 1.

The phone numbers and other means of contact for Company personnel shall be posted with the emergency notification list and/or integrated into the site-specific emergency notification list.

3.3 Event Report Generation

The information portion of the Event Report should be generated by the end of the supervisor's work shift on the day of the event, if possible, but no later than 24 hours after the event was reported by the supervisor and employee(s) involved in the event. The investigation completion time is provided in Section 3.4.

The Event Report and Investigation may be completed electronically in the Company Incident Database located on Lotus Notes or by hardcopy using Attachment A, Event Report and Investigation Form, or Attachment B, Quality Event Report Form. (Attachment C, Event Sketch, may be used to graphically depict **events**).

The forms are intended to be self-explanatory. If the supervisor or the employee has any questions regarding completion of the report, an ESQ representative should be contacted for support.

Both the employee(s) and the employee's supervisor must sign the Event Report.

For low loss-potential near misses, the ZIP Slip may be substituted for the standard Event Report. (See CRL Procedure PP-10, Employee Recognition).

3.4 Event Investigations

Event investigations are to be initiated and completed as soon as possible, but should be completed no later than 10 working days after the event has been reported.

Guidance for conducting investigations and cause analysis may be found in Section 4.3.

Table 1. Internal Notifications By Supervisor

EVENT TYPE	SUPERVISOR NOTIFIES...	TIMING[1]	... WHO NOTIFIES	TIMING[1]
Spill/release or Permit Exceedence	ESS	Immediately	PESM and Director, EHS Services	Immediatel external rep required
	Project Manager	Immediately	Client and Area/Program Manager	Immediatel external rep
			Government agency if required by contract/plan and Director, EHS Services not available (See 3.5.2)	required
Fatality, Hospitalization of 1 or more persons, Fire, or Explosion	ESS	Immediately	PESM and Director, EHS Services	Immediatel
			0 OSHA reporting (See 3.5.1)	Immediatel
			Insurance AIG through Chartis @ 1-800-910-2667 (Company personnel only) (Not required inside Washington State)	Immediatel
	Project Manager	Immediately	Area/Program Manager	Immediatel
			VP Construction	Immediatel
			Client	Immediatel
	ESS	Immediately	PESM and Director, EHS Services	Same day
			Insurance AIG through Chartis @ 1-800-910-2667 (Not required in Washington State)	Same day Same day
Confirmed or Potential OSHA Recordable	Project Manager	Immediately	Area/Program Manager	Same day
			VP Construction, VP Remediation, VP C&E, COO	Same day 24 hours or by contract

			Client, if required	
Equipment/Property/ Vehicle Damage	ESS	Immediately	PESM and Director, EHS Services	24 hours
	Project Manager	Immediately	Client (client property)	Immediatel
			Client (other property, if required)	24 hours
			Equipment Manager	24 hours
			Area/Program Manager	24 hours
			VP Construction	24 hours
Potential Insurance Claim, other than Worker's Compensation	Project Manager	Immediately	Law Department and Procurement	24 hours
Office Events	ESC	Immediately	Operations Manager	24 hours
			Director, EHS Services	
Quality Events	Project Manager	Immediately	Program or Operations Manager	24 hours
	Project QC Manager	Same Day	Director of Quality Programs	24 hours

[1]Timing - Immediately - Real time verbal discussion or notification in writing
Same Day
24 hours - written event report copy; Client notification, or as specified in contract or project specification

ESS Environmental Safety Specialist
ESC Environmental Safety Coordinator
PESM Project Environmental and Safety Manager
QC Quality Control
VP Vice-President

Investigations that fall within the scope of the OSHA Process Safety Management Standard must meet the requirements of 29 Code of Federal Regulations (CFR) 1910.119(m). Projects that must meet this standard shall include the appropriate reporting requirements in project specific procedures or plans.

Project QC personnel should participate in the QER Cause Analysis and in determining an appropriate Action Plan.

Completed investigation reports should be submitted within 10 working days to:

a. Project Manager or Office Manager for review and signature

b. PESM or Project QC Manager (for QERS) for review and signature

c. ESS (for projects) or ESC (for offices) for review and signature

d. Director, EHS Services/Quality Services as applicable

Electronic submittal within 10 working days meets these reporting requirements. Additional reporting requirements are listed in Table 1.

The Project or Office Manager and the PESM, or Project Quality Manager must sign the report indicating their satisfaction with thoroughness of the investigation and the report and their concurrence that the action items address the identified causes. This constitutes the peer review, and the report, particularly the description, should be clear to readers not familiar with the project or incident.

3.5 External Notifications

3.5.1 OSHA Notification

Notification to OSHA is required within 8 hours if the event resulted in one or more fatalities and/or three or more hospitalized individuals. The 8-hour notification of OSHA is also required if a fatality or hospitalization of three individuals occurs within 30 days after the event.

The Director, EHS Services, has the responsibility for making the OSHA notification. The senior site EHS representative shall make the notification if the Director, EHS Services is unavailable.

The Project Manager is responsible for notifying the client of any required OSHA notifications.

3.5.2 Agency Notifications for Spills, Releases, and Permit Exceedences

It is the Company's policy that *if a spill, release, or permit exceedence is determined to be reportable, the Company or the client shall perform the reporting in a timely fashion as defined by federal, state, or local laws and regulations*. Notifications shall be made per contract requirements or the project Communications Plan. Prior to initiation of project field activities, the Project Manager shall coordinate with the client to determine the appropriate agency notification responsibilities and procedures. During the conduct of project activities, the client shall be notified regarding the spill, release, or permit exceedence and the Company's notification determination.

The Project Manager, in conjunction with the PESM must determine whether a spill, release, or permit exceedence exceeds reportable quantities to a regulatory agency under federal, state, and/or local laws and regulations or permit conditions. This determination must be made quickly because many laws and regulations require that notifications be made within short time frames (immediately upon knowledge, but no later than 24 hours).

If a spill or release is determined not to exceed reportable quantities, the PESM shall evaluate whether the spill or release poses a threat to human health (for example, has or may release into known drinking water sources, has or may cause contamination of surface soils/materials/air accessible to the public, and so forth). If a spill or release is determined to pose a threat to human health, the Project Manager, with the assistance of the Director, EHS Services, as necessary, shall consult with the client to determine whether the spill or release should be reported to a regulatory agency.

3.6 Documentation

A copy of each Event Report shall be retrievable for the project or office files. The Event Report database may serve this purpose.

3.6.1 Documentation of Agency and Client Notifications

All agency and client notifications shall be documented on the **Event** Report form. Other documentation generated regarding verbal or written agency notifications (if required), including agency response to such notification, shall either be maintained in the project file or preferably, attached to the Event Report.

In instances where the client conducts the reporting, documentation shall be obtained from the client indicating that the agency was notified in accordance with federal, state, or local regulations and maintained in the project files. If the client verbally notifies the Company that the notification was made, the Project Manager shall document the conversation. In these cases, communications shall be recorded internally in accordance with EHS 1-10, External Regulatory Inspections and Notifications, for Environmental Management System reporting requirements.

If the spill, release, or permit exceedence is determined not to be reportable, the Event Report and Investigation shall include the rationale for not reporting the spill, release, or permit exceedence to a regulatory agency.

3.7 Training

The Director, EHS Services, and the Director, Quality Services, have the responsibility for ensuring that site

and office supervisory personnel have the appropriate training to conduct event investigations.

ESSs shall be trained on a project-specific basis by the PESM to implement the spill/release and permit exceedence reporting requirements in conjunction with training on the requirements of the project-specific EHS Plans per Corporate Reference Library procedure EHS 3-2, Procedures—Environmental, Health & Safety Plan(s).

Personnel serving in a project or office supervision, or office supervision, ESQ position shall have completed and passed the Company provided self-study course entitled "Practical Loss Control Leadership within 3 months of initial assignment."

4.0 GUIDANCE

4.1 Definitions

4.1.1 Event

For the purposes of this program, an event is:

a. An injury or illness that meets the OSHA recordability criteria

b. Ergonomic-related pain complaints

c. An exposure to a hazardous substance above the allowable exposure unit.

d. A property/vehicle/equipment/heavy equipment/truck/passenger damage case that results in damage greater than $500.

e. A fire or explosion.

f. A spill or release resulting from the Company, or subcontractor activities, including spills or releases from operations at a client facility of which Company employees have become aware.

g. Discovery of chemicals or waste products in an office.

h. A permit exceedance.

i. Safety-related events reported by an enforcing authority (ISO 14001 Registrar requirement).

j. Customer, or enforcing authority, complaints regarding the implementation of the Company's EMS or Quality Management System (QMS).

k. External regulatory inspections that result in findings or citations.

l. Quality events as defined in Section 4.1.3.

m. Near-miss occurrences, as defined in Section 4.1.2 below[1]

4.1.2 Near Miss

A “near miss” is an event, that has a reasonable probability in resulting in one of the outcomes described above if the circumstances were different and for which modifications to management programs will reduce the probability of occurrence or the severity of the outcome (see examples of Immediate and Basic causes in Attachment A.

4.1.3 Quality Event

QERs should be generated for the following two situations:

a. When project quality deficiency reports identify a **significant condition adverse to quality**. A significant condition adverse to quality is one that, if uncorrected, could have a serious adverse effect on operability, level of quality, or presents a high loss potential.

b. When an event reveals an opportunity for improved performance through modification of our management system.

4.1.4 Recognition and EMS Communication

ZIP Slips (See PP-10, Employee Recognition Programs) may be used to document employee recognition for a job well done, suggestions for improvement, or minor safety issues that should be resolved.

ZIP Slips may be used to document external inquires or complaints regarding the Company's EMS or project-specific environmental aspects.

4.2 Continuous Improvement

TtEC's event investigation procedure and event report database is a tool used by the (ESQ) organization for continuous improvement by:

Identifying the root causes of each event
Tracking and trending
Selecting appropriate corrective action(s), and person(s) responsible for corrections
Providing Lessons Learned
Identifying additional EHS orientation and training topics
Identifying future health and safety goals and objectives

Corporate ESQ management periodically disseminates valuable information contained in the event/investigation program, company wide to employees in the form of ZIP Bulletins, Flash Reports, and Lessons Learned.

The EMS Coordinator should also review the Event Report database to identify trends and incorporate results into the continuous improvement of the EMS.

4.3 Cause Analysis

4.3.1 Immediate Cause

Determine the immediate causes, using the examples on the form. If one or more of the examples fits the circumstance, use those words in the cause description. Explain, e.g., Improper Lifting – employee attempted to lift box by bending at the waist and twisting while lifting. Be sure that the event description is sufficiently detailed to support the causal analysis in this section. An assumption of cause (e.g., improper lifting) from the injury (low back pain) is not acceptable.

4.3.2 Basic Cause

Like the Immediate Causes, use the guidewords on the form whenever appropriate and explain. For example, improper motivation may be because the correct way takes more time or effort; short cutting standard procedure is tolerated or positively reinforced; or the person thinks there is no personal benefit to always doing the job correctly.

Investigators should determine if a change in the work conditions, scope, methods or personnel contributed to the event. This may occur due to inadequate assessment of hazard potential or inadequate application of

hazard controls. If "Change" was contributing, it will most likely be identified in combination with other basic causes.

Note: The investigator is encouraged to review the Practical Loss Control Leadership chapters on *Causes and Effects of Loss* and *Accident/Event Investigation* before doing the causal analysis. The investigation team should refer to the S.C.A.T. Chart available from the PESM when analyzing causes of high loss potential events, especially where motivation is suspected of being a Basic Cause.

4.3.3 Remedial Actions

Include all actions taken or those that should be taken to *prevent recurrence*. Be sure that actions address the causes. For example, training (safety meetings) may be a necessary response for lack of knowledge, but may be inadequate for improper motivation.

4.4 Loss Control Leadership for Non-Supervisory Personnel

All non-supervisory and non-ESQ positions (excluding craft workers) assigned to conduct field activities should complete the Practical Loss Control Leadership self-study course within one year of initial assignment.

5.0 REFERENCES

Please Describe your Reference Here	Place Your Link in this Column
1. OSHA 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals	
2. EHS 1-10, External Regulatory Inspections and Notifications	
3. EHS 2-1, Emergency Preparedness	
4. EHS 3-2, Procedures - Environmental, Health & Safety Plan(s)	
5. Environmental Management System	
6. HSG 2-7, Risk Prioritization	
7. PP-10, Employee Recognition	
8.	
9.	

6.0_ATTACHMENTS

Please Provide a Description of the Attachment	Place Your Attachments Here
1. Attachment A - Event/Near Miss Report and Investigation	EHS 1-7, Att A, 2007.doc
2. Attachment B - Quality Event Report Form	EHS 1-7, Att B, 2007.doc
3. Attachment C -Event Sketch	EHS 1-7, Att C, 2007.doc

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EHS 1-7 ATTACHMENT B

TETRA TECH EC, INC.

	HAZARD REPORT AND SUGGESTION FORM	Hazard Type: Condition ☐ Practice ☐

The form is intended to provide a means for any employee to report hazards in the work place, or to make suggestions that will improve safety, environmental protection, quality or productivity. It may also be used to report Near Miss incidents with a low loss potential. If desired, the Report may be submitted anonymously. Please provide enough information to allow an effective evaluation of the hazard or suggestion. Your input is appreciated and all suggestions will be evaluated. If your name is included, we may request further information, and will inform you of the disposition. Thank You!

DESCRIBE CONDITION OR PRACTICE:	
SUBMITTED BY (OPTIONAL):	**DATE:**

IMMEDIATE CORRECTIVE ACTION COMPLETED:	COMPLETED BY	COMPLETION DATE

RECOMMENDATIONS FOR FURTHER CORRECTIVE ACTION	RESPONSIBLE PERSON	TARGET DATE	COMPLETION DATE

FOR OFFICE USE ONLY

POTENTIAL INCIDENT TYPE:

Slip/Trip/Fall		Strain/Overexertion		Fire	
Struck by or against		Chemical Exposure		Environmental Release	
Caught in, between or under		Property damage		Other (Explain)	

Project/Office/Location: _____

Report Given To: _____ Date: _____

Tracking Number:

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment A
Event/Near Miss Report and Investigation

Checkboxes can be toggled on ☒ and off ☐ to show an "X" or not show an "X." Double-click on the box to activate a dialog box that shows possible selections. To preserve formatting when you cut and paste text, use the "paste special" command to paste: EDIT, PASTE SPECIAL, UNFORMATTED TEXT.

Guidance for filling out this form is provided in CRL Procedure EHS 1-7.

Section 1, General Information

Short Description/Title Below: (limited to 125 characters). This is the description that will appear in the database listing.

Type of Event/Near Miss (check all that apply):

Was a person injured or made ill:

☐ By something at work ☐ By something outside the work environment ☐ No injury or illness

Did this event occur in one of our major offices? ☐ Yes ☐ No List Office:

Did this event occur in a foreign country? ☐ Yes ☐ No

Did this event involve:

A strain?	☐ Yes ☐ No	Fire?	☐ Yes ☐ No
A motor vehicle accident?	☐ Yes ☐ No	Property damage (>$500)?	☐ Yes ☐ No
A repetitive motion injury?	☐ Yes ☐ No	Spill/release?	☐ Yes ☐ No
A fall?	☐ Yes ☐ No	Permit exceedence?	☐ Yes ☐ No
Being struck by something?	☐ Yes ☐ No		

Event Information

Case #:	Site Case #:	Workers Comp #:
Where did the event occur?	Project # (4 digits):	
Site/Location Name:	Delivery Order #'s:	
Date of event:	Military time:	
TtEC Supervisor on duty:	Was Supervisor at event scene? ☐ Yes ☐ No	

Event Location:

What employee/employer category was involved in this event?

☐ TtEC permanent
☐ TtEC craft/temp service
☐ Subcontractor
☐ Other

Employer of affected employee?

Weather conditions:	Adequate Lighting at Scene? ☐ Yes ☐ No

What was the employee doing, or what was happening, just before the event occurred? Describe the activity below, as well as the tools, equipment, or material the employee was using. Be specific. For example, "climbing a ladder while carrying roofing materials," "spraying chlorine from hand sprayer," or "daily computer key-entry."

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment A
Event/Near Miss Report and Investigation

What happened? What was the contact or event and how did it occur? Tell us below how the injury occurred. For example, "When the ladder slipped on the wet floor, the worker fell 20 feet," "worker was sprayed with chlorine when gasket broke during replacement," or worker developed soreness in wrist over time." Attach file if necessary.

Section 2, Affected Employee Information		
Include injured person, driver/operator, or employee whose activities resulted in the event. A new event report must be created for each injured employee.		
Employee's name:		Sex ☐ Male ☐ Female
Date of Hire:	Job classification:	Number of months at TtEC:
Work hours on shift prior to event:		Years in job classification (##):
Did event relate to routine task for job classification? ☐ Yes ☐ No		
Section 3, Injury/Illness Information ***(If not applicable, check here ☐ and go to Section 4)***		
Nature of injury of illness: Describe body part affected and how it was affected below. Be more specific than "hurt," "pain," or "sore." For example, "strained back."		
What object or substance directly harmed the employee? For example, "concrete floor," "chlorine," "radial arm saw." If this question does not apply to the event, leave it blank.		
Was First Aid provided? ☐ Yes ☐No		
Did the injury/illness result in ☐ Days away (with or without restricted days) ☐ Restricted days only ☐ No or unknown		
Did employee die? ☐ Yes ☐No		
Medical treatment does not include examination, diagnostic tests, or First Aid. See ZIP Bulletin 109 for OSHA definition of First Aid. Attach treatment report/doctor's note or send copies to Director, EHS Services. Was medical treatment provided? ☐ Yes ☐ No		
Section 4, Vehicle and Property Damage Information ***(If not applicable, check here ☐ and go to Section 5)***		
Damaged vehicle make:		Damaged vehicle model:
Damaged vehicle VIN:		Vehicle owner:
Property damaged:		
Describe property damage:		

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Project Name: Insert name here

EHS 1-7, Attachment A
Event/Near Miss Report and Investigation

Section 5, Environmental Release ***(If not applicable, check here ☐ and go to Section 6)***		
Environmental Release		
Substance spilled or released:		
From where:	To where:	
Estimated quantity/duration:	CERCLA Hazardous substance? ☐ Yes ☐ No	
RQ exceeded? ☐ Yes ☐ No	Specify RQ:	
Reportable to agency? ☐ Yes ☐ No	Specify (place telecom in project file):	
Responsibility to report: ☐ TtEC ☐ Client ☐ Other	Time frame:	
Written report (place report in project file): ☐ Yes ☐ No		
Response action taken:		
Permit Exceedence		
Type of permit:	Permit #:	
Date of exceedence:	Parameter(s):	
Criteria:	Exceedence levels:	
Exceedence duration:	Reportable to agency: ☐ Yes ☐ No	
Specify (place telecom in project file):	Written report: ☐ Yes ☐ No	
Time frame:		
Response action taken:		
Section 6, Notifications		
Insert names of TtEC personnel notified below:		
Name:	Date:	Time:
Name:	Date:	Time:
Name:	Date:	Time:
Name:	Date:	Time:
Client rep notified:	Date:	Time:
By whom:		
Agency notified:	Date:	Time:
By whom:		
Agency Contact Name:		
Section 7, Persons Preparing Report		
Signature of this form verifies that all supplied information is accurate.		
Employee's name (print):	Sign:	
Employee's name (print):	Sign:	
Supervisor's name (print):	Sign:	
Supervisor's phone number:		
Date:		
Note to supervisor: Supervisor is to forward a copy of the Event Report to immediate supervisor, PESM, ESS or ESC, and other personnel as identified in Table 1 of this procedure ASAP, but no later than 24 hours.		

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment A
Event/Near Miss Report and Investigation

Section 8, Attach Sketches or Photos		
Report Number:		
Send sketch by mail, fax, or attach an electronic file. EHS 1-7, Attachment C, contains a template that can be used for creating sketches of accidents.		
Vehicle Events		
Write in the street names and, if possible, the points of the compass. Attach black-and-white hard-copy photos or JPG or BMP files (JPG file sizes are typically smaller) as appropriate. If the sketch appears on a police report or insurance form, this need not be completed. Attach the other report or send a hard copy to the Director, EHS Services.		
Section 9, Investigative Report		
Date Information:		
Date of event:	Date of investigative report:	
Event Cost:		
Other event costs: $	WC claim value: $	Estimated loss: $
Cause Analysis		
Was the activity addressed in an AHA? ☐ Yes (attach applicable section) ☐ No		
Immediate Causes		
What actions and conditions contributed to this event? Check all that apply:		
Substandard Acts		
☐ Operating equipment without authority	☐ Horseplay	
☐ Failure to warn	☐ Using equipment improperly	
☐ Failure to secure	☐ Failure to follow procedure	
☐ Operating at improper speed	☐ Personnel not properly qualified	
☐ Making safety devices inoperable	☐ Failure to communicate	
☐ Removing safety devices	☐ Operating equipment outside of specified parameters	
☐ Using defective equipment	☐ Failure to check equipment prior to acceptance	
☐ Failure to use PPE properly	☐ Acceptance of defective equipment	
☐ Improper loading	☐ Failure to provide proper equipment	
☐ Improper placement	☐ Improper servicing/maintenance of equipment	
☐ Improper lifting	☐ Other substandard acts	
☐ Improper position for task	☐ Servicing equipment in operation	
☐ Under influence of alcohol/drugs		
Substandard Conditions		
☐ Guards or barriers	☐ Exposure to hazardous materials	
☐ Protective equipment	☐ Extreme temperature exposure	
☐ Tools/equipment or materials	☐ Illumination	
☐ Congestion	☐ Ventilation	
☐ Warning system	☐ Visibility	
☐ Fire and explosion hazards	☐ Radiation	
☐ Poor housekeeping	☐ Hazardous environmental conditions	
☐ Noise exposure	☐ Other substandard conditions	

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment A
Event/Near Miss Report and Investigation

Enter brief explanation of each ***immediate cause*** below:	
Basic Causes	
What specific personal or job factors contributed to this event? Check all that apply:	
Personal Factors	**Job Factors**
☐ Inadequate physical/physiological capability	☐ Inadequate leadership and/or supervision
☐ Inadequate mental/psychological capability	☐ Inadequate engineering
☐ Physical or physiological stress	☐ Inadequate purchasing
☐ Lack of knowledge	☐ Inadequate maintenance
☐ Lack of skill	☐ Inadequate tools and equipment
☐ Improper motivation	☐ Inadequate work standards
☐ Other personal factors	☐ Excessive wear and tear
	☐ Abuse and misuse
	☐ Change
	☐ Other job factors
Enter brief explanation of each ***basic cause*** below:	

Section 10, Action Plan	
What has or should be done to control each of the causes listed? Consider the following Management Programs in developing remedial actions:	
☐ Leadership and administration	☐ Health control
☐ Training	☐ System evaluation
☐ Planned inspections	☐ Engineering controls and change management
☐ Task analysis and procedures	☐ Personal communications
☐ Task observation	☐ Group meetings
☐ Emergency preparedness	☐ General promotion
☐ Rules and work permits	☐ Hiring and placement
☐ Accident/event analysis and corrective and preventive action	☐ Materials and services management
☐ Personal protective equipment	

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment A
Event/Near Miss Report and Investigation

Remedial Actions			
Actions	Person Responsible	Target Date	Completion Date
1.	1.		
2.	2.		
3.	3.		
4.	4.		

Section 11, Persons Performing Investigation	
Investigator's name:	Date:
Investigator's name:	Date:
Investigator's name:	Date:

Management Review	
Note: Signature verifies that all supplied information is accurate; the description supports the causal analysis; and the Action Plan is sufficient to address the causes.	
Project/Office Manager Approval: ☐ Yes ☐ No	
Comments:	
Sign:	Date of Approval:
ESQ (PESM) Approval: ☐ Yes ☐ No	
Comments:	
Sign:	Date of Approval:
Note: Attach additional information as necessary. Supervisor to forward copy of Investigative Report to the PM or Office Manager or ESQ as soon as possible, but no later than 72 hours after the event. A copy shall be sent to the Director, EHS Services, within 24 hours of completion of the report. Attach here.	

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment B
Quality Event Report and Investigation

Checkboxes can be toggled on ☒ and off ☐ to show an "X" or not show an "X." Double-click on the box to activate a dialog box that shows possible selections. To preserve formatting when you cut and paste text, use the "paste special" command to paste: EDIT, PASTE SPECIAL, UNFORMATTED TEXT.

Guidance for filling out this form is provided in CRL Procedure EHS 1-7.

Section 1, Event Description and Investigation			
Date of event:			
Office/Project Location:		Organization or Department:	
Means of identification:			
☐ Client concern	☐ Nonconformance report	☐ Audit report	☐ Corrective action request
☐ Supervisory review	☐ Peer review	☐ Project review	☐ Other (describe):
Enter Short Description/Title (limited to 125 characters) below. This is the description that will appear in the database listing.			
Issue Summary: Summarize the concern, problem, or situation that needs to be addressed. Identify who was involved and their role (e.g., performer, inspector, auditor).			

Section 2, Persons Preparing Report	
Signature of this form verifies that all supplied information is accurate.	
Employee's name (print):	Sign:
Employee's name (print):	Sign:
Supervisor's name (print):	Sign:
Supervisor's phone number:	
Date:	
Note to supervisor: Supervisor is to forward a copy of the Event Report to immediate supervisor, PESM, ESS or ESC, and other personnel as identified in Table 1 of this procedure ASAP, but no later than 24 hours.	

Section 3, Investigative Report		
Date of investigative report:		
Other event costs: $	WC claim value: $	Estimated loss: $
Cause Analysis		
Immediate Causes		
What actions and conditions contributed to this event? Check all that apply:		
Substandard Acts		
☐ Operating equipment without authority	☐ Inadequate inspection/peer review	
☐ Failure to follow/improper execution of procedure	☐ Poor judgment	
☐ Using equipment improperly	☐ Failure to communicate—written and/or verbal	
☐ Improper servicing/maintenance of equipment	☐ Acceptance of defective equipment/material	
☐ Under influence of alcohol/drugs	☐ Other substandard acts	
☐ Horseplay		

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment B
Quality Event Report and Investigation

Substandard Conditions	
☐ Personnel not properly qualified or trained	☐ Inadequate oversight
☐ Defective equipment/material	☐ Inadequate procedure/instruction
Enter brief explanation of each ***immediate cause*** below:	

Basic Causes	
What specific personal or job management system factors contributed to this event? Check all that apply:	
Personal Factors	**Job Factors**
☐ Inadequate physical/physiological capability	☐ Inadequate leadership and/or supervision
☐ Inadequate mental/psychological capability	☐ Inadequate engineering
☐ Physical or physiological stress	☐ Inadequate purchasing
☐ Lack of knowledge	☐ Inadequate maintenance
☐ Lack of skill	☐ Inadequate tools and equipment
☐ Improper motivation	☐ Inadequate work standards
☐ Other personal factors	☐ Excessive wear and tear
	☐ Abuse and misuse
	☐ Change
	☐ Other job factors
Enter brief explanation of each ***basic cause*** below:	

Section 4, Action Plan	
What has or should be done to control each of the causes listed? Consider the following Management Programs in developing remedial actions:	
☐ Leadership and administration	☐ Engineering controls and change management
☐ Training	☐ Personal communications
☐ Planned inspections	☐ Group meetings
☐ Critical task analysis and procedures	☐ General promotion of Loss Control principles
☐ Task observation	☐ Hiring and placement
☐ Rules and work permits	☐ Materials and services management
☐ Accident/event analysis and corrective and preventive action	☐ Quality control
☐ System evaluation	

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Corporate ESQ Report # Insert number here
Project Name: Insert name here

EHS 1-7, Attachment B
Quality Event Report and Investigation

Remedial Actions			
Actions	Person Responsible	Target Date	Completion Date
1.	1.		
2.	2.		
3.	3.		
4.	4.		

Section 5, Persons Performing Investigation	
Investigator's name:	Date:
Investigator's name:	Date:
Investigator's name:	Date:

Management Review	
Note: Signature verifies that all supplied information is accurate; the description supports the causal analysis; and the Action Plan is sufficient to address the causes.	
Project/Office Manager Approval: ☐ Yes ☐ No	
Comments:	
Sign:	Date of Approval:
ESQ (PESM, QA) Approval: ☐ Yes ☐ No	
Comments:	
Sign:	Date of Approval:
Note: Attach additional information as necessary. Supervisor to forward copy of Investigative Report to the PM or Office Manager or ESQ as soon as possible, but no later than 72 hours after the event. A copy shall be sent to the Director, EHS Services, within 24 hours of completion of the report. Attach here.	

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST—AIR QUALITY

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
Permitting Applicability/Exemption *(Please complete each line in this section)*				
			1. State/Local Pre-Construction Permit. The project modified a point or nonpoint air emissions source for which a permit modification must be obtained from the state/local regulatory agency. (State/regional/local air regulations) *Note: regulated sources may include passive emission sources such as landfills, bioremediation piles, etc.*	
			2. PSD Permit. Project modified a major source which has the potential to emit 250 tpy (or 100 tpy if source is one of 28 listed sources) of any regulated air pollutant. Project has potential to emit in "significant amounts" criteria pollutants for which the area is in attainment (NO_x, SO_2, PM_{10}, VOC, CO, lead). Project meets PSD permit conditions (40 CFR 52.21, State/local air regulations)	
			3. Non-attainment Area. Project involves the modification of a "major source" which emits a "significant" amount of criteria pollutants for which the area is designated non-attainment. The project obtained permit mod & meets conditions in the pre-construction permit (40 CFR 52, State/local regulations) *Note: definitions for major source and significant amounts of pollutants will vary depending upon the classification of the nonattainment area.*	
			4. NSPS Sources. Project involves modification of a source that is subject to NSPS standards. Project obtained permit mod & meets permit conditions. (40 CFR 60)	
			5. Hazardous Air Pollutant Sources. Project involves the modification of a source that is listed as a HAP source and has the potential to emit 10 tpy of a single HAP or 25 tpy of a combination of HAPs. Project has obtained proper approval from regulatory agency. (40 CFR 63)	
			6. Title V Permit. Project involves the operation of a source which has the potential to emit 100 tpy of any regulated air contaminant, or 10 tpy of a single HAP or 25 tpy of combination of HAPs, or source is subject to NSPS, PSD or nonattainment area permitting. Project complies with permit requirements. (40 CFR 70, State/local air regulations)	
			7. State Toxic Air Pollutants. Project involves the modification of a source of toxic air pollutants that is regulated by state/local agency and proper approval has been obtained. (State/local regulations)	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST—AIR QUALITY

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			8. Permit Exclusion/Exemption. Project involves modification of a point or nonpoint source that emits regulated air pollutants and the state/local air regulations specifically exempt the project activities from obtaining a permit/approval or an exemption has been obtained. Documentation exists in the project files recording the exemption. (State/local regulations)	
			9. Permit Equivalency. Project is being conducted pursuant to CERCLA. "Substantive" requirements of ARARs, permits/approvals have been documented in project plans/correspondence and project is implementing substantive requirements.	
Equipment/Pollution Control Devices *(Applies if project has equipment that generates or controls air pollution.)*				
			10. Equipment, Process, Materials, Process Rates. Permit terms/conditions reflect current equipment, process, materials, and process rates. If not, note differences and determine if permit modification is required.	
			11. Pollution Control Devices. Air emissions source includes control technology. Evaluation of the following was conducted and determined to be in compliance: a. Verification was made that control technology as specified in permit/regulations is in place and operating properly. b. Inspections of control equipment are being conducted in accordance with permit terms or SOPs. Documentation of inspections is recorded in logbooks/operating record/project files.	
			12. Treatment Residues. Control equipment generates treatment residues which have been properly characterized, managed, and/or disposed of. *Complete applicable waste checklists.*	
Emissions Monitoring and Testing (*Applies if project must conduct air emissions monitoring or testing.)*				
			13. Continuous or Periodic Emissions Measurement. Emissions from project sources are subject to continuous/periodic emissions measurements. Evaluation of the following was conducted and determined to be in compliance: a. Verification was made that emissions measurements comply with regulatory requirements. b. Monitoring data was reviewed and meets emissions limits specified in regulations/permit conditions. c. Recordkeeping to regulatory agency, if required, is being conducted. Documentation exists in project files.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			14. Stack Testing. Project is required to conduct stack testing in accordance with federal, state, or local regulations and/or permit. (40 CFR 51 and 52, State/local regulations) a. Testing was conducted as specified in regulations/permit. b. Notification to regulatory agency, if required, was performed/documented. c. Reporting of testing results was performed, if required. d. Testing verified that source was in compliance with regulatory/permit requirements.	
			15. NSPS Sources. Sources subject to NSPS have specific Continuous Emission Monitoring (CEM) & performance testing requirements. An evaluation of the following was conducted and found to be in compliance: a. Source-specific CEM performance testing specified in applicable Subpart. b. Notification prior to startup of CEM/opacity demonstration was provided to agency. (40 CFR 60.7) c. If excess emissions occurred, quarterly reports were submitted to agency. (40 CFR 60.7) d. CEM requirements in 40 CFR 60.13 are being met. e. General performance testing requirements specified in 40 CFR 60.8 has been met.	
			16. HAPs/NESHAP Sources. Sources subject to HAPs/NESHAPs have specific Continuous Monitoring System (CMS) & performance testing requirements. (40 CFR 61 and 63) An evaluation of the following was conducted and found to be in compliance: a. Source-specific CEM/performance testing specified in applicable Subpart. b. Notification prior to performance test/startup of CEM was provided to agency. (40 CFR 63.7/63.8) c. CMS requirements in 40 CFR 63.8 are being met, including CMS quality control program.	
Emissions Limits *(Please complete each line in this section)*				
			17. General Regulatory Emissions Limits. Emissions for project source comply with all applicable federal, state, local emission limits. This includes point source emissions from units, fugitive emissions from unit and material handling equipment, and toxic air pollutants. (Federal/state/local regulations)	
			18. Permit-specific Emissions Limits. Emissions from project sources comply with permit-specific emissions limits.	
			19. NSPS Source-Specific Emissions Limits. Project is in compliance with NSPS emissions limits. (40 CFR 60, Subparts)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			20. HAPs/NESHAPs Source-Specific Emissions Limits. Project is in compliance with HAPs/NESHAPs emissions limits. (40 CFR 61/63, Subparts)	
Reporting/Recordkeeping *(Please complete each line in this section)*				
			21. Registration. Emissions source is required to register with state/local agency. Project files document that registration has been performed. (State/local air regulations)	
			22. Emissions Inventory. Emissions inventory must be submitted to state/local agency and project files document that emissions inventory has been submitted. (State/local air regulations)	
			23. Permit Posting. Permit is posted conspicuously, if required. (State/ local air regulations)	
			24. Reporting of Startup/Shutdown/Malfunctions/Emissions Excesses/Other. Project files contain documentation that startup/shutdown/malfunctions/excess emission (as applicable) were reported to State/local/EPA. (40 CFR 60, 61, 63, state/local regulations)	
			25. Recordkeeping. All permit/agency required records are maintained in the project files. This may include data from CEM, monitoring, stack tests, maintenance of equipment/pollution control devices, malfunctions, excess emissions, etc. (State/local regulations)	
			26. NSPS Reporting/Recordkeeping. Project is in compliance with the following requirements: a. Documentation exists in project files demonstrating that project has complied with applicable notification requirements. (40 CFR 60.7) b. Records of startup/shutdown, malfunctions of NSPS process, control and monitoring equipment are in project files. (40 CFR 60.7) c. Source-specific recordkeeping requirements have been evaluated and project files contain all proper records. (40 CFR 60 Subparts) d. Reporting to regulatory agencies of source-specific requirements. (40 CFR 60 Subparts)	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST—AIR QUALITY

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			27. HAPs/NESHAPs Reporting/Recordkeeping. Project is in compliance with the following requirements: a. Documentation exists in project files demonstrating that project has complied with applicable notification requirements (e.g., performance tests, visible emissions; startup/shutdown/malfunction reports; CMS performance; excess emissions and CMS performance report; summary report for each HAP) (40 CFR 63.7, .9, .10) b. Records of startup/shutdown, malfunctions, control and monitoring equipment are in project files. (40 CFR 63.6(e)) c. Source-specific recordkeeping requirements have been evaluated and project files contain all proper records. (40 CFR 63, Subparts) d. Records of performance tests are maintained for 5 years. e. Startup/shutdown/malfunction plan has been developed & is being properly implemented. Records are kept to demonstrate compliance with plan. If actions are taken that are inconsistent with plan, verbal reporting to agency was performed within 2 days & written report was submitted within 7 days. (40 CFR 63.6(e)(3)) f. Records required in 40 CFR 63.10 are being kept for 5 years.	
CFCs			*(This section applies to projects which involve the handling of CFCs.)*	
			28. Export/Import/Production Destruction/Transformation of Ozone-Depleting Controlled Substances. If project involves any of these activities, 40 CFR 82 must be consulted for specific reporting, recordkeeping, labeling, and training requirements.	
			29. Disposal of Appliances/Motor Vehicle Air Conditioners. The disposal of appliances and MVACs are subject to specific disposal prohibitions specified in 40 CFR 82.154. The CFCs from these units must be evacuated by a certified recovery/recycling machine prior to disposal. (40 CFR 82.156) Persons performing testing and equipment used must be certified. (40 CFR 82.158(a) - (d))	
			30. Recordkeeping/Reporting. If appliances/MVACs are disposed of, reporting and recordkeeping requirements are being met. (40 CFR 82.166)	
Miscellaneous			*(Please complete each line in this section)*	
			31. Fugitive Dust. Project generates fugitive dust and all reasonable measures (or other local standard) are being used to minimize fugitive emissions. At time of inspection fugitive dust was minimal and measures used to minimize dust were observed (e.g., water tank truck). (State/local regulations)	

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TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST—AIR QUALITY

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			32. Odor. Odors from project are minimized. (State/local regulations)	
			33. Complaints by Adjacent Landowners. Complaints from adjacent landowners have been filed.	
			34. Inspections by Air Quality Regulatory Agencies. Project has been inspected by air quality regulatory agency. *Please note the purpose (e.g., permit compliance), and results of the inspection.*	
			35. Accidental Release Emergency Planning. State emergency planning requirements are applicable to this project because toxic substances are stored on site that exceed threshold levels. These requirements may include registration, development of risk management plan (RMP), or incorporation of project-related activities into client's facility RMP. *Note: Federal § 112(r) program has not been finalized to date.* (State regulations).	
			36. Open Burning. Project involves opening burning of construction - related debris/materials. Permit has been obtained from State/local air agency, if applicable. Burn - ban criteria have been evaluated and determined to <u>not</u> be applicable. State/local Fire Marshall has been contacted and approval, if required, has been granted. Project is being performed in compliance with any approvals/permits.	

--End of Checklist--

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TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— ASBESTOS

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes No N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
	This checklist applies to projects where asbestos materials or waste are present.	
	Surveying/Sampling Non-School Buildings	
☐ ☐ ☐	**1. Licensing/Certification/Accreditation**. State/local regulations require that persons/company performing asbestos surveying/sampling in a facility be AHERA-accredited building inspectors if results will be used to determine negative presence of asbestos. (State/local air and safety regulations). Ensure copies of accreditation are present in project file.	
☐ ☐ ☐	**2. Handling/Disposal of Sampling Wastes/PPE**. Sampling wastes/PPE are being handled and disposed of in accordance with state/local requirements. (State/local air and safety regulations)	
	Demolition/Renovation (*Applies if facility (or portion thereof) is being demolished or renovated. Demolition and renovation require an asbestos survey to be performed to ascertain presence, quantity, and location of asbestos containing materials.* *Note that some state or local regulatory agencies require prior notice for demolition even if no asbestos was identified in the survey (e.g., Puget Sound Clean Air Agency).*	
☐ ☐ ☐	***3.*** **Written Notification**. Written notification has been provided to EPA/state regulatory agency with a delegated NESHAP asbestos program. Notice is maintained in on-site files. Notice provided based upon type of project. *Note: State/local (e.g., air agencies) regulations may establish different size/time periods for notification so be sure to check local requirements.* a. Demolition/renovation of at least 260 linear ft (160 ft^2) or 35 ft^3 of 1% Regulated Asbestos-Containing Material (RACM) -- 10 day notice provided. b. Demolition of less than 260 linear ft (160 ft^2) or 35 ft^3 of 1% RACM - 10 day notice provided. c. Renovation of less than 260 linear ft (160 ft^2) or 35 ft^3 of 1% RACM - no notice required. d. Revised notice provided if amounts of RACM changed by more than 20% or start date changes. (40 CFR 61.145(b)) e. Asbestos containing roof material, if more than 160 ft^2 is removed. (40 CFR 761, Appendix A provides EPA interpretive ruling)	
☐ ☐ ☐	**4. Removal.** RACM was removed prior to demolition unless it is: a. Category I non-friable Asbestos-Containing Material (ACM) in good condition, b. On facility component which is encased in hard material/adequately wetted, c. Not accessible for testing; not discovered until work began, or d. Category II non-friable ACM unlikely to crumble during demolition. (40 CFR 61.145(c))	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
☐ ☐ ☐	**5. Non-Component Removal/Emissions Controls.** RACM is adequately wetted unless: a. Agency has indicated that wetting would unavoidably damage equipment/pose safety hazard, b. Exhaust ventilation and collection system designed and operated to capture asbestos emissions is in use and no visible emissions to outside air, c. Glove bag system is being used which is operating to contain particulate asbestos, or d. Leak-tight wrapping is being used to contain all ACM. (40 CFR 61.145(c))	
☐ ☐ ☐	**6. Component Removal/Emissions Controls**. RACM is stripped with appropriate wetting/exhaust venting or components are placed in leak-tight wrapping. Large components in which ACM is not disturbed and components are placed in leak-tight wrapping/labeled do not need to be stripped. (40 CFR 61.145(c)(4))	
☐ ☐ ☐	**7. RACM Handling**. No visible emissions to outside air. RACM is carefully lowered to ground without damaging; use leak-tight chutes or containers if removal occurs 50 feet above ground. If temperature is below 0° C, no wetting is required. Temperature records kept for beginning, middle and end of each day and are recorded and retained for 2 years. (40 CFR 61.145(c))	
☐ ☐ ☐	**8. Training**. Foreman trained in NESHAP regulations is present during shipping, removal, and handling. Verify that proof of training is at project site. OSHA requires annual refresher course. (40 CFR 61.145(c), 29 CFR 1926)	
☐ ☐ ☐	**9. Posting Area**. Removal/storage area is demarcated and access is restricted. (29 CFR 1929 and 1915; state air regulations)	
☐ ☐ ☐	**10. Health and Safety Requirements**. OSHA regulations specify requirements that include minimizing exposure, for establishing engineering controls and work practices, monitoring, PPE, medical surveillance, warning/posting/labeling, training/certification of asbestos workers and air monitors, recordkeeping.	
☐ ☐ ☐	**11. Minimizing Emissions**. All areas of building where RACM is present are being cleaned using HEPA vacuuming, steam-cleaning of carpets/wet-cleaning of floors and horizontal surfaces. (GMP)	
☐ ☐ ☐	**12. Vehicle Placarding**. All vehicles are marked with visible asbestos hazard warning signs. (40 CFR 61.150 and 61.149)	
☐ ☐ ☐	**13. Disposal**. Disposal facility has been prequalified under TTEC procedures for disposal of ACM.	
☐ ☐ ☐	**14. Labeling**. Containers/wrapped materials destined for disposal are labeled with generator name/location/asbestos label as specified in 29 CFR 1910.1001(j)(2) or 1926.58(k)(2)(iii). (40 CFR 61.150(d))	
☐ ☐ ☐	**15. Shipping papers**. Shipment papers are prepared and signed by generator. (40 CFR 61.150(d))	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
☐ ☐ ☐	**16. Transportation.** Transporter has been pre-qualified under TTEC procedures for transportation subcontractors. Transportation on public roads of asbestos waste complies with 49 CFR 172.101 and 173, Subpart J. *Complete the "Oil and Hazardous Substances Management" checklist.*	
☐ ☐ ☐	**17. Reports**. Exception report has been submitted to EPA/delegated agency if shipment paper was not returned within 45 days. (40 CFR 61.150(d)) Note: May be managed by client. Ensure ESS is aware of who's responsibility it is to file exception reports.	
☐ ☐ ☐	**18. Recordkeeping**. Waste shipment records, exception reports and notifications are retained in project files.. (40 CFR 61.150(d), GMP)	
☐ ☐ ☐	**19. Deconwater/Treatment Filters/PPE.** These waste streams may be regulated RACM. If so, they have been properly handled and disposed of. Review site documentation showing regulated status of these wastestreams.	
☐ ☐ ☐	**20. State Hazardous Waste**. RACM and wastes generated during remedial activity may be a state special/hazardous waste. Review EPP/WMP for any state-specific requirements relating to ACM.	
School Building (*Applies if surveying, sampling, conducting written assessments, developing management plans, and conducting demolition renovation or operation and maintenance in public or non-public schools are performed.)*		
☐ ☐ ☐	**21. Training**. The following persons have been trained in accordance with State or Federal requirements. a. Inspectors that conduct asbestos surveys. (40 CFR 763.85(a)) b. Workers conducting response actions or maintenance activity. c. Contractor/Supervisors conducting response actions/maintenance activities. d. Persons who develop management plans per 40 CFR 763.93. e. Project Designer who designs activities associated with response actions/maintenance activities. f. Project Monitor who oversees abatement activities performed by contractor. (40 CFR 763, Appendix C) Review site training matrix to determine if training requirements are being maintained for all site personnel.	
☐ ☐ ☐	**22. Surveys/Written Assessment**. Surveys should be repeated every 3 years to reassess condition of all friable known or assumed ACM. Review date of most recent survey for project activities related to ACM.	
☐ ☐ ☐	**23. Sampling**. During survey, material suspected of containing asbestos has been sampled in accordance with 40 CFR 763.86. Analysis is being performed by an accredited laboratory. At completion of response actions functional space must be sampled. (40 CFR 763.86, .87, and .90) Review project documentation to ensure samples were collected as determined necessary.	
☐ ☐ ☐	**24. Asbestos Management Plan.** Each facility with ACM has an asbestos management plan. (40 CFR 763.93)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
☐ ☐ ☐	**25. Response.** Response action is being conducted in accordance with written assessment developed under 40 CFR 763.88. The response action includes: a. Damaged/significantly damaged thermal system insulation (TSI) ACM which is being repaired or removed. All other TSI ACM and covering is being maintained intact and undamaged. b. Damaged friable surfacing ACM which is either being encapsulated, enclosed, removed or repaired. c. Significantly damaged friable ACM which is being isolated, access is restricted, and ACM is enclosed/encapsulated or removed. (40 CFR 763.90)	
☐ ☐ ☐	**26. Operations and Maintenance Plan.** An O&M Plan is being implemented if friable surfacing ACM, TSI ACM, and miscellaneous ACM that has potential for damage is found. If those materials have significant damage, O&M plan is being implemented, area is isolated, access is restricted, preventative measures are being instituted, and ACM is being removed, encapsulated, restricted or repaired. (40 CFR 763.91)	
☐ ☐ ☐	**27. Air Sampling.** Air sampling during and after completion of response action is being conducted in accordance with 40 CFR 763.90. Records of air sampling are being maintained in accordance with 40 CFR 763.94.	
☐ ☐ ☐	**28. Notification.** Local education agency is providing annual written notification to parents, teachers and employee organization of availability of asbestos management plan. (40 CFR 763.93)	
☐ ☐ ☐	**29. Minimizing Exposure.** All areas of building where friable ACM is present is cleaned using HEPA vacuuming, steam-cleaning of carpets/wet-cleaning of floors and horizontal surfaces. (40 CFR 763.91(c))	
☐ ☐ ☐	**30. Record Keeping.** The following records, as applicable, are being maintained in the project files: a. Air sampling information. b. Cleaning records for activities described in 40 CFR 763.91(c). c. Other records, as required by client under contract, training records, description of response actions, surveillance activities, O&M activities, etc.	

-- End of Checklist --

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— CONSERVATION RESOURCES AND ENVIRONMENTAL REVIEWS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
Location-Dependent Programs				
			1. River. If project site is located adjacent to or within a designed Wild and Scenic River, regulatory agency has been consulted regarding protective measures. Project is in compliance with those measures. Documentation is maintained. (Wild and Scenic Rivers Act, State regulations)	
			2. Coastal Zone Management Act. If project site is located within a designated federal/state coastal zone, Coastal Zone Management Act Certification has been obtained and is maintained in files. (CZMA, State/local regulations)	
			3. Shoreline Protection. If project site is located within protected shoreline area in the state, a Shoreline Protection Act permit has been obtained. Project is in compliance with permit terms and conditions. (State/local regulations)	
			4. Public Lands. If project activities are located or are occurring within federal, state, local public lands, including parks, forests, reserves, and trails, access and use authorization were obtained & documented. (Federal/State/local regulations)	
Environmental Review				
			5. National Environmental Policy Act. If applicable, project activities are in compliance with any mitigation measures specified in the final documentation (e.g., FONSI). (40 CFR 1500-1508)	
			6. State Environmental Policy Act. Project files contain documentation demonstrating completion of the environmental review and site activities are in compliance with any mitigative measures specified in this document. (State regulation)	
			7. CERCLA/State Mini-CERCLA Cleanup. Project is not required to undergo environmental review because it is being conducted under CERCLA or State cleanup law.	
			8. Exempt. Project is categorically exempt or has obtained specific exemption that it is not required to undergo environmental review. Project files contain proper documentation. (40 CFR 1500, State regulations)	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— CONSERVATION RESOURCES AND ENVIRONMENTAL REVIEWS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
Location or Activity-Dependent Programs				
			9. Archaeological/Cultural/Historic Resources. Project activities involve excavation or other land disturbing activities. If State Historic Preservation Officer files show that no surveys have been conducted and client has no information about cultural resources at the site, Tetra Tech EC cultural resources specialist or client designated specialist conducted a survey prior to commencing land disturbing activities. (36 800, E.O. 11593)	
			10. Threatened/Endangered Species. If applicable, project files contain notification and regulatory agency response. Project is in compliance with any mitigative measures. If "takings" occur, approval has been obtained. (50 CFR 17, 50 CFR 402.6, state/local regulations)	
			11. Fish and Wildlife Collection. Permit/approval, if required, has been obtained and fish/wildlife collection regulations and guidance are being complied with. (33 CFR 230-330, State/local regulations)	

--End of Checklist--

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— DRINKING WATER, SOLE SOURCE AQUIFER, WELLHEAD PROTECTION AND WATER WITHDRAWAL

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			This checklist applies to projects in which drinking water sources are being constructed/modified/abandoned, groundwater is being withdrawn, or sole source aquifers or wellheads are being impacted.	
			Drinking Water Systems. (*Applies if project involves connection to or upgrading a drinking water system.)*	
			1. Design. System design has been approved by regulatory agency and is being constructed in accordance with design plans.	
			2. PE Certification/Stamping. If applicable, drawings are properly stamped/certified.	
			3. Water System Permits. If required, permit is maintained in files and activities are in compliance with permit terms/conditions.	
			4. Water System Connection Approvals/Plumbing Code. If applicable, the connection design has been approved by the local authority and conforms to the local plumbing code.	
			5. Other Permits/Certifications. Permits to conduct construction, demolition, and road alteration/interference have been obtained. If fill brought in, certification that fill is clean is maintained in files. *Complete the "Field/Construction/Road Activities" Checklist to demonstrate compliance.*	
			6. Waste Management. Construction debris and other wastes, if any, are being properly managed, transported, and disposed of. *Complete applicable waste checklists.*	
			7. Easements/Right-of-Ways. Activities are being conducted on property owned/controlled by third parties. Easements and right-of-ways have been obtained prior to conduct of activities and are contained in project files.	
			Well Construction and Abandonment. (*Applies if construction or abandonment of water supply or monitoring wells are performed.*)	
			8. Well Construction and Abandonment Approval/Notice. Notice or approval was obtained prior to commencing well construction or abandonment activities. Documentation is in project files. (State regulations)	
			9. Well Decommissioning Forms. Notice was submitted to agency after well was decommissioned. (State regulations)	
			10. Well Construction Standards. Well construction standards have been met. (State regulations)	
			11. Well Contractor Licensing. Contractor performing well construction/abandonment is properly licensed. Documentation of licensing is contained in project files. (State regulations)	

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TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— DRINKING WATER, SOLE SOURCE AQUIFER, WELLHEAD PROTECTION AND WATER WITHDRAWAL

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
Wellhead Protection. (*Applies when project is located near water wells or "well fields" supplying public water.)*				
			12. Wellhead Protection Program. States list wellhead areas that must be protected against contamination or degradation. The state list has been examined to determine if the project areas is listed. (State regulations)	
			13. Wellhead Restrictions. If the impacted area is within a wellhead protection area, all restrictions are being complied with. (State regulations)	
Water Withdrawal. (*Applies if groundwater is being withdrawn.)*				
			14. Groundwater Withdrawal Permit. A withdrawal permit has been obtained if the volume of groundwater being withdrawn exceeds the state-determined level. Terms/conditions of permit are complied with. (State regulations)	
			15. Sole Source Aquifer Protection Standards. Groundwater withdrawal must comply with state/local aquifer protection standards if the underlying aquifer has been designated as a sole source aquifer. (State/local regulations)	
--End of Checklist--				

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST—EHS/EMS PROGRAMS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			This checklist applies to all projects	
			Program Administration and Documentation	
			1. EHS Procedures. Site has access to current, relevant EHS Program requirements through CRL or other communication source.	
			2. Awareness Recognition Programs (EHS 1-2). EHS awareness being implemented (e.g., postings, posters, etc.). EHS recognition program instituted.	
			3. Employee Participation Program (EHS 1-3). "Major Projects" have EHS Committee, meetings held, and files contain required documentation. The EPP has been implemented and documented (EHS 1-3, Section 3.3).	
			4. Subcontractors (EHS 1-4).	
			a) HIPO Field Contractors have been approved and proper documentation is maintained.	
			b) Waste Management Subs have been approved (including lower tier subcontractors) and proper documentation is maintained.	
			5. Visitor Safety (EHS 1-5). Visitors entering site have complied with procedural requirements.	
			6. EHS Meetings (EHS 1-3)	
			a) EHS Daily Briefings conducted – contents properly documented, EMS issues discussed (ESQ Policy, worker impacts to environment, pollution prevention).	
			b) "Major Projects" conduct weekly meetings. Documentation is maintained.	
			7. Incident/Regulatory Reporting (EHS 1-7)	
			a) Incident reports submitted for all incidents in a timely fashion.	
			b) Investigation report submitted for all incidents in a timely fashion.	
			c) Corrective actions identified in the investigation report have been completed and closure has been documented.	
			d) Employer's first report of injury prepared and submitted on time.	
			e) Permit exceedences/spills/releases have been reported to regulatory agencies as required by law or regulation.	
			8. Manifests/TtEC Permits (EHS 1-8).	
			a) Manifests are not signed by TtEC personnel except as allowed by EHS 1-8.	
			b) No environmental permits in TtEC's name or TtEC as operator except as allowed by EHS 1-8.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			9. Recordkeeping (EHS 1-9). All EHS records maintained per procedure Personnel medical clearance EHS Correspondence H&S Logbooks Weekly Reports Air/noise monitoring records are complete including calibration, monitoring records, chain of custody, laboratory results, and employee notifications as necessary. EHS Compliance Documents EHS Program Documentation (e.g., work permit, fit-test results, etc.)	
			10. External Regulatory Inspections/Notices (EHS 1-10). Have any inspections been conducted by external EHS regulatory agency? If so, when? External EHS Inspection checklist completed, maintained in files, and notifications were made per procedure. Are corrective actions completed?	
			11. EHS/EMS Training (EHS 1-11).	
			a) All staff (including subcontractors) have required EHS and TtEC training. Documentation is maintained on-site as required by EHS 1-11.	
			b) Training on EHS, WM, and DOT Plans have occurred and is documented (EHS 3-2).	
			c) Are personnel trained in the environmental aspects of their activities?	
			12. Ergonomics (EHS 3-1). Field and Office Ergonomic evaluations have been conducted as suggested in EHS 3-1	
			13. EHS Plans (EHS 3-2).	
			a) Meets requirements of EHS 3-2, including requirements under 29 CFR 1910.120 and any other safety or environmental statute or regulation.	
			b) Are TIP/RMP risks incorporated into EHS plan?	
			c) Completed, approved, and signed copy is on-site.	
			d) Has been modified to reflect changing site condition/activities.	
			e) Is being implemented as written.	
			f) Identifies activity hazard analyses, which adequately address site hazards (EHS 3-5).	
			g) Identifies PPE, which is appropriate for site contaminants, actual, and potential exposure levels, and site activities.	
			h) Identifies Air/Noise monitoring strategy (s), which is appropriate for contaminants and activities.	
			i) Lists action levels which are appropriate and action levels are being implemented.	
			j) Identifies exclusion, CRZ, and support zones, site is clearly demarcating these zones per EHS plan (EHS 3-4).	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			k) Discusses appropriate personnel and equipment decontamination procedures. Procedures are being implemented (EHS 5-1).	
			l) Includes Emergency Response Plan, which addresses potential site emergencies (EHS 2-1).	
			m) Addresses Bloodborne Pathogens (EHS 4-1), Hazard Communications (EHS 4-2), Radioactive/Mixed Waste (EHS 4-3), Hearing Conservation (EHS 4-4), and Temperature Extreme (EHS 4-6) requirements as applicable. Requirements are appropriate and properly implemented.	
			n) Addresses respiratory protection program (EHS 5-2) requirements. Program being implemented.	
			o) Addresses environmental conditions and regulatory requirements.	
			p) Identifies all waste streams, management requirements (including client requirements), and transport/disposal plans. These requirements are being implemented.	
			q) Identifies all required environmental permits – permits are current and all applicable conditions are implemented. *(Refer to specific checklists if necessary).*	
			14. Inspections (EHS 3-3).	
			a) Weekly/monthly inspections conducted. Closure of action items are documented.	
			b) Closures of previous PESM inspection action items are documented. (*Those action items not closed must be forwarded to action item matrix for this inspection).*	
Postings/ Signs/ Labeling/ Markings				
			15. OSHA Job Safety & Health Poster.	
			16. OSHA 300 Log (February) posted.	
			17. OSHA Noise Regulation posted.	
			18. Department of Labor Postings.	
			19. Emergency phone numbers posted.	
			20. Other suggested postings: **a)** Evacuation routes posted. **b)** All hazard warning signs. **c)** Noise hazard warning signs. **d)** Control zones clearly identified. **e)** Site perimeter posted and controlled. **f)** Emergency exits clearly marked. **g)** Fire extinguishers clearly marked. **h)** Safety showers/ eyewashes clearly marked. **i)** Circuit breakers labeled. **j)** Low overhead hazards clearly marked.	
			21. Copy of TtEC Work Rules Posted (EHS 3-6).	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			22. ESQ Policy posted.	
			23. TtEC Hotline Poster.	
			24. ZIP/EMS Bulletins are posted, as appropriate.	
Work Practices and EHS Knowledge				
			25. Identify at least 1 Safety Observation performed	
			a) Do Site Personnel: Where appropriate PPE Understand risks Implement appropriate controls Implement permit systems Comply with EHS Plan requirements	
			b) Do Supervisors: Provide appropriate tasking Identify competent persons as necessary Provide sufficient oversight	
			26. EHS personnel have good knowledge regarding use and limitations of the monitoring equipment.	
			27. TtEC (including craft labor) and subcontractor employees are aware of the ESQ policy and commitments it contains.	
High Loss Potential Activities (Meet TtEC and/or Regulatory Requirements)				
			28. Asbestos operations (EHS 8-1).	
			29. Hazardous Materials Management (EHS 3-7).	
			30. Confined space entries (EHS 6-1).	
			31. Drill rigs (EHS 6-2).	
			32. Excavations (EHS 6-3).	
			33. Lockout/ tagout (EHS 6-4).	
			34. Hotwork (EHS 6-5).	
			35. Boating (EHS 6-6).	
			36. Drum Handling (EHS 6-7).	
			37. Adequate fall protection (EHS 3-8).	
			38. Hydroblasting.	
			39. Demolition (EHS 6-8).	
			40. Crane operations.	
			41. UXO Operations.	
Emergency Preparedness				
			42. SCBAs for emergency use inspected each month and documented.	
			43. Sufficient dedicated ER equipment available.	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST—EHS/EMS PROGRAMS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			44. Sufficient trained CPR/ first aid personnel available. (See EHS 1-11 for TtEC requirements).	
			45. Site personnel trained to perform ER tasks per EHS Plan.	
			46. ER drills conducted per EHS Plan.	
			47. Emergency response phone numbers verified.	
			48. Local fire department, hazardous materials group, hospital, etc. aware of TtEC expectations for emergency situations	
Environmental Management System				
			49. Project-Specific Significant Environmental Risks (Aspects). Project-specific significant environmental risks (aspects) have been identified in TIP.	
			50. Significant EHS Risks The Project/Site Manager should be able to describe project environmental and H&S risks and their mitigations.	
			a) Pollution Prevention. Does project have a recycling program for paper, bottle, cans, construction debris, trees/shrubs, other: _____ (specify). (Please circle all that apply). *If not, why not?*	
			51. Document Control. No obsolete company guidance documents are maintained on-site. See PO-8 for requirements. Project Staff utilize current company procedures/ have access to CRL.	
			52. Operational Controls. The operations/activities associated with project-specific significant environmental risks (aspects) are carried out in accordance with specifications included in the project work plan, other project plans, and/or applicable procedures. *Operational controls are described as mitigation measures in TIP.*	
			53. Monitoring and Measuring and Corrective Measures. Significant environmental risks (aspects) are being monitored and measured. Corrective action to address deficiencies is implemented and closure is documented in project files.	

-- End of Checklist--

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— FIELD CONSTRUCTION AND ROAD IMPACTING ACTIVITIES

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			This checklist applies to all projects involved in field construction activities.	
			Utilities (*Applies if project involves the construction, extension, or hookup or shutoff of utilities.)*	
			1. Utilities. Project involves the construction, hook-up or shut-off and extension of the following utilities. *Circle all that apply.* a. Electric b. Phone c. Water d. Sewer e. Gas f. Other: _____	
			2. Permit/Approval. Permit/approval from local government, state utility siting commission, state agency, or federal base personnel was obtained prior to commencing construction, extension, hook-up, or shut-off activities. Permit/approval is located in the on-site project files or conspicuously posted, if required. (State/local regulations, Base requirements)	
			3. Inspection. Regulatory agency has conducted an inspection of the activities. *In the adjacent column note the date of the inspection(s) and the results.*	
			Zoning/Land Use	
			4. Zoning. Project constitutes an approved use for the zoned area. If not, a conditional use permit or request for re-zoning has been obtained. (State/Local regulations) *Note: This issue normally will apply to larger project in which landfills are being constructed, or other larger facilities are being developed.*	
			5. Building Code. Project involves the construction or placement of temporary or permanent buildings, equipment, or structures. State/local agency or base personnel responsible for reviewing/permitting these structures has been consulted. Permits and/or reviews have been obtained, if necessary. Buildings/structures comply with federal, state, and local building codes. (State/Local regulations) *If an inspection was conducted note the date and results.*	
			6. UFC. Project involves the construction or placement of temporary or permanent buildings, equipment, or structures. State/local agency or base personnel responsible for reviewing fire safety has been consulted. Permits/approvals/reviews have been obtained, if necessary. Buildings/structures comply with federal, state, and local fire codes. (State/local regulations) *If an inspection was conducted note the date and results.*	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— FIELD CONSTRUCTION AND ROAD IMPACTING ACTIVITIES

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			7. Airport/FAA Approval. Project involves the construction or placement of temporary or permanent buildings, equipment, or structures which will be constructed adjacent to an airport or exceed 200 feet in height. FAA Certification has been obtained for the project or a determination has been made that the project is exempt. Project files contain the FAA certification or exemption determination (14 CFR 77).	
			8. Noise. Project generates noise emissions (e.g., drilling rigs, construction equipment, etc.). Project is in compliance with state or local noise control standards. If restrictions have been placed on hours of operation, project operating logs demonstrate compliance with these restrictions. (State/Local regulations).	
			9. Certification of Drawings. As-builts, specifications, or drawings have been stamp/sealed by PE or certified by other professional, as applicable, in accordance with state/local regulation.	
			10. Demolition Activities. Project involves the demolition of structures or equipment.	
			a. **Pre-demolition Notice/License.** Notice is maintained in project files or posted conspicuously, if required.	
			b. **Hazardous substances.** A pre-demolition determination regarding the presence of hazardous substances (PCB, Mercury, Lead and Others) associated with building structures, processes and equipment has been made. Proper removal and segregation of these hazardous substances occurs before demolition.	
			c. **Asbestos Determination.** A determination regarding the presence of asbestos has been made. Proper notifications have been made (40 CFR 61, State/Local agencies)	
			d. **Waste Characterization.** Debris and other wastes have been characterized and are being properly managed and disposed of.	
Miscellaneous				
			11. Excavation Activities. Dig-safe/ "hot dig" permits/approvals have been obtained. Permits are maintained in the project files. (State/Local regulations)	
			12. Well Drilling/Construction/Maintenance/Abandonment. Project involves the drilling/abandonment of wells.	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— FIELD CONSTRUCTION AND ROAD IMPACTING ACTIVITIES

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			a. **Drilling Permit/Pre-Drill Notification/Start Card.** Permit/approval/notification was obtained in a timely manner and is maintained in the project files. (State/Local regulations).	
			b. **Licensed Operator.** Documentation of Driller or Professional Geologist licensing/certification is maintained in project files. (State/Local regulations)	
			c. **Well Construction/Abandonment Standards.** Well was constructed/abandoned in accordance with regulatory standards/guidance. (State/Local regulations)	
			d. **Post-Abandonment Notification.** Notification was submitted in a timely manner and a copy is maintained in the project files. (State/Local regulations)	
			13. Clean Fill Certification/Testing. Project files contain analytical testing or letter from supplier (which may be the client if from project site) that soil is clean. (State/Local regulations; GMP)	
			14. Soil Erosion Control. Project involves excavation, grading or other land disturbing activities associated with construction projects.	
			a. Stormwater Permit. Project is complying with General or Individual Permit for Stormwater Discharges from Construction Projects as required by State/Local regulations. *Complete "Wastewater/Stormwater Discharge/UIC" checklist*	
			b. Soil Erosion and Sediment Control Plan. Project prepared Plan and effectively implements erosion controls, inspections and maintenance requirements.	
			c. Grading Permit/Plan. Activities are being conducted in compliance with the permit. Permit is maintained in the project files.	
			15. Stormwater Pollution Prevention (SWPP). Project has prepared a SWPP Plan to comply with the Industrial or Construction SWPP requirements (State/Local regulation) to prevent sediment and chemical contamination from migrating off the project site boundary.	
			16. Spill Prevention Control and Countermeasures Plan (SPCC). Projects storing oils in quantities subject to federal regulations (40 CFR 112) have prepared and implemented an SPCC Plan and/or registered tanks (State/Local regulation). *Complete oil and hazardous substances checklist.*	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— FIELD CONSTRUCTION AND ROAD IMPACTING ACTIVITIES

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			17. Dust Control. Project involves land disturbance activity that generates fugitive dust and all reasonable measures (or other local standard) are being used to minimize fugitive emissions. (State/Local regulations)	
			a. Planning. Project has plans, specifications and or procedures for the control of fugitive dust	
			b. Inspections. Project is observing and taking action when visual dust is observed. Responsibility for dust control and visual monitoring is assigned and understood.	
			c. Control Measures. Project has equipment and materials on site to effectively control fugitive dust from land disturbance activities. Controls are implemented in active and inactive (but not fully stabilized) construction areas.	
			d. Effectiveness. At time of inspection fugitive dust was observed to be minimal and controls used to minimize dust were observed (e.g., water tank truck).	
			18. Stream Crossing. If applicable, the USACE § 9 permit has been obtained. State may also require permit. *Complete "Wetlands/Streams/Floodplains" checklist.*	
			19. Land Surveying. Licensed/registered Professional Land Surveyor performed the surveying and stamped/sealed appropriate documentation. (State/local regulations)	
Activities That Impact Roads/Traffic (*Applies if roads or traffic will be impacted by project activities.)*				
			20. Road Alteration/Curb Cuts. Opening/access permit or approval has been obtained from the local or state agency prior to commencing construction. (State/local regulations)	
			21. Heavy/Large Loads. Permit/approval has been obtained from state/local agency authorizing shipment. Time restrictions and weight limits for shipment are being complied with. (State/local transportation regulations)	
			22. Traffic Impact Analysis. If required, the analysis was conducted and approved by the local regulatory agency. (Local regulations)	
			23. Road Crossing/Easements. For public road crossings, right-of-way permit was obtained from state/local agency. For private road crossing, right-of-way permit or easement was obtained from private landowner. Permits/approvals are maintained in the project files. (State/local regulations)	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— FIELD CONSTRUCTION AND ROAD IMPACTING ACTIVITIES

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			24. Traffic Control. Flag signals, barricades, safety lighting, warnings, etc., are used for vehicle crossings, loading/unloading, or parking. Sufficient vehicle parking has been allocated. (State/local regulations, Base requirements)	
Materials Transportation *(Includes the activities such as classification, packaging and shipment of DOT-regulated Hazardous Materials. See 49 CFR 172.101 Hazardous Materials Table)*				
			25. Hazardous Materials (HM) Transportation. Project plans identify hazardous materials transported over public roadways by the project and address DOT requirements. *Complete oil/hazardous substances and hazardous waste (as applicable) checklists.*	
			a. **Fuel Transport.** If Project uses "fuel trucks" (i.e., tanks on back of a pickup truck) for diesel fuel transport along roads that are accessible by the public and the tanks have a capacity of > 119 gallons (e.g. DOT definition of "bulk package"), the tanks must be placarded on all 4 sides with a Class 3 Flammable Liquid placard & it must display the appropriate 4-digit DOT Identification Number (49 CFR 172.101).	
			--End of Checklist--	

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TETRA TECH EC, INC.

PESM INSPECTION CHECKLIST— HAZARDOUS WASTE: PERMITTED FACILITIES

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes No N/A	**REQUIREMENTS**	**COMMENTS/NOTES**

This checklist applies when client (or Tetra Tech EC, Inc., if applicable) is storing wastes for longer than 90 days, creating, treating, or disposing of hazardous wastes on-site. Project may include either conducting work at a client's already permitted facility or obtaining a permit. Therefore, reference to the term "facility" throughout this checklist may either include the entire project or the client's facility. However, if the client already has a RCRA permit, the inspection is limited only to those areas of the client's facility which are impacted by the project activities. Other checklists may be required for areas of concern not included under this permit (i.e., Wastewater Discharge, Hazardous Waste: Storage Treatment Disposal in less than 90 days, Air Quality, etc.)

	General Requirements *(Please complete each line in this section.)*	
	1. ESS or Designated Waste Management Role. Discuss Role of ESS or designated individual with regards to waste management at the Site. a. How is waste management handled. Is it working effectively? b. What types of problems have been encountered? c. Is ESS or designated individual receiving regulatory support/oversight from ESQ Specialists, as needed? d. Does ESS or designated individual have the required training and knowledge? Note – for permitted or interim status facility management, the designated individual should be trained and experienced to a much higher level than is typical on less than 90 day facilities at most Tt project sites.	
	2. Permit Applications/Interim Status and Final Part B Permits. Copies of Part A and B permit applications and final Part B permits are located on-site. Verify the following: (40 CFR 270) a. Permit is current. b. Existing physical facilities are consistent with contents in permit and application. c. Part A and B application and permit, as applicable, accurately reflect existing TSD project activities. d. Project is in compliance with applicable permit requirements. Note: Each part of the permit that affects TTEC scope of work must be reviewed and evaluated for compliance as part of this inspection	
	3. EPA Identification Number. Facility has an EPA Identification number to store/treat/dispose/transport/offer waste for transport. (40 CFR 264.11 and 265.11)	
	4. Waste Determination. Waste has been determined to be hazardous or state-regulated hazardous waste prior to treatment, storage or disposal. (40 CFR 264.13 and 265.13)	
	5. Waste Analysis Plan. Written waste analysis plan has been developed.	

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Project:	Inspector:	Date:

Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	a. Contents. The waste analysis plan includes: • All wastes generated and received at the project. • Parameters for which each waste will be analyzed. • Test methods used to test for these parameters. • Sampling method used to obtain representative samples. • Frequency with which initial analysis will be reviewed or repeated. • Provisions for retesting waste when the process or operation generating the waste changes. • Procedures used to inspect and analyze each hazardous waste shipment received. (40 CFR 264.13 and 265.13)	
	b. Recordkeeping. Records are kept that confirm waste received matches analyses, waste movement are kept within the facility, and analysis regarding restricted waste are maintained. c. Updates. WAP is updated to reflect requirements applicable to restricted wastes. (40 CFR 265.13(b)(6) and 268.7(c) and (d))	
	6. Waste Minimization. Waste minimization practices are being implemented in accordance with a written plan. (40 CFR 262.41(a)(6)-(8); 58 Fed. Reg. 31114)	
	7. Inspection. A written schedule has been developed and is being complied with to inspect monitoring equipment, safety equipment, security devices, and operating and structure equipment. a. A copy of the plan is kept at the project site. b. Areas subject to spills are inspected daily. c. Deterioration/malfunctions are remedied in a timely manner. d. All inspections are documented in a log. All inspections must show deficiencies, responsibility for correcting deficiencies, and dates on which those deficiencies were corrected.	
	8. Location Requirements. Project involves the construction of a TSD unit. Location standards specified in 40 CFR 264.18 and 265.18 are being complied with.	
	9. Construction Quality Assurance Program. For new surface impoundments, waste piles, or landfills (units, lateral expansions, and replacement units constructed after January 29, 1992), a construction quality assurance program was developed and implemented in accordance with 40 CFR 264.19 and 265.19.	
Closure/Post-Closure (*Applies if the project involves closure or post-closure care for any hazardous waste management unit.)*		
	10. Closure Plan. Closure is being conducted pursuant to an approved-closure plan. ESS should be able to describe closure requirements and how they are being met. (40 CFR 264.112 and 265.112)	

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Project:	Inspector:	Date:

Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	11. Amendment to Plan. Written notice was provided to EPA/state requesting modification to the closure plan and Part B permit because changes in operating plans or facility design affect the closure plan, there is a change in the expected year of closure, or a partial or final closure is being conducted and unexpected events require modification to the approved plan. A copy of the notification should be included in the project files.	
	12. Notification. Notification was provided to EPA/state 60 days prior to conducting closure of a surface impoundment, waste pile, or landfill and at least 45 days prior to closure of a tank, container storage area or incinerator. A copy of the notification should be included in the project files. (40 CFR 264.112 and 265.112)	
	13. Time Allocation. Within 90 days of receiving the last volume of waste, all hazardous wastes are treated, removed from unit or dispose on-site in accordance with the closure plan. The partial/final closure of the unit must be completed within 180 days of receiving the last volume of waste unless an extension has been obtained from EPA/state. Documentation of compliance should be included in the project files. (40 CFR 264.113 and 265.113)	
	14. Disposal. All contaminated equipment, structures and soil are being properly disposed of or decontaminated unless standards specified for closure of individual units are complied with. Hazardous waste generator requirements, as applicable, are being complied with during closure. (40 CFR 264.114 and 265.114)	
	15. Certification. Within 60 days of completion of closure of surface impoundment, waste pile, land treatment, and landfill unit, or completion of final closure of a facility, certification was sent to EPA/state certifying that it was closed in accordance with approved plan. Certification was signed by independent PE and owner/operator of facility. Documentation of compliance should be included within project files. (40 CFR 264.115 and 265.115)	
	16. Survey Plat. Survey plat indicating location and dimensions of landfill cells or other hazardous waste disposal units prepared and certified by professional land surveyor was submitted in timely fashion to local zoning authority and EPA/state. (40 CFR 264.116 and 265.116)	
	17. Post-Closure Care/Plans/Notices and Certifications. Post-closure performance standards, plan requirements, amendment/permit modification requirements, notifications to regulatory agencies and certification of completion are being complied with. (40 CFR 264.117 - .120 and 265.117 - .120)	
	18. State-Specific Requirements. Closure meets state-specific requirements. (State Hazardous Waste Regulations) See Work Plan/WMP for details on requirements.	
Container Storage (*Applies to storage of containers for greater than 90 days.)*		
	19. Marking. Containers are clearly marked with the words "Hazardous Waste".	

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Project:	Inspector:	Date:

Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	20. Condition. Containers are in good condition (e.g., no severe rusting, apparent structural defects). (40 CFR 264.171 and 265.171)	
	21. Compatibility. Waste is compatible with container. (40 CFR 264.172 and 265.172)	
	22. Management. Containers are closed at all times, except when adding or removing wastes, and containers are handled/stored in a manner to prevent rupture/leaking. (40 CFR 264.173 and 265.173)	
	23. Stacking Drums. Containers stored on top of each other have pallets between them and are not stored more than 2 high. (GMP)	
	24. Drum Log. A log is kept of all drums contained in the storage area. (GMP)	
	25. Location. Containers holding ignitable/reactive waste are stored at least 50 feet from property boundary. (40 CFR 264.177 and 265.176)	
	26. Secondary Containment--Final Status. Storage area has a secondary containment system which: a. Is impervious: free from cracks or gaps and impervious enough to contain leaks, spills, and precipitation. b. Base is sloped (or otherwise designed) to drain and remove liquids resulting from leaks, spills, or precipitation. c. Containers are elevated or protected from contact with accumulated liquids. d. Has adequate capacity to contain 10% of volume of containers or the volume of the largest container, whichever is greater. e. Run-on into the containment system is prevented or system has sufficient capacity to contain any runon that might enter system. f. Liquids within containment system are removed as soon as practicable. (40 CFR 264.175)	
	27. Inspections. Containers and storage area are inspected at least weekly and logs are kept of these inspections. (40 CFR 264.174 and 265.174)	
	28. Incompatibility. If incompatible wastes are stored in same container, they comply with precautions specified in 40 CFR 264.17(b) or 265.17(b) and if waste is placed in container that previously held incompatible waste, documentation exists that container was washed by drum recycler before reuse. (40 CFR 264.177 and 265.177)	
	29. Separation. Incompatible wastes/materials are separated from each other or protected from each other by dike, berm, wall or other device. (40 CFR 264.177 and 265.177)	
	30. Closure. Upon closure, storage area meets 40 CFR 264.111 or 265.111 decontamination/closure requirements. (40 CFR 264.179 and 265.179)	

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Project:	Inspector:	Date:

Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	31. Air Emissions. Containers comply with management standards specified in 40 CFR Part 265.1030, -.1050, and -.1080. a. Subpart AA: Applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air/steam stripping of hazardous wastes with organic concentrations of 10 ppm or greater. Operator must calculate emissions and operate equipment within those specified emissions. b. Subpart BB:Applies to equipment that contains or contacts hazardous waste with organic concentrations of 10 ppm or greater. Refer to subpart for standards for various equipment. c. Subpart CC: Applies to tanks, surface impoundments, and containers used to contain hazardous waste. (ie, hazardous waste is stored in DOT specification containers; hazardous waste tanks meet specific design criteria (note CERCLA and RCRA corrective action exemptions); emissions controls for surface impoundments)	
	32. State-Specific Requirements. Storage area meets state-specific requirements. (State Hazardous Waste Regulations) See WMP for additional state requirements.	
Satellite Accumulation		
	33. Satellite Accumulation Area. A SSA is being used to manage small quantities of hazardous waste being generated at or near the point of generation. If so, complete the applicable SAA section in the *Hazardous Waste: Storage Treatment Disposal in Less than 90 Days* Checklist	
Tanks		
	34. Existing Tanks. If wastes are being stored in existing tanks that do not have secondary containment, there is a written integrity assessment certified by an independent, registered PE that attests to the tank's integrity, within the project files.. (40 CFR 264.191(a) and 265.191(a))	
	35. New Tanks Installed as Part of Project. Project involves the installation of a tank that stores/treats hazardous waste, and the following has been performed: a. **Integrity Assessment.** There is a written assessment reviewed/certified by independent, registered PE of tank's integrity on-site. (40 CFR 264.192(a) and 265.192(a)) b. **Installation Inspection.** There is a written assessment by a qualified installation inspector or registered PE that tank is properly installed on-site. (40 CFR 264.192(b) - (g) and 265.192(b) - (g))	
	36. Marking. Tanks are clearly marked with "Hazardous Waste".	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	37. Containment System. Applies to a new tank, existing tank storing F020-F023, F026/F027, or other specified existing tanks, unless variance obtained. a. **General Requirement.** Containment system is capable of detecting/collecting releases and accumulated liquids until collected material is removed. (40 CFR 264.193(b)(3) and 265.193(b)(2)) b. **Leak Detection.** Containment system has leak detection system that is designed/operated to detect failure of either primary or secondary containment structure or any release of waste in system within 24 hours, or earliest practicable time. (40 CFR 264.193(c) and 265.193(c)) c. **Removal of Releases.** All spills, leaks, precipitation are removed from containment system within 24 hours. (40 CFR 264.193(c) and 265.193(c)) d. **Specific Design.** Containment is: a liner, vault, double-walled tank or other EPA/state-approved device that meets specified design requirements (e.g., suitable base, sloped, leak detection system). (40 CFR 264.193(d) and (e) and 265.193(d) and (e)) e. ***Ancillary Equipment.*** *Ancillary equipment is provided with secondary containment. (40 CFR 264.193(f) and 265.193(f))* Note: Not applicable to above ground piping/welded flanges, joints, and connections/seamless or magnetic coupling pumps and valves/pressurized aboveground piping with automatic shut-off devices that are visually inspected daily. f. **Existing tanks not yet subject to containment requirement.** If existing tank is being utilized which is not yet subject to containment requirement there is written assessment to leak test tank or tank integrity performed annually by registered PE kept on-site. (40 CFR 264.193(i) and 265.193(i))	
	38. Overfill/Spill Control. Tank system includes spill prevention controls; overfill prevention controls and maintenance of freeboard in uncovered tanks to prevent overtopping. (40 CFR 264.194 and 265.194)	
	39. Inspection. Daily inspections are performed of overfill/spill control; aboveground points of tank; monitoring/leak detection; and tank integrity for signs of ruptures, leaks, corrosion, and surrounding area. Cathode protection systems are inspected bimonthly (and 6 months after installation). Records are kept of inspections. (40 CFR 264.195 and 265.195)	

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	40. Spills/Releases. If a spill has occurred from tank/containment system, the following must be performed: (40 CFR 264.196 and 265.196) a. **Waste/Released Material.** Waste is removed from tank as necessary to prevent further release and released material is removed from containment area within 24-hours/in timely manner. (40 CFR 264.195(a) and (b) and 265.195(a) and (b)) b. **Release to Environment.** A visual inspection/removal of contamination was conducted and Environmental Compliance Spill/Release procedure was implemented. (40 CFR 264.196(c) and 265.196(c)) c. **Notification.** If release to environment occurred, proper verbal and written notification was conducted. (40 CFR 264.196(d) and 265.196(d)) d. **Repair.** If after the release the tank system required major repair, PE certification was sent to EPA/state. (40 CFR 264.198(e) and 265.198(e)) *Note: Major repair includes installation of internal liner, repair of ruptured containment system, etc.*	
	41. Closure. At closure, the standards in 40 CFR 264.197 or 265.197 and Subpart G were met which include removing/decontaminating waste residue, contaminated containment system, contaminated soils, structures, and equipment. (40 CFR 264.197 and 265.197)	
	42. Ignitable/Reactive. If ignitable/reactive waste are stored in tank, 1) waste is treated, rendered, or mixed before placement so that it is no longer ignitable/reactive and meets 40 CFR 265.17(b) **OR** 2) waste is stored/treated so that it is protected from material/conditions that may cause ignition/reaction **OR** 3) tank system is used solely for emergencies **AND** NFPA requirements for storage of such wastes are met. (40 CFR 264.198 and 265.198)	
	43. Incompatible Wastes. Incompatible wastes/materials are not placed in same tank system. (40 CFR 264.199 and 265.199)	
	44. Air Emissions. Storage tanks comply with management standards specified in 40 CFR Part 264 or 265, Subpart AA (air emissions for process vents), BB (emissions standards for equipment leaks), and CC (air emissions for surface impoundments, tanks, and containers, if applicable. (40 CFR 264.178 and 265.178)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	45. Waste Analysis and Treatment -- Interim Status. Tank system is used: 1) to treat chemically or to store a hazardous waste that is substantially different from waste previously treated or stored in the tank; or 2) treat chemically a hazardous waste with a substantially different process than any previously used in that tank system. The following is being performed: a. Waste analyses and trial treatment or storage tests (e.g., bench-scale or pilot-plant scale tests); OR b. Written, documented information was obtained on similar waste under similar operating conditions to show that the proposed treatment or storage will meet the requirements of § 265.194(a). (40 CFR 265.200)	
	46. State-Specific Requirements. Tank system meets state-specific requirements (State Hazardous Waste Regulations). See WMP for requirements.	
Containment Buildings		
	47. Enclosed. Building is completely enclosed (floor/walls and roof) and self-supported, and can support the waste and daily operating activities. (40 CFR 264.1100(a) and 265.1100(a))	
	48. Barrier. Building has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel and equipment. Barrier is free of significant cracks, gaps, corrosion or other deterioration that could cause release of waste. (40 CFR 264.1101(a)(4) and (c) and 265.1101(a)(4) and (c))	
	49. Compatibility. Surfaces are chemically compatible with wastes that come into contact with them. (40 CFR 264.1101(a)(2) and 265.1101(a)(2))	
	50. Amount of Waste. Level of waste within containment walls does not exceed height of wall. (40 CFR 264.1101(c) and 265.1101(c))	
	51. Decontamination. Building has decontamination area and procedures to prevent tracking waste out of building. (40 CFR 264.1101(c) and 265.1101(c))	
	52. Fugitive Dust Control. Fugitive dust is controlled so that openings (doors, windows, vents, cracks, etc.) exhibit no visible emissions during normal operating conditions including when vehicles enter and exit unit. If particulate collection devices are used (fabric filter, electrostatic precipitator) these devices are operated and maintained. (40 CFR 264.1101(c) and 265.1101(c))	

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	53. Liquids Management. If containment building is used to store/treat wastes with free liquids, the following requirements are met: (40 CFR 264.1101(b) and 265.1101(b)) a. **Primary Barrier** is designed to prevent the migration of hazardous constituents into the barrier. b. **Liquid Collection/Removal.** Liquid collection system minimizes accumulation of liquids on primary barrier—Primary barrier is sloped to drain liquids to collection system and liquids/waste are collected/removed to minimize hydraulic head on containment system at earliest practicable time. c. **Secondary Containment.** The secondary containment system includes a secondary barrier designed and constructed to prevent migration of hazardous constituents into barrier and leak detection system capable of detecting failure of primary barrier and collecting accumulated wastes/liquids. (*Note: Leak detection system requirement is met if bottom slope is 1% or more and constructed of granular drainage material with hydraulic conductivity of 1 x 10^{-2} or more and 12 inches thick or constructed of synthetic/geonet drainage materials with trasmissivity of 3 x 10^{-5} m^2/sec or more)* d. **Treatment.** If treating in building, treatment area must be designed to prevent release of liquids, wet materials, or liquid aerosols to other portions of building. e. **Chemically Resistant.** Secondary containment system is constructed of materials that are chemically resistant to waste and liquids managed and of sufficient strength and thickness.	
	54. PE Certification. On-site files contain PE certification that containment building is designed in accordance with 40 CFR 264 or 265.1101(a) through (c). (40 CFR 264.1101(c)(2) and 265.1101(c)(2)).	
	55. Release. If condition detected that could cause or has caused a release of waste, the following has been conducted: (40 CFR 264.1101(c)(3) and 265.1101(c)(3)) a. **Repair.** Condition was promptly repaired and any cleanup was conducted. b. **Recordkeeping.** Condition/release was recorded in operating record. c. **Notification.** Within 7 days EPA was notified and within 14 working days written plan of steps taken to repair/cleanup was submitted. d. **PE Certification.** After repairs were performed, EPA was provided with PE certification that repairs/cleanup were conducted in accordance with written plan.	

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	56. Inspection. Building is inspected once every 7 days and results are recorded in project log book/inspection log. (Inspection should include monitoring/leak detection equipment data, containment building, surrounding area for signs of release/deterioration) (40 CFR 264.1101(c)(4) and 265.1101(c)(4))	
	57. Areas With and Without Secondary Containment. If building contains areas with and without secondary containment, each area is designed and operated to meet specified requirements, measures are taken to prevent release of liquids/wet materials into areas without secondary containment, and operating log provides written description of procedures used to maintain integrity of areas without secondary containment. (40 CFR 264.1101(d) and 265.1101(d)).	
	58. Closure. Upon leaving the project site, contaminated containment systems, contaminated sub-soils, and structures/equipment contaminated with waste or leachate are removed or decontaminated. Requirements for closure specified in Subpart G and H are being met. Post-closure care requirements are being met if contaminated sub-soils could not be practically removed or decontaminated. (40 CFR 264.1102 or 265.1102)	
	59. Recordkeeping. The following records are kept: a. Certification by PE that building meets design requirements. b. Operating log which includes containment building operations and reported leaks or spills. c. Regulatory agency correspondence. d. Operating procedures to maintain integrity of areas without secondary containment. (40 CFR 264.1101 and 265.1101)	
	60. State-Specific Requirements. Containment building meets state-specific requirements. (State Hazardous Waste Regulations) See WMP for requirements.	
Surface Impoundments		
	61. Permit. Surface impoundment is operating in accordance with conditions of permit. (40 CFR 270)	
	62. Construction or Expansion. Project involves the construction or replacement of portions of a surface impoundment. The unit is designed and constructed with two or more liners and a leachate collection and removal system between such liners OR an EPA/state-approved alternative design. (40 CFR 264.221(c) and 265.221(a) - e)) *Note: This requirement applies to construction, lateral expansions or replacement of existing units which commenced after January 29, 1992 For interim status units, additional exemptions/variances may apply for replacement units.*	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	63. Existing Units. Project involves non-construction activities at an existing surface impoundment. The unit : a. Contains a liner which is designed, constructed and installed to prevent the migration of waste out of the unit. *Applies to final status.* (40 CFR 264.221(a)) b. Has 2 feet of freeboard to prevent overtopping of the dike by overfilling, wave action or a storm, unless alternative design is certified by qualified engineer. *Applies to interim status.* (40 CFR 265.221(f) and (g)) c. Designed, constructed, maintained and operated to prevent overtopping by overfilling due to normal or abnormal activities, wind and wave action, rainfall, runon, malfunctions of level controllers, alarms and other equipment and human error. *Applies to final status.* (40 CFR 264.221(g) d. Has a containment system (e.g., earthen dike, covered with grass, rock, or shale) that shows no signs of erosion. (40 CFR 264.221(h) and 265.223) e. Has additional design requirements as specified in the Part B permit. *Applies to final status*. (40 CFR 264.221(i))	
	64. Inspections. The following inspections are conducted. Records are maintained at the project site. a. During and after installation and construction, liners and cover systems are inspected. *Applies to final status only.* b. Freeboard level is checked daily for interim status facilities and weekly for final status facilities. c. Weekly and after storm events, evidence of deterioration, malfunctions, or improper operation of overtopping control systems, sudden drops in the level of the impoundment contents, and severe erosion or other signs of deterioration of dikes and containment devices are checked. d. Leak detection systems are monitored and amount of liquid removed from sump is recorded at least monthly. (40 CFR 264.226 and 265.226)	
	65. Response Action. For new or expansion units, an approved response plan has been developed which describes the actions to be taken if action leakage rate has been exceeded. If flow rate into the leak detection system exceeded the action leakage rate for any sump, EPA was notified in writing within 7 days; a preliminary written assessment was sent to EPA within 14 days; results of determination regarding the location/size/cause of leak, determination whether waste should continue to be received, and long- and short-term actions was submitted to EPA within 30 days after notification. (40 CFR 264.223 and 265.223)	
	66. Certification -- Final Status. Prior to issuance of permit and after extended period, certification was obtained from qualified engineer regarding the integrity of the dike system. (40 CFR 264.226(c))	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	67. Removal from Service -- Final Status. If level of liquids in impoundment suddenly dropped and cause was not due to flow into or out of impoundment, or the dike leaked, the unit was removed from service in accordance with 40 CFR 264.227(b). Notification to EPA within 7 days was conducted and prior to reinitiating service the steps specified in 40 CFR 264.227(d) were complied with. (40 CFR 264. 227)	
	68. Closure/Post-Closure. Project activities involve closure of a surface impoundment. At closure, all waste residues, contaminated containment system components, contaminated sub-soils, and structures/equipment contaminated with waste and leachate are being removed or decontaminated OR free liquids are being eliminated by removing or solidifying the remaining wastes and residues and covering the surface impoundment. Post-closure care will be conducted if waste residues or contaminated materials are left in place at final closure. Closure plan, cost estimate and financial responsibility requirements specified in Subpart G are also being complied with. (40 CFR 264.228 and 265.228)	
	69. Ignitable/Reactive Wastes. Ignitable/reactive wastes are not placed in the surface impoundment unless: a. Waste and impoundment satisfy 40 CFR 268 requirements; AND b. Waste is treated, rendered or mixed before or immediately after placement in the impoundment so that mixture or dissolution of material no longer meets definition of ignitable or reactive and 40 CFR 264.17(b) or 265.17(b) are complied with; OR c. Waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; OR d. Surface impoundment is used solely for emergencies. (40 CFR 264.229 and 265.229)	
	70. Incompatible Wastes. Incompatible wastes/materials are not placed in the same surface impoundment unless 40 CFR 264.17(b) or 265.17(b) requirements are met. (40 CFR 264.230 and 265.230)	
	71. Dioxin-containing Wastes -- Final Status. Waste codes F020-F023, F026, and F027 are not placed in a surface impoundment unless the impoundment is operated in accordance with a management plan approved by EPA/state. (40 CFR 264.231)	
	72. Waste Analysis and Trial Tests -- Interim Status. If surface impoundment is being used to chemically treat a hazardous waste which is substantially different from waste previously treated OR chemically treat hazardous waste with a substantially different process than previously used, EITHER waste analyses and trial treatment tests were conducted prior to treatment OR written documented information on similar treatment of similar waste under similar operating conditions to demonstrate compliance with 40 CFR 265.17(b) has been obtained. (40 CFR 265.225)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	73. Air Emissions Standards. Air emission standards specified in Subpart CC are being complied with if the surface impoundment is used to manage volatile organic compounds. This requirement applies after June 1996. (40 CFR 264.232 and 265.231)	
	74. State-Specific Requirements. Surface impoundment meets state-specific requirements. (State Hazardous Waste Regulations)	
Waste Piles		
	75. Permit. Waste pile is operating in accordance with conditions of permit. (40 CFR 270)	
	76. Protection From Wind. Pile containing hazardous waste is protected from the wind. Are appropriate BMPs in place? (40 CFR 264.251(j) and 265.251)	
	77. Waste Analysis. Incoming shipments of waste are analyzed prior to adding to the pile to determine compatibility of the waste, unless waste being added is known to be compatible. (40 CFR 264.257 and 265.252)	
	78. Construction or Expansion. Project involves the construction or replacement of portions of a waste pile. Waste pile has: a. Double liner that meets the requirements of 40 CFR 264.251(c); b. Leachate collection and removal system; c. Run-on control system capable of preventing flow onto active portion of pile from at least 25-year storm; d. Run-off system to collect/control water volume from 24-hour, 25-year storm; e. Collection/holding systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity; f. Additional requirements specified in permit. (40 CFR 264.251 and 265.254) *Note: This requirement applies to construction, lateral expansions or replacement of existing units which commenced after January 29, 1992.*	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	79. Existing Waste Pile. Unless an alternative design has been approved by EPA/state, waste pile has: a. Liner designed, constructed, and installed to prevent migration of wastes out of the pile. *Applies to final status.* (40 CFR 264.251(a)) b. Impermeable base compatible with the waste which supports liner. (40 CFR 264.251 and 265.253(a)(1)) c. Run-on diversion and control systems. (40 CFR 264.251(g) and 265.253(a)) d. Leachate and runoff collection. (40 CFR 264.251 and 265.253) and e. Collection/holding systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity. *Note: Existing pile must be constructed prior to January 29, 1992. If pile is at interim status facility and it is protected from precipitation and runon by other means, and no liquids or waste containing free liquids are placed on pile, then these conditions do not apply.*	
	80. Exemptions -- Final Status. Waste pile is located indoors or otherwise protected from factors which produce leachate and runoff. Pile does not need to comply with the lining, leachate collection and groundwater protection requirements. Verify: a. Liquids are not placed in the waste pile (40 CFR 264.250(c)(1)); b. The unit is protected from surface water runon (40 CFR 264.250(c)(2)); c. Wind dispersal is controlled by a means other than wetting; (40 CFR 264.250(c)(3)); and d. Pile does not generate leachate through decomposition or reactions (40 CFR 264.250(c)(4)).	
	81. Inspections. The following inspections are conducted. Records are maintained at the project site. a. During and after installation and construction, liners and cover systems are inspected. *Applies to final status only.* b. Weekly and after storm events, evidence of deterioration, malfunctions, or improper operation of run-on/run-off systems, proper functioning of wind dispersal control systems and presence of leachate in and proper functioning of leachate collection and removal systems are inspected. *Applies to final status only.* c. Leak detection systems are monitored and amount of liquid removed from sump is recorded at least weekly. (40 CFR 264.254 and 265.260)	

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Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			82. Response Action. For new or expansion units, an approved response plan has been developed which describes the actions to be taken if action leakage rate has been exceeded. If flow rate into the leak detection system exceeded the action leakage rate for any sump, EPA was notified in writing within 7 days; a preliminary written assessment was sent to EPA within 14 days; results of determination regarding the location/size/cause of leak, determination whether waste should continue to be received, and long- and short-term actions was submitted to EPA within 30 days after notification. (40 CFR 264.253 and 265.259)	
			83. Closure/Post-Closure. Project activities involve closure of a waste pile. At closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures/equipment contaminated with waste and leachate are being removed or decontaminated. If after removal/decontamination all contaminated subsoils can not be practicably removed/decontaminated, post-closure care will be conducted. Closure plan, cost estimate and financial responsibility requirements specified in Subpart G are also being complied with. (40 CFR 264.258 and 265.258)	
			84. Ignitable/Reactive Wastes. Ignitable/reactive wastes are not placed in a waste pile unless: a. Waste and impoundment satisfy 40 CFR 268 requirements; AND b. Waste is treated, rendered or mixed before or immediately after placement in the impoundment so that mixture or dissolution of material no longer meets definition of ignitable or reactive and 40 CFR 264.17(b) or 265.17(b) are complied with; OR c. Waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react. (40 CFR 264.256 and 265.256)	
			85. Incompatible Wastes. Incompatible wastes/materials are not placed in the same waste pile unless 40 CFR 264.17(b) or 265.17(b) requirements are met. a. Pile that is incompatible with waste/materials stored nearby in containers, other piles, open tanks, or surface impoundments is separated from other materials or protected from them by dike, berm, wall or other device. b. Waste is not piled on same base where incompatible waste/materials were previously piled unless base was decontaminated sufficiently to meet 40 CFR 264.17(b) or 265.17(b) requirements. (40 CFR 264.257 and 265.257)	
			86. Dioxin-Containing Wastes -- Final Status. Waste codes F020-F023, F026, and F027 are not placed in a waste pile unless it is operated in accordance with a management plan approved by EPA/state. Additional design requirements, if any, are being complied with. (40 CFR 264.259)	
			87. State-Specific Requirements. Waste pile complies with state-specific requirements. (State Hazardous Waste Regulations)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
Drip Pads		
	88. Design and Operation. Drip pads are designed and operated as follows: a. Constructed solely of nonearthen materials (40 CFR 264.573(a)(1) and 265.443(a)(1); b. Has an intact curb or berm around the perimeter of the pad and pad is sloped to drain liquids into a collection system (40 CFR 264.573(a)(2) and (3) and 265.443(a)(2) and (3); c. Pad is either covered or capable of preventing runon and runoff from a 24-hour, 25-year storm (40 CFR 264.573(e) and (f) and 265.443(e) and (f)). d. Collecting/holding units are emptied as soon as possible after storms. (40 CFR 264.573(h) and CFR 265.443(h)); e. Pad has hydraulic conductivity of 1 x 10^{-7} cm/sec or less and is free of cracks and gaps, OR synthetic liner is below drip pad, leak detection system is above liner, and leak collection system is installed immediately above the liner. (40 CFR 264.573(a)(4), (b)(1) and (2) and 265.443(a)(4) , (b)(1) and (2)) f. Pad is operated/maintained to minimize tracking of waste/constituents off pad resulting from personnel or equipment activities. (40 CFR 264.573(k) and 265.443(j)) g. After removal from treatment vessel, treated wood is held on pad until drippage has ceased; records are maintained to document. (40 CFR 264.573(k) and 265.443(k))	
	89. Construction of New Units. Project activities involve the construction of a new drip pad. All of the requirements specified in #1 are complied with EXCEPT: a. Pad has hydraulic conductivity of 1 x 10^{-7} cm/sec or less and is free of cracks and gaps, OR synthetic liner is below drip pad, leak detection system is above liner, and leak collection system is installed immediately above the liner. (40 CFR 264.573(a)(4), (b)(1) and (2) and 265.443(a)(4) , (b)(1) and (2)) OR b. Pad has a synthetic liner and leakage detection system constructed in accordance with 40 CFR 264.573(b) or 265.442(b). *Note: New units are those which commenced construction after December 24, 1992.*	
	90. Assessment and Certification. Written independent professional engineering assessments and annual certifications have been conducted and are located in the on-site project files. (40 CFR 264.573(a)(4) and (g), 264.574(a) and 265.441, 265.443(a)(4) and (g))	
	91. Operating Record. Past operating and waste handling practices are document in the facility records. (40 CFR 264.573(o) and 265.443(n).	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	92. Closure. Based upon review of closure plan determine if all wastes will be removed and all contaminated equipment, sub-soils, and structures will be removed or decontaminated OR if the unit will be closed as a landfill. (40 CFR 264.575 and 265.445).	
	93. Inspection. The following inspections have or are being conducted. Documentation is placed in on-site files. a. Liners and cover systems were inspected during and after installation (examine construction records to determine). (40 CFR 264.574(a) and 265.441(a)) b. Drip pads are inspected weekly while in operation and after storm events to detect deterioration, malfunction, or leakage of run-on and runoff control systems, leak detection systems, and the drip pad surface. (40 CFR 264.574(b) and 265.444(b)). c. Drip pads are sufficiently clean to allow weekly inspections. Facility records must note the date and time of cleaning. (40 CFR 264.573(i) and 265.444(i))	
	94. Release. If leak detected, the following has been conducted: (40 CFR 264.573(m) and 265.443(m)) a. **Repair.** Condition was promptly repaired and any cleanup was conducted. b. **Recordkeeping.** Condition/release was recorded in operating record. c. **Notification.** Within 24 hours EPA was notified and within 10 days a written report of steps taken to repair/cleanup was submitted. d. **Certification.** Independent engineering certification was submitted upon completion of repairs and cleanup.	
	95. State-Specific Requirements. Drip pads comply with state-specific requirements. (State Hazardous Waste Regulations)	
Landfills		
	96. Design and Operation. Project involves construction of a new landfill, replacement landfill or lateral expansion of existing landfill that first received waste after November 8, 1984, that meets specific design and construction standards. Landfill constructed after January 29, 1992, that meets minimum technology requirements for a. Double liners; b. Leak detection; and c. Groundwater monitoring. (40 CFR 264.301, 264.90 - 100 and 265.301)	
	97. Written Procedures. Procedures are in place to ensure that received waste is appropriate for landfilling and waste is placed in the proper landfill cell. (40 CFR 270.21)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	98. Runoff Collection/Control System. Landfill has a runoff diversion and control system which is capable of managing a 24-hour, 25-year storm. a. The system is emptied as soon as practicable to maintain the required holding capacity. b. Collected runoff is analyzed to determine if it is hazardous waste. c. Collected runoff is properly managed according to characterization. (40 CFR 264.301(g), (h), and (j) and 265.301(b) - (c)).	
	99. Waste Location Documentation. Operating record contains information on a map designating the exact location and dimensions (including depth of each cell with respect to permanent surveyed bench marks and the contents of each cell) and approximate locations of each hazardous waste type within each cell. (40 CFR 264.73(b)(1) and (2), 264.309 and 265.73(b)(1) and (2) and 265.309)	
	100. Inspection. The following inspections have or are being conducted. Documentation is contained in project files. a. Liners and cover systems were inspected during and after installation (examine construction records to determine). b. Landfill is inspected weekly while in operation and after storm events to detect deterioration, malfunctions, or improper operation of run-on and run-off control systems; proper functioning of wind dispersal control systems, and presence of leachate in and proper functioning of leachate collection and removal systems. c. If landfill is required to have a leak detection system under 40 CFR 264.301(c) or (d) record of the amount of liquids removed from each leak detection system sump must be kept at least once each week during the active life and closure period. After final cover is installed, some exceptions apply if no liquids found in sumps. (40 CFR 264.303 and 265.303)	
	101. Response Action. For new or expansion units, an approved response plan has been developed which describes the actions to be taken if action leakage rate has been exceeded. If flow rate into the leak detection system exceeded the action leakage rate for any sump, EPA was notified in writing within 7 days; a preliminary written assessment was sent to EPA within 14 days; results of determination regarding the location/size/cause of leak, determination whether waste should continue to be received, and long- and short-term actions was submitted to EPA within 30 days after notification. (40 CFR 264.304 and 265.304)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	102. Closure/Post-Closure. Project activities involve closure of a landfill. At final closure, the owner or operator must cover the landfill or cell with a final cover designed and constructed to: provide long-term minimization of migration of liquids through the closed landfill; function with minimum maintenance; promote drainage and minimize erosion or abrasion of the cover; accommodate settling and subsidence so that the cover's integrity is maintained; and have a permeability less than or equal to the permeability of any bottom liner system or natural sub-soils present. After final closure, all post-closure requirements contained in 264.117 through 264.120, including maintenance and monitoring throughout the post-closure care period, are being complied with. If during the post-closure care period, liquid leaks into a leak detection system installed under 264.302, EPA was notified within seven days after detecting the leak. Closure plan, cost estimate and financial responsibility requirements specified in Subpart G are also being complied with. (40 CFR 264.310 and 265.310)	
	103. Reactive/Ignitable Wastes. Reactive or ignitable waste are placed in landfill only if: a. It is treated, rendered, or mixed before or immediate after placement in the landfill so it is no longer reactive/ignitable; OR b. Ignitable waste is in non-leaking containers that are protected from sources of ignition (i.e., daily soil cover, segregation from heat-generating wastes, etc.). (40 CFR 264.17(b), 264.312(a) and (b) and 265.17(b) and 265.312(a) and (b))	
	104. Incompatible Wastes. Incompatible wastes are placed in the same landfill cell only if wastes are managed to prevent: a. Extreme heat, fire or explosion; b. Uncontrolled toxic mists, dusts, fumes, or gases; c. Uncontrolled flammable vapors or gases; d. Damage to structural integrity of landfill; and e. Threat to human health and the environment. (40 CFR 264.17(b) and 265.17(b))	
	105. Bulk Liquids -- Final Status. Bulk liquids are banned from disposal in landfills. Procedure is in place to prevent bulk or non-containerized liquid hazardous or non-hazardous waste or waste containing free liquids from being placed in landfill. Liquids are treated chemically or physically prior to placement in the landfill so that free liquids are no longer present. (40 CFR 264.314(b) and (e), 264.13)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	106. Containerized Liquids. Containerized liquids are only placed in the landfill under the following conditions: a. Free-standing liquid has been removed; b. Waste has been mixed with absorbents or solidified so that free-standing liquid is no longer observed; c. Container is very small, such as an ampule; d. Container is designed to hold free liquids for use other than storage, such as a battery or capacitor; OR e. Container is a lab pack. (40 CFR 264.314(d) and 265.314(d)) f. Absorbents used to treat free liquids are non-biodegradable. (40 CFR 264.314(e) and 265.314(f))	
	107. Empty Containers. Empty containers are reduced in volume (i.e., shredded) prior to disposal in a landfill. Containers meet definition of "empty" prior to disposal. (40 CFR 264.315 and 265.315).	
	108. Dioxin-Containing Wastes – Final Status. Waste codes F020-F023, F026, and F027 are not placed in a landfill unless it is operated in accordance with a management plan approved by EPA/state. Additional design requirements, if any, are being complied with. (40 CFR 264.317)	
	109. State-Specific Requirements. Landfill complies with state-specific requirements. (State Hazardous Waste Regulations)	
Incinerators		
	110. Exemption. Incinerator is exempt from all requirements of this subpart except 40 CFR 264.341 (Waste analysis) and 264.351 (Closure) [40 CFR 265.351 for interim status] because waste meets requirements specified in 40 CFR 264.340(b) and (c) or 265.340(b) and (c).	
	111. Waste Analysis. For final status facility, waste analysis of feed was provided as part of trial burn plan or with Part B application and during normal operation waste feed to incinerator is being analyzed as specified in the permit. For interim status unit, waste which has not been previously burned has been sufficiently analyzed so that steady-state (normal) operating conditions (including waste and auxiliary fuel feed and air flow) and pollutants which might be emitted have been determined. Minimum analysis includes: heat value of waste, halogen, sulfur, lead and mercury content. Waste analysis is placed in operating record. (40 CFR 264.341, 40 CFR 265.341)	
	112. Principal Organic Hazardous Constituents (POHCs) -- Final Status. POHCs in the waste feed are being treated to meet performance standard of 40 CFR 264.343. During trail burn, POHCs are meeting trial burn requirements specified in 40 CFR 270.62. (40 CFR 264.342)	
	113. Performance Standards -- Final Status. Incinerator is designed, constructed, and maintained so that, when operated in accordance with operating requirements specified below in #6, unit meets performance standards specified in 40 CFR 264.343.	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	114. Permit -- Final Status. Incinerator is burning only wastes specified in permit and under operating conditions, unless burning is being conducted under trial burn approved under 40 CFR 270.62 or is subject to exemption specified in 40 CFR 264.340. A permit modification/new permit was obtained to burn other hazardous wastes, if applicable. (40 CFR 264.344)	
	115. Operating Conditions -- Final Status. Incinerator is operating in accordance with operating requirements specified in the permit which include: composition of the waste feed (including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirement); CO in the stack exhaust gas; waste feed rate; combustion temperature; appropriate indicator of combustion gas velocity; allowable variations in incinerator system design or operating procedures; and other operating requirements as are necessary to ensure that the performance standards are met. These standards apply to start-up and shutdown. Standards specified in 40 CFR 264.345 for controlling fugitive emissions and operation of automatic shutoff/cutoff systems are also being met. (40 CFR 264.345).	
	116. Operating Conditions -- Interim Status. During start-up and shut-down of an incinerator, hazardous waste is not being fed into unit unless the incinerator is at steady state (normal) conditions of operation, including steady state operating temperature and air flow. (40 CFR 265.345)	
	117. Monitoring and Inspections -- Interim Status. During hazardous waste burning, specified instruments are monitored at least every 15 minutes (waste feed gauge, auxiliary fuel feed gauge, CO gauge, air flow gauge, temperature, scrubber flow, scrubber pH gauge, and relevant level controls). Daily inspection is conducted of: a. Pumps, valves, conveyors, and pipes for leaks, spills, and fugitive emissions; b. Emergency shutdown controls; and c. System alarms. Inspections logs are kept in the project files (40 CFR 265.347 and 265.15)	
	118. Monitoring and Inspections -- Final Status. Continuous monitoring of combustion temperature, waste feed rate, and combustion gas velocity is being conducted. Pumps, valves, conveyors, and pipes are monitored daily for leaks, spills or fugitive emissions. Waste feed cut-off and associated alarms are monitored at least weekly. Inspections logs are kept in project files. (40 CFR 264.347)	
	119. Closure. All hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from the incinerator site is removed at closure. (40 CFR 364.351 and 265.351)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	120. Dioxin Containing Wastes -- Interim Status. If unit is burning F020, F021, F022, F023, F026, or F027 wastes, a certification has been obtained demonstrating that unit meets the performance standards of 40 CFR 264, Subpart O. (40 CFR 265.352)	
	121. Waste Residues and Treated Wastes. Solid wastes generated from the treatment, storage or disposal of hazardous waste must be properly managed. Verify if any of the following have been generated: ash, scrubber liquids, refractory material, scrubber filters, etc.	
	122. State-Specific Requirements. Incinerator complies with state-specific requirements. (State Hazardous Waste Regulations)	
Thermal Treatment Units. (*This section applies to interim status facilities only.)*		
	123. Operation. Thermal unit is operated at steady-state conditions whenever waste is added to the unit, including startup and shutdown periods. For continuous feed processes, written procedures have been developed to ensure that process is operating at steady-state before adding hazardous waste. (40 CFR 265.373)	
	124. Waste Analysis Plan. A written waste analysis plan has been developed. Waste analysis is performed on hazardous waste not previously burned. Written procedures incorporate the analysis results into operating parameters that establish the steady-state conditions. Waste analysis plan includes: heat value, halogen content, sulfur content, concentration of lead, mercury and PCBs. Lead and mercury analysis are not required if facility has written, documented data that show elements are not present. Waste analysis is documented in the operating record. (40 CFR 265.375)	
	125. Monitoring and Inspections. Instruments related to combustion and emission control are monitored at least every 15 minutes (waste feed gauge, auxiliary fuel feed gauge, treatment process temperature gauge, process flow gauge, afterburner/temperature controls, O_2 and CO meters, process levels, etc.). Stack plume emissions are monitored at least hourly (for color and opacity). Daily inspection is conducted of: a. Pumps, valves, conveyors, and pipes for leaks, spills, and fugitive emissions; b. Emergency shutdown controls; and c. System alarms. Inspections logs are kept in the project files. (40 CFR 265.377 and 265.15)	
	126. Contingency Planning. Written contingency plan has been developed to ensure that corrective actions are initiated when operating conditions based upon combustion and emission control instruments or observation of emission plume change. Procedures are being followed. (40 CFR 265.377)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	127. Detonation of Explosives. Project involves the open burning or detonation of waste explosives and detonation meets distance requirements specified in 40 CFR 265.382. Written procedure is in place to prohibit open burning of hazardous waste (except waste explosives).	
	128. Closure. At closure, all hazardous waste and hazardous waste residues (including, but not limited to, ash) are removed from the thermal treatment process or equipment. (40 CFR 265.381)	
	129. Dioxin Containing Wastes -- Interim Status. If unit is burning F020, F021, F022, F023, F026, or F027 wastes, a certification has been obtained demonstrating that unit meets the performance standards of 40 CFR 264, Subpart O. (40 CFR 265.382)	
	130. Waste Residues and Treated Wastes. Solid wastes generated from the treatment, storage or disposal of hazardous waste must be properly managed. Verify if any of the following have been generated: ash, scrubber liquids, refractory material, scrubber filters, etc.	
	131. State-Specific Requirements. Unit complies with state-specific requirements. (State Hazardous Waste Regulations). Refer to WMP for requirements.	
Chemical, Physical, and Biological Treatments. (*Applies to interim status facilities only.*)		
	132. Operating Procedure. Written procedure is in place that describes the types of wastes that are not permitted to be added to the treatment systems and specifies all operating and safety procedures. Chemical, physical, or biological treatment of hazardous waste complies with 40 CFR 265.17(b). Hazardous wastes or treatment reagents are not placed in the treatment process or equipment if they could cause the treatment process or equipment to rupture, leak, corrode, or otherwise fail before the end of its intended life. Where hazardous waste is continuously fed into a treatment process or equipment, the process or equipment is equipped with a means to stop the inflow (e.g., a waste feed cut-off system or by-pass system to a standby containment device). (40 CFR 265.401)	
	133. Waste Analysis Plan. A written waste analysis plan has been developed. If hazardous waste being treated is substantially different from any hazardous waste previously treated, or if a substantially different process than previously used is being used to chemically treat the waste, waste analysis and treatment tests are being performed OR written, documented information on similar treatments of similar wastes is kept in project files. (40 CFR 265.13, 265.402, 265.17 and 265.401(a))	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	134. Inspections. Daily inspections are being conducted of a. Discharge control and safety equipment; and b. Data gathered from monitoring equipment. Weekly inspections of construction materials used in the treatment process or equipment are conducted to detect signs of corrosion or leakage. Inspection logs are maintained in the project files documenting conduct of these inspections. (40 CFR 265.403, 265.15 and 265.73)	
	135. Incompatible Wastes. Incompatible wastes are placed in the same treatment process only if wastes are managed to prevent: a. Extreme heat, fire or explosion; b. Uncontrolled toxic mists, dusts, fumes, or gases; c. Uncontrolled flammable vapors or gases; d. Damage to structural integrity of landfill; and e. Threat to human health and the environment. (40 CFR 265.17(b)) If waste is placed in a treatment unit that previously held an incompatible waste, procedures are in place to ensure that equipment is properly washed prior to placing incompatible waste in unit. (40 CFR 265.406(b))	
	136. Reactive/Ignitable Wastes. Reactive or ignitable waste are treated to prevent ignition or reaction. a. It is treated, rendered, or mixed before or immediately after placement in the treatment process so it is no longer reactive/ignitable; b. Treated in a manner that does not threaten human health or the environment; OR c. Treated so that it is protected from any material or condition that may cause the waste to ignite or react. (40 CFR 265.17(b), 265.405(a)(1) and (2))	
	137. Closure. At closure, all hazardous waste and hazardous waste residues are removed from treatment processes or equipment, discharge control equipment, and discharge confinement structures. (40 CFR 265.404)	
	138. Waste Residues and Treated Wastes. Residues from hazardous waste treatment process are hazardous waste unless specifically exempt. Verify that treatment residue is managed as hazardous waste or is delisted. (40 CFR 261.3(c) and (d), 260.22 and 265.404)	
	139. State-Specific Requirements. Unit meets state-specific requirements. (State Hazardous Waste Regulations)	
Land Treatment Units		

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	140. Design and Operation. Unit is designed and operated in accordance with permit conditions. Land treatment program has been established in accordance with 40 CFR 264.271 that is designed to ensure that hazardous constituents placed in or on the treatment zone are degraded, transformed, or immobilized within the treatment zone. For interim status unit, hazardous waste is not placed in or on a land treatment facility unless the waste can be made less hazardous or nonhazardous by degradation, transformation, or immobilization processes occurring in or on the soil. (40 CFR 264.273(a) and 265.272(a))	
	141. Treatment Demonstration. -- Final Status. Treatment demonstration has been conducted for each waste that will be applied to the treatment zone in accordance with 40 CFR 264.272.	
	142. Waste Analysis -- Interim Status. Before hazardous waste was placed in or on a land treatment facility, waste analysis was conducted in accordance with 40 CFR 265.273.	
	143. Run-on/Runoff Control. Treatment zone is designed, constructed, operated and maintained to minimize runoff of hazardous constituents. Runon control system is capable of preventing flow onto the treatment zone during peak discharges from at least a 25-year storm. Runoff control system is capable of collecting and controlling at least water volume from a 24-hour, 25-year storm. Collection and holding facilities associated with runon/runoff system are managed to maintain the design capacity of the system. (40 CFR 264.273 and 265.272)	
	144. Wind Dispersal Control. Treatment zone contains particulate matter and wind dispersal is being controlled. (40 CFR 264.273(f) and 265.272(e))	
	145. Inspections – Final Status. Treatment unit is inspected weekly and after storms to detect deterioration, malfunctions, or improper operation of the runon/runoff control systems and improper functioning of wind dispersal control measures. Inspection logs are being maintained in the on-site project files. (40 CFR 264.273(g))	
	146. Monitoring. If unit is conducting unsaturated zone monitoring such monitoring is being conducted in accordance with permit conditions or monitoring plan. (40 CFR 264.278 and 265.278)	
	147. Significant Increase of Hazardous Constituents -- Final Status. If a significant increase in hazardous constituents below the treatment zone has occurred, the EPA/state was notified within 7 days and an application for a permit modification was submitted within 90 days of this increase. (40 CFR 264.278(g))	

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Yes	No	N/A	Requirements	Comments/Notes
			148. Reactive/Ignitable Wastes. Reactive or ignitable waste are treated to prevent ignition or reaction. a. It is immediately incorporated into the soil so that they no longer meet the definition of ignitability or reactivity; OR b. It is managed to prevent ignition or reaction. (40 CFR 264.281 and 265.281)	
			149. Incompatible Wastes. Incompatible wastes are treated in separate treatment zones or other adequate precautions are taken to prevent reactions from occurring. (40 CFR 264.282 and 265.282)	
			150. Treatment of Dioxins -- Final Status. Waste codes F020 - F023 or F026 - F027 are treated and facility has a management plan approved by EPA/state for treatment of these wastes. (40 CFR 264. 283)	
			151. Recordkeeping. Hazardous waste application dates and rates are included in the operating record required under 40 CFR 264.73 and 265.73. (40 CFR 264.279 and 265.279)	
			152. Closure. Land treatment unit is being properly closed. a. Operations necessary to maximize degradation, transformation, or immobilization of waste and minimize run-on/runoff and wind dispersal will continue through closure. b. Vegetative cover is being established and maintained. c. Unsaturated zone monitoring is being continued. d. Soil pore monitoring is continued for 90 days after last waste application e. Closure has been certified by independent qualified soil scientist or independent registered professional engineer. (40 CFR 264.280 and 265.280)	
			153. State-Specific Requirements. Land treatment unit complies with state-specific requirements. (State Hazardous Waste Regulations)	
Miscellaneous Units (*Applies to final status units only.*)				
			154. Design and Operation. Unit is designed and operated in accordance with permit conditions, including but not limited to: a. Prevention of migration of waste constituents in groundwater or subsurface environment; b. Prevention of migration of waste constituents in surface water, wetlands, or soil surface; c. Prevention of migration of waste constituents to air; and d. Procedures regarding monitoring and analysis, inspection, emergency response, spill reporting, and corrective action. (40 CFR 264.600 - 603)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	155. Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action. Monitoring, testing, analytical data, inspections, response, and reporting procedures and frequencies have been developed and are being implemented to comply with 40 CFR 264.601, 264.15, 264.33, 264.75, 264.76, 264.77, and 264.101 as well as meet any additional requirements needed to protect human health and the environment as specified in the permit. (40 CFR 264.602)	
	156. Closure. Plan is in place for closure and if all contamination cannot be completely removed, post closure plan is in place. (40 CFR 264.603)	
	157. State-Specific Requirements. Miscellaneous unit complies with state-specific requirements. (State Hazardous Waste Regulations)	
Boilers And Industrial Furnaces		
	158. Interim Status. Project involves the construction or operation of a BIF which is operating under interim status. The unit complies with 40 CFR 266.103 and 266.104 requirements.	
	159. Final Status. Project involves the construction or operation of a BIF which is operating under a final status permit. The unit complies with 40 CFR 266.100, 270.22 and 270.66 requirements.	
Groundwater Monitoring		
	160. Solid Waste Management Unit – Final Status. Facility has SWMUs that are subject to the groundwater monitoring program. Sampling for each hazardous constituent or monitoring parameters as specified in the permit are being met. Groundwater monitoring plan which was approved by the state/EPA is being implemented. (40 CFR 264.90 - .101)	
	161. Monitoring At Interim Status Facilities. Project involves activities at a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste and is required to implement a groundwater monitoring program. The groundwater monitoring system is designed in accordance with 40 CFR 265.91, sampling and analysis is conducted in accordance with 40 CFR 265.92, groundwater quality assessment program meets 40 CFR 265.93 requirements, and reports/recordkeeping requirements specified in 40 CFR 265.94 are met. *Note: Facility may have obtained a waiver from these requirements if the criteria specified in 40 CFR 265.90(c) - (e) were met.*	
Corrective Action Management Units Facilities (*Applies to final status facilities only.*)		

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	162. Designated Area. Area at the facility has been designated as CAMU. The permit or order specifies the areal configuration of the CAMU, requirements for remediation waste management (including design, operation and closure requirements) and requirements for groundwater monitoring. If a regulated unit is designated as a CAMU or a regulated unit is incorporated into a CAMU, Subpart F, G, and H requirements and the unit-specific requirements of part 264 or 265 that applied to that regulated unit will continue to apply to that portion of the CAMU after incorporation into the CAMU. (40 CFR 264.552)	
	163. Closure. Closure of the CAMU will minimize the need for further maintenance and control to the extent necessary to protect human health and the environment. For areas where wastes remain in place, closure will minimize the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, to surface waters, or to the atmosphere. Closure may include excavation, removal, treatment or containment of wastes; and removal and decontamination of equipment, devices, and structures used in remediation waste management activities within the CAMU. Post-closure requirements are being implemented as necessary to protect human health and the environment, to include, for areas where wastes will remain in place, monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of any cap, final cover, or other containment system. (40 CFR 264.552(e) and (f))	
	164. Documentation. EPA has documented the rationale for designating the CAMU. (40 CFR 264.552(g))	
	165. Incorporation Into Permit. CAMU has been incorporated into existing permit. Such incorporation has been approved by the EPA according to the procedures for Agency-initiated permit modifications under 40 CFR 270.41 or according to the permit modification procedures of 40 CFR 270.42. (40 CFR 264.552(h))	
	166. Temporary Unit. Temporary tanks and container storage areas are being used for treatment or storage of hazardous remediation wastes. EPA has determined that a design, operating, or closure standard applicable to such units may be replaced by alternative requirements which are protective of human health and the environment. EPA has specified the length of time a temporary unit will be allowed to operate, (which is no longer than one year), and the design, operating, and closure requirements for the unit. The operational period of a temporary unit may be extended once for one year beyond that originally specified in the permit or order and such extension has been approved as agency-initiated permit modification or a Class II modification. (40 CFR 264.552)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
Training		
	167. General. Personnel have completed program of classroom or on-the-job training that teaches them to perform their duties. Training has been conducted within 6 months after project start/untrained personnel are supervised. (40 CFR 264.16(a) and (b) and 265.16(a) and (b))	
	168. Annual Refresher. Personnel have undergone annual refresher training. (40 CFR 264.16(c) and 265.16(c))	
	169. Personnel Records. Records are maintained on-site which include: job title of each position at facility and name of person filling it; job description of each position; written description of type/amount of training for each position; and records documenting training. (40 CFR 264.16(d) and 265.16(d))	
	170. Training Records. Training records are kept on-site until project closure. If employee leaves, records are kept for at least 3 years from date of last employment. (40 CFR 264.16(e) and 265.16(e))	
Preparedness and Prevention		
	171. Controlled Entry/Security. The following security measures are installed at the hazardous waste portion of the project site. (40 CFR 264.14 and 265.14) a. Area is surrounded by a fence or natural barrier. b. Entrances are locked or monitored on a 24-hour basis. c. Signs with "Danger-Unauthorized Personnel Keep Out" are posted at each entrance and other locations as appropriate. d. Signs are legible from at least 25 feet and are written in English or other language predominant in the area.	
	172. Management of Project. Project is managed to minimize the possibility of fire, explosion, or any sudden releases to the environment. (40 CFR 264.31 and 265.31)	
	173. Equipment. Project site is equipped with: a. Internal communication or alarm system. b. Telephone or hand-held two-way radio capable of summoning help. c. Spill control, and decontamination equipment, and d. Portable fire extinguisher, fire control equipment, water to supply fire hoses, foam equipment or sprinklers (if flammable wastes on-site). (40 CFR 264.32 and 265.32)	
	174. Testing. Equipment is tested/maintained to assure proper operation and records are kept of testing. (40 CFR 264.33 and 265.33)	
	175. Waste Handling Procedure. Whenever waste is being poured, mixed, spread, or handled, all personnel have immediate access to internal alarm or emergency communication device. When only one employee is on-site, he/she has immediate access to communication device. (40 CFR 264.34 and 265.34)	

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Yes	No	N/A	Requirements	Comments/Notes
			176. Aisle space. Proper aisle space is maintained to allow unobstructed movement of personnel, fire, spill control, and decon equipment. Three feet is considered GMP. (40 CFR 264.35 and 265.35)	
			177. Local Arrangements. Arrangements have been made with emergency response agencies. (40 CFR 264.37 and 265.37)	
			178. Ignitable/Reactive/Incompatible Wastes. The following is being performed: a. Waste is separated and confined from sources of ignition or reaction, sparks, spontaneous ignition, and radiant heat. b. Smoking and open flames are confined to specifically designated areas. c. "No Smoking" signs are posted in areas where ignitable or reactive wastes are handled. d. Incompatible wastes are always separated. e. Written procedures for avoiding commingling of incompatible wastes have been developed and are being implemented. f. Flammable/ignitable wastes are grounded. (40 CFR 264.17 and 265.17)	
			179. Contingency Planning	
			180. Hazardous Waste Contingency Plan. Facility has a HWCP or SPCC Plan which has been amended to include hazardous waste requirements. The plan includes requirements specified in 40 CFR 264.52 or 265.52. (40 CFR 264.51 and .52, and 265.51 and .52)	
			181. Copies. HWCP is maintained at the project site and submitted to local emergency response agencies, as appropriate. (40 CFR 264.53 and 265.53)	
			182. Revision of HWCP. HWCP is reviewed and amended immediately when: a. Regulations change, b. Plan failed in an emergency, c. Increased potential for emergency from changes in project/facility, d. List of emergency coordinators changes, and e. List of emergency equipment changes.	
			183. Emergency Coordinator Responsibilities. On-site emergency coordinator is familiar with HWCP, operations, location/characteristics of wastes, location of records, facility layout; is on-call or on facility (or has designated alternate); and is authorized to commit resources to implement HWCP. (40 CFR 264.55 and 265.55)	
			184. Implementation of Plan. During emergency, requirements/responsibilities of emergency coordinator, implementation of plan, and notification were properly conducted. (40 CFR 264.56 and 265.56)	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
Off-site Transportation/Disposal		
	185. Transporter. Hazardous wastes are offered only to transporters with proper EPA Identification Numbers. (40 CFR 262.12(c))	
	186. Prequalification. Hazardous wastes are transported by and disposed only by prequalified transporters and disposal, treatment, or recycling facilities (EHS 1-4).	
	187. Manifesting. Completed manifests are used each time a regulated hazardous waste is transported off-site. (40 CFR 262.20-.23; 49 CFR 172.604). All required data has been inputted and manifest is properly signed by both the generator and transporter. If TtEC personnel sign the manifest, there is written authorization from the generator and this authorization has been reviewed by ESQ Dept.	
	188. Packaging/Labeling/Placarding. Prior to off-site transport each hazardous waste is: a. Packaged and labeled in accordance with DOT requirements. b. If 110 gallons or less, marked with commercial label designated "Hazardous Waste" and contact information. c. Marked with generator's name, address, and manifest document number. d. Placarded in accordance with DOT requirements. (40 CFR 262.30 - .32)	
Receiving Offsite Waste		
	189. Manifest/Shipping Paper Review. All manifests and shipping papers are reviewed for waste received from offsite sources. Each manifest is signed and dated; discrepancies are noted; transporter is given one copy; copy is returned to generator within 30 days. (40 CFR 264.71 and 265.17)	
	190. Discrepancies. Significant discrepancies are reported on all shipments received: quantity variations greater than 10% for bulk waste; any variation in piece count for batch waste, and obvious differences of waste type. In addition, such discrepancies are reconciled with generator or transporter within 15 days OR if not, letter is sent to EPA. (40 CFR 264.72 and 265.72)	
	191. Unmanifested Waste Reports. If a facility accepts for treatment, storage, or disposal waste from off-site source without an accompanying manifest (and waste is not excluded from the manifest requirement), "Unmanifested Waste Report" (EPA from 8700-13B) was submitted to EPA within fifteen days after receiving the waste.	

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Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	192. Restricted Waste Disposal. If a facility accepts for treatment, storage, or disposal waste from off-site source which is restricted from land disposal, records are maintained of all notices and certifications pertaining to land disposal. (40 CFR 268.7(c)(1)) a. **Recordkeeping.** Records are maintained of all notices and certifications pertaining to land disposal. (40 CFR 268.7(c)(1)) b. **Sampling and Analysis.** Waste or extract of waste must be tested to ensure waste is in compliance with treatment standards. Verify: • Waste analysis plan contains frequency and analytical methods. • Operating record demonstrates waste analysis plan is being implemented. • Laboratory analysis demonstrates waste disposed of meets LDRs.	
	193. Receiving Off-site Waste. If the project activities include receiving hazardous waste from a foreign source, a notice was filed with EPA at least 4 weeks prior to waste arrival. If project is receiving hazardous waste from off-site source, the facility owner informed generator in writing that facility has appropriate permits and will accept waste that is being shipped. (40 CFR 264.12 and 265.12) a. Written notice is maintained in project's operating record. b. Project is approved to handle specified waste type.	
Import/Export		
	194. Export. Hazardous wastes are being exported outside the U.S. for treatment, storage or disposal. Notification of intended export was sent to EPA, EPA's acknowledged consent was sent to receiving country, and manifesting and reporting requirements are being met. (40 CFR 262.50 - .57)	
	195. Import. Hazardous wastes are being imported to the facility for treatment, storage or disposal from a foreign country. Manifests have been properly completed for these wastes. (40 CFR 262.60)	
Onsite Transportation		
	196. Management Practices. Onsite transportation of hazardous wastes between buildings is accomplished using good management practices to ensure against spills, releases, and accidents. Procedures exist to manage movement of hazardous wastes throughout the site, drivers are trained in spill response, provisions are made to secure waste in vehicles, and site contingency plan covers accidents during transport.	
	197. Crossing Public Roads. Onsite transportation of hazardous wastes involves crossing public roads. If so, offsite transportation requirements must be complied with and facility must be permitted as a transporter. (40 CFR 263)	

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Project:	Inspector:	Date:

Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	Recordkeeping. *Note: These are generator requirements; Tetra Tech EC normally is not a generator, but assists clients in managing their wastes. However, Tetra Tech EC may keep some or all of these records depending upon contractual requirements. It is GMP to keep records if Tetra Tech EC is involved in off-site transport or disposal.*	
	198. Operating Record. Operating record contains the following: a. Description, quantity and date of placement of each shipment of waste received. This information should cross-reference the manifest number. b. Location of waste at the facility. c. Records and results of waste analysis and trial tests. d. Report on incidents. e. Records/results of inspections in accordance with 40 CFR 264.17 and 265.17. f. Monitoring, testing, and analytical data. g. Copies of LDR notices and certifications. h. Records of quantities of waste placed in land disposal under extension of effective date of any LDR. i. Closure and, for disposal facilities, post-closure plans and cost estimates. Verify closure plan and post-closure plans are up-to-date, reflects all units currently operating, was amended if operating, design or closure plans have changed, and notices sent to EPA to amend plans, if applicable. j. Annual waste minimization program certifications. (40 CFR 264.73, 265.74, 268.7 and 268.8)	
	199. Generator Records If Waste Shipped Off-site. Records are kept on-site for at least 3 years (or in project files if project ends earlier) of the following: a. Copy of signed manifests from TSDF which received waste. b. Copy of exception reports. c. Records to characterize wastes. (40 CFR 262.40)	
	200. Biennial/State Report. Biennial Report has been prepared and submitted by March 1 of each even numbered year or according to timing and schedule of state requirement. Copy of report is kept for 3 years. (40 CFR 264.75, 265.75 and 262.41)	
	201. Facility Reports. The following reports, if applicable, have been prepared, signed, and submitted: a. Any release from solid waste management unit. b. Fires and explosions. c. Groundwater detection monitoring program. d. Compliance monitoring program. e. Corrective action program. f. Surface impoundment, waste pile, land treatment, and land disposal unit monitoring. g. Certification of closure for hazardous waste surface impoundment, waste pile, land treatment, and landfill units. (40 CFR 264.77 and 265.77)	

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Project:	Inspector:	Date:

Yes No N/A	REQUIREMENTS	COMMENTS/NOTES
	202. Exception Reports. If copy of signed manifest from TSDF was not received within 35 days from off-site transport, transporter was contacted. If the manifest was not received within 45 days, exception report was filed with EPA (state). (40 CFR 262.43)	
	203. LDR Certification/Notices/Waste Analysis. Copies of all data to support characterization either based upon knowledge of waste or testing, notices, certifications, and demonstrations are kept on-site/in project files for at least 5 years. (40 CFR 268.7(a)(5))	
Land Disposal Restrictions		
	204. Notice/Certification. Initial Off-site shipment of waste has generator notice and certification that waste meets/does not meet LDRs (waste number, treatment standard under 40 CFR 268, five letter treatment code, if applicable, manifest number, and waste analysis data. (40 CFR 268.7(a) and (b))	
	205. Variance/Extension/Exemption. If hazardous waste is subject to exemption, variance, or extension from LDR requirements, notice is submitted to TSDF that waste is not prohibited from land disposal. (40 CFR 268.7(a)(3)	
	206. Exemption. If waste is determined to be exempt from RCRA subtitle C subsequent to the point of generation, a one-time notice stating this determination is placed in the project files. (40 CFR 268.7(a)(6))	
	207. Compliance with LDRs. Disposal of hazardous wastes meet treatment standards specified in 40 CFR 268.40 and applicable Universal Treatment Standards in 40 CFR 268.48, unless variance, exemption, or extension has been granted. (40 CFR 268)	
	208. Debris. Debris which contains a listed waste or is characteristically hazardous has: a. Obtained a contained-in determination by EPA under 40 CFR 261 b. Has been treated and meets the performance standards specified in 40 CFR 268.45 and is therefore no physical or chemical extraction longer regulated as hazardous. c. Meets the land disposal restrictions in 40 CFR 268.40 and applicable Universal Treatment Standards of 40 CFR 268.48. d. Residues from treatment of hazardous debris must be managed as a hazardous waste and meet 40 CFR 268 standards prior to land disposal.	

--End Checklist--

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST - HAZARDOUS WASTE: STORAGE/TREATMENT/DISPOSAL IN LESS THAN 90 DAYS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			General Requirements	
			1. ESS or Designated Waste Management Role. Discuss Role of ESS or designated individual with regards to waste management at the site. **a.** How is waste management handled & is it working effectively? **b.** What types of problems have been encountered? **c.** Is ESS or designated individual receiving regulatory support from ESQ Env. Compliance/Regulatory Specialists as needed? **d.** Does ESS or designated individual have the required training and knowledge?	
			2. Waste Classification. Waste is characterized as hazardous or state-regulated hazardous waste. Waste containers that are stored pending sample results are labeled as "Hazardous Waste-Pending Analysis," are dated with an accumulation start date (ASD), and are in compliance with 90-day accumulation period while awaiting waste classification.	
			3. EPA Identification Number. Generator has obtained EPA Identification number to store & offer waste for transport. (40 CFR 262.12)	
			Container Storage	
			4. Storage Requirements. Review weekly inspection forms for container & storage area requirements and inventory/tracking. Perform field observations to document how the requirements are being met and check condition of containers, including marking and labeling requirements. (40 CFR 262.34 and 40 CFR 265.171-177)	
			5. Inspections. Containers & storage area are inspected at least weekly & written records are kept of these inspections as well as corrective actions documentation. (40 CFR 265.174; GMP)	
			6. Incompatibility. Check to see if incompatible wastes are stored without adequate separation or berms, as applicable. (40 CFR 265.177; GMP)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			7. Air Emissions. Containers comply with management standards specified in 40 CFR Part 265.1030, -.1050, and -.1080 ***(Contact ESQ Env. Compliance Specialist for assistance).*** **a.** If there are process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air/steam stripping of hazardous wastes with organic concentrations of 10 ppm or greater, the operator must calculate emissions & operate equipment within those specified emissions (40 CFR 265 Subpart AA). **b.** If there is equipment that contains or contacts hazardous waste having organic concentrations of 10 ppm or greater, the Subpart BB standards are followed for various equipment. (40 CFR 265 Subpart BB). **c.** If there are tanks that contain hazardous waste, the tanks must meet specific design criteria in Subpart CC *(Note: Superfund sites & RCRA Corrective Actions are exempt*). If haz. waste is stored in surface impoundments, there must be emissions controls per Subpart CC. (40 CFR 265 Subpart CC).	
			8. State-Specific Requirements. Storage area meets state-specific requirements, which may include secondary containment. ***See the Site Health & Safety Plan (or Project Waste Management Plan) for additional requirements.***	
Satellite Accumulation				
			9. Designated Area and Marking. A designated area has been established to accumulate waste (posted as such) & area is marked with caution signage or tape on the floor.	
			10. Quantity and Location. A total of less than 55 gallons of haz. waste (or 1 quart of acutely haz. waste) is being accumulated at the location where the waste is generated and is within control of the person generating the waste. (40 CFR 262.34(c)) Ex.: NAPL removed from a monitoring well is accumulated in a 55-gal. drum & stored next to the well, and drum contains less than 55 gallons. Ex.: Five gallon pails of spent solvent haz. waste are stored in a flammable cabinet in the lab where waste was generated, and the total stored is less than 55 gallons.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			11. Marking. Containers are marked with the words "Hazardous Waste". NOTE: An **Accumulation Start Date** is **not** placed on the container until the total of haz. waste accumulated is equal to or more than 55 gallons of haz. waste (or 1 qt. of acutely haz. waste).	
			12. Timing. Waste is dated when a total of 55 gallons of haz. waste (1 qt of acutely haz. waste) is generated and moved to a less-than-90 days or RCRA permitted storage area within 3 days. NOTE: If site does not have either a Less-Than-90-Days Storage Area or a RCRA Permitted haz. waste storage area, then the haz. waste must be **shipped off-site** within 3 days.	
			13. State-Specific Requirements. Satellite accumulation area meets state-specific requirements. **See Site H&S Plan** (or Waste Mgmt. Plan) for additional requirements.	
			14. Container Management. Containers meet the same condition, compatibility, and requirements for handling as less than 90-day storage areas ***(see #4 through #8 above).***	
			REMEDIATION WASTE STOCKPILES (NOTE: This is not the same as a "waste pile" which is a permitted temporary waste storage area similar to a surface impoundment – these are covered in the checklist for hazardous waste permitted Facilities.) Not all remediation waste will be hazardous waste but RCRA has specific allowances for stockpiling of remediation waste that is hazardous *in situ* (versus in a container, tank, drip pad, containment building) without triggering LDRs or minimum technology requirements (MTRs) if the waste is managed in accordance with the Area of Contamination (AOC) policy. Remediation wastes are generated during state or federal cleanup actions (e.g., CERCLA or state CERCLA programs). Remediation waste may be debris or soil. Note: Stockpiles of contaminated remediation waste (hazardous or not) on projects sites requires diligence and attention to BMPs because wind and rain create challenges for maintaining stockpile integrity and the spread of contamination can occur. Also, not all remediation sites have space for stockpiling within the AOC, so if direct dig and haul options exist; usually clients prefer that option.	
			15. Is the remediation waste stockpile located within the AOC (contiguous contaminated area)?	
			16. Stockpiles of haz. waste are tracked in a waste log to include at a minimum: **a.** Date of generation (accumulation start date) **b.** Dates sampled (if applicable) **c.** Characterization of waste **d.** Off-site shipment dates.	
			17. Stockpiles of hazardous waste are shipped off-site within 90 days of the accumulation start date.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			18. Stockpiles are designed & maintained appropriately (e.g. placed on poly sheeting, bermed, and **covered when not in use or at the end of each day. Covers should be anchored appropriately to avoid wind lifting cover & exposing waste or rain to enter into the bermed area.**	
			19. Stockpiles are inspected at least weekly and inspections are documented. BMP – even non hazardous waste stockpiles should be inspected weekly – e.g., EHS 3-3 weekly inspection checklist.	
Hazardous Waste Tanks (NOTE: DOES NOT APPLY TO TANKS THAT ARE PART OF A "PROCESS" (e.g., Wastewater Treatment collection/treatment tanks for treatment of contaminated groundwater)				
			20. New Tanks Installed as Part of Project. Project involves the installation of a tank that stores/treats hazardous waste, and the following has been performed:	
			a. Integrity Assessment. There is a written assessment reviewed/certified by an independent, registered PE of tank's integrity & document is kept on-site. (40 CFR 265.192(a))	
			b. Installation Inspection. There is a written assessment by qualified installation inspector or registered PE that tank is properly installed & document is kept on-site. (40 CFR 265.192(b) - (g))	
			21. Marking. Tanks are clearly marked with the words "Hazardous Waste" and accumulation start date is clearly visible. (40 CFR 262.34(a))	
			22. Accumulation Time. Waste is stored in tanks for 90 days or less, unless an extension has been obtained from the State (or EPA, if state is not authorized to implement RCRA haz. waste program). (40 CFR 262.34(b))	
			23. Containment System. Applies to a new tank, existing tank storing F020-F023, F026/F027, or other specified existing tanks, unless a variance was obtained.	
			a. **General Requirement.** Containment system is capable of detecting/collecting releases & accumulated liquids until collected material is removed. (40 CFR 265.193(b)(2))	
			b. **Leak Detection.** Containment system has leak detection system that is designed/operated to detect failure of either primary or secondary containment structure or any release of waste in system within 24 hours, or earliest practicable time. (40 CFR 265.193(c))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			c. **Removal of Releases.** All spills, leaks, precipitation are removed from containment system within 24 hours. (40 CFR 265.193(c))	
			d. **Specific Design.** Containment is: a liner, vault, double-walled tank or other EPA/state-approved device that meets specified design requirements (e.g., suitable base, sloped, leak detection system). (40 CFR 265.193(d) and (e))	
			e. **Ancillary Equipment.** Ancillary equipment is provided with secondary containment. (40 CFR 265.193(f)) Note: Not applicable to above ground piping/welded flanges, joints & connections/seamless or magnetic coupling pumps and valves/pressurized aboveground piping with automatic shut-off devices that are visually inspected daily.	
			f. **Existing Tanks not yet Subject to Containment Requirement.** If existing tank is being utilized which is not yet subject to containment requirement, there is written assessment to leak test tank or tank integrity performed annually by registered PE & document is kept on-site. (40 CFR 265.193(i))	
			24. Overfill/Spill Control. Tank system includes spill prevention controls, overfill prevention controls and maintenance of freeboard in uncovered tanks to prevent overtopping. (40 CFR 265.194)	
			25. Inspection. Daily inspections are performed of overfill/spill control; aboveground points of tank; monitoring/leak detection; and surrounding area. Cathodic protection systems are inspected bimonthly (and 6 months after installation). Records are kept of inspections. (40 CFR 265.195)	
			26. Spills/Releases. If a spill has occurred from tank/containment system, the following must have been performed: (40 CFR 265.196)	
			a. **Waste/Released Material.** Waste was removed from tank as necessary to prevent further release and released material removed from containment area within 24-hours/in timely manner. (40 CFR 265.195(a)(b))	
			b. **Release to Environment.** A visual inspection/removal of contamination was conducted and the site-specific Environmental Compliance Spill/Release procedure was implemented. (40 CFR 265.196(c); GMP)	
			c. **Notification.** If release to environment occurred, proper verbal and written notification to the State agency or agencies, and EPA were conducted. (40 CFR 265.196(d))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			d. **Repair.** If after the release the tank system required major repair, the PE certification was sent to EPA/state. (40 CFR 265.198(e)) Note: "Major repair" includes installation of internal liner, repair of ruptured containment system, etc.	
			27. Closure. At closure, the standards in 40 CFR 265.197 and Subpart G were met which include removing/decontaminating waste residue, contaminated containment system, contaminated soils, structures, and equipment. (40 CFR 265.197) ***(Contact ESQ Env. Compliance Specialist for assistance).***	
			28. Ignitable/Reactive. If ignitable/reactive wastes are stored in tank, 1) waste is treated, rendered, or mixed before placement so that it is no longer ignitable/reactive and meets 40 CFR 265.17(b) **OR** 2) waste is stored/treated so that it is protected from material/conditions that may cause ignition/reaction **OR** 3) tank system is used solely for emergencies **AND** NFPA requirements for storage of such wastes are met. (40 CFR 265.198) ***(Contact ESQ Env. Compliance Specialist for assistance).***	
			29. Incompatible Wastes. Incompatible wastes/materials are not placed in same tank system. (40 CFR 265.199)	
			30. Air Emissions. If 40 CFR Part 265, Subpart AA, BB, or CC standards are applicable, tank system complies with these management standards. (40 CFR 265.202) ***(Contact ESQ Env. Compliance Specialist for assistance).***	
			31. Treatment in 90-Day or Less Tanks. If tanks are used to treat waste to meet RCRA Land Disposal Restrictions (LDRs), a waste analysis plan has been developed, is maintained on-site, and was submitted to EPA/state 30 days prior to treatment. (40 CFR 262.34(a)(4)) ***(Contact ESQ Env. Compliance Specialist for assistance).***	
			32. State-Specific Requirements. Tank system meets state-specific requirements. ***See Project Waste Mgmt. Plan for requirements.***	
Containment Buildings (APPLICABLE TO BULKY, NONLIQUID HAZARDOUS WASTES (e.g., lead-bearing materials from batteries) NOT AMENABLE TO ACCUMULATION, STORAGE, OR TREATMENT IN CONTAINERS OR TANKS.				
			33. Enclosed. Building is completely enclosed (floor/walls and roof), self-supported and can support the waste and daily operating activities. (40 CFR 265.1100(a))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			34. Barrier. Building has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel and equipment. Barrier is free of significant cracks, gaps, corrosion or other deterioration that could cause release of waste. (40 CFR 265.1101(a)(4) and (c))	
			35. Compatibility. Surfaces are chemically compatible with wastes that come into contact with them. (40 CFR 265.1101(a)(2))	
			36. Amount of Waste. Level of waste within containment walls does not exceed height of wall. (40 CFR 265.1101(c))	
			37. Decontamination. Building has decontamination area and procedures to prevent tracking waste out of building. (40 CFR 265.1101(c))	
			38. Fugitive Dust Control. Fugitive dust is controlled so that openings (doors, windows, vents, cracks, etc.) exhibit no visible emissions during normal operating conditions including when vehicles enter and exit unit. If particulate collection devices are used (fabric filter, electrostatic precipitator) these devices are operated and maintained. (40 CFR 262.1101(c))	
			39. Liquids Management. If containment building is used to store/treat wastes with free liquids, the following requirements are met: (40 CFR 265.1101(b))	
			a. **Primary Barrier.** The primary barrier is designed to prevent the migration of hazardous constituents into the barrier	
			b. **Liquid Collection/Removal.** Liquid collection system minimizes accumulation of liquids on primary barrier -- Primary barrier is sloped to drain liquids to collection system and liquids/waste are collected/removed to minimize hydraulic head on containment system at earliest practicable time.	
			c. **Secondary Containment.** The secondary containment system includes a secondary barrier designed and constructed to prevent migration of hazardous constituents into barrier and leak detection system capable of detecting failure of primary barrier and collecting accumulated wastes/liquids. ***(Contact ESQ Env. Compliance Specialist for assistance).*** (Note: Leak detection system requirement is met if bottom slope is 1% or more and constructed of granular drainage material with hydraulic conductivity of 1×10^{-2} or more and 12 inches thick or constructed of synthetic/geonet drainage materials with transmissivity of 3×10^{-5} m^2/sec or more)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			d. **Treatment.** If treating in building, treatment area must be designed to prevent release of liquids, wet materials, or liquid aerosols to other portions of building.	
			e. **Chemically Resistant.** Secondary containment system is constructed of materials that are chemically resistant to waste and liquids managed and of sufficient strength and thickness.	
			40. PE Certification. On-site files contain PE Certification that containment building is designed in accordance with 40 CFR 265.1101(a) through (c). (40 CFR 265.1101(c)(2)).	
			41. Release. If condition detected that could cause or has caused a release of waste, the following has been conducted: (40 CFR 265.1101(c)(3))	
			a. **Repair.** Condition was promptly repaired and any cleanup was conducted.	
			b. **Recordkeeping.** Condition/release is recorded in operating record.	
			c. **Notification.** Within 7 days notify EPA and within 14 working days provide written plan of steps taken to repair/cleanup.	
			d. **PE Certification.** After repairs performed, provide EPA with PE certification that repairs/cleanup conducted in accordance with written plan.	
			42. Inspection. Building is inspected once every 7 days and results are recorded in project log book/inspection log. (40 CFR 265.1101(c)(4)) (Inspection should include monitoring/leak detection equipment data, containment building and surrounding area for signs of release/deterioration).	
			43. Areas With and Without Secondary Containment. If building contains areas with and without secondary containment: • Each area is designed and operated to meet specified requirements, • Measures are taken to prevent release of liquids/wet materials into areas without secondary containment; and • Operating log provides written description of procedures used to maintain integrity of areas without secondary containment. (40 CFR 265.1101(d)).	
			44. Closure. Upon leaving the project site, plans are in place to ensure storage area meets 40 CFR 265.111 decontamination/closure requirements. (40 CFR 265.179) ***(Contact ESQ Env. Compliance Specialist for assistance).***	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			45. Accumulation Time. Waste is stored in building for 90 days or less, unless an extension has been obtained. Project operating record/log book documents that unit is emptied at least once every 90 days or procedures are being used to ensure waste volume remains in unit no more than 90 days. (40 CFR 262.34(a)(1))	
			46. Recordkeeping. The following records are kept:	
			a. Procedure to ensure that each waste volume remains in the unit for no more than 90 days, **OR**	
			b. Written description of waste generation and management practices for facility showing that they are consistent with respecting 90 day limit and documentation that procedures are complied with. (40 CFR 264.34(a)(1)).	
			47. State-Specific Requirements. Containment building meets state-specific requirements. ***(See Project Waste Mgmt. Plan for requirements).***	
Training				
			48. General. Personnel have completed waste management training that teaches them to perform their duties (general and function specific to their tasking). Training has been conducted within 6 months after project start & untrained personnel are supervised. (40 CFR 265.16(a) and (b)). This training is in addition to HAZWOPER requirements and if persons are involved with a DOT related hazardous material function, must also have DOT/HAZMAT Security training.	
			49. Annual Refresher. Personnel have undergone annual waste management refresher training. (40 CFR 265.16(c)). DOT/HM Security is every 2 years *(Tt policy because our training includes air shipment module which is more stringent than DOT rail, highway, vessel modes).*	
			50. Personnel Records. Records are maintained on-site which include: job title of each position at facility and name of person filling it; job description of each position; written description of type/amount of training for each position; records documenting training. (40 CFR 265.16(d))	
			51. Training Records. Training records are kept on-site until project closure. If employee leaves, records are kept for at least 3 years from date of last employment. (40 CFR 265.16(e))	
Preparedness and Prevention				

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			52. Management. Project is managed to minimize the possibility of fire, explosion, or any sudden releases to the environment. (40 CFR 265.31)	
			53. Testing. Emergency equipment is tested/maintained to assure proper operation and records are kept of testing. (GMP; 40 CFR 265.33)	
			54. Waste Handling Procedure. Whenever waste is being poured, mixed, spread, or handled, all personnel have immediate access to internal alarm or emergency communication device. When only one employee is on-site, he/she has immediate access to communication device. (40 CFR 265.34)	
			55. Local Arrangements. Arrangements have been made with emergency response agencies. (40 CFR 265.37)	
Contingency Planning (NOTE: THESE REQUIREMENTS MAY BE COVERED IN THE SITE-SPECIFIC HEALTH & SAFETY PLAN)				
			56. Hazardous Waste Contingency Plan. Facility has a HWCP (or SPCC Plan which has been amended to include hazardous waste requirements). The plan includes requirements specified in 40 CFR 265.52. (40 CFR 265.51 and .52) ***(Contact ESQ Env. Compliance Specialist for assistance).***	
			57. Copies. HWCP is maintained at the project site and was submitted to local emergency response agencies, as appropriate. (40 CFR 265.53)	
			58. Revision of HWCP. HWCP is reviewed and amended immediately when: a. regulations change, b. plan failed in an emergency, c. increased potential for emergency from changes in project/facility, d. list of emergency coordinators changes, and e. list of emergency equipment changes. (40 CFR 265.54)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			59. Emergency Coordinator Responsibilities. On-site emergency coordinator is familiar with HWCP, operations, location/characteristics of wastes, location of records, facility layout; on-call or on-facility (or has designated alternate); is authorized to commit resources to implement HWCP. (40 CFR 265.55)	
			60. Implementation of Plan. During emergency, requirements/ responsibilities of emergency coordinator, implementation of plan, and notification were properly conducted. (40 CFR 265.56)	
Offsite Transportation/Disposal				
			61. Transporter. Hazardous wastes are offered only to transporters with proper EPA Identification Numbers. (40 CFR 262.12(c))	
			62. Prequalification. Hazardous wastes are transported by and disposed only by pre-approved qualified transporters and disposal, treatment or recycling facilities. (Contact Project Procurement staff or Project ESQ Env. Compliance Specialist to verify these vendors were approved prior to waste shipment). See Procedure EHS1-4.	
			63. Manifesting. Completed manifests are used each time a regulated hazardous waste is transported off-site. All required data has been inputted and manifest is properly signed by both the generator & transporter. (40 CFR 262.20-.23; 49 CFR 172.604) **If TtEC personnel sign manifest, there is written authorization from the generator and this authorization has been reviewed by both the ESQ and Legal Departments.**	
			64. Packaging/Labeling/Placarding. Prior to off-site transport each hazardous waste is: a. Packaged & labeled in accordance with DOT requirements. b. If 110 gallons or less, marked with commercial label designated "Hazardous Waste" and contact information c. Marked with generator's name, address, and manifest document number d. Placarded in accordance with DOT requirements. (40 CFR 262.30 - .32)	
Onsite Disposal (*If hazardous waste is being disposed at client's facility, or onsite disposal is part of remedial activity, complete the "Hazardous Waste: RCRA Permitted Facility" checklist.)*				

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST - HAZARDOUS WASTE: STORAGE/TREATMENT/DISPOSAL IN LESS THAN 90 DAYS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			Recordkeeping *Note: These are generator requirements; Tetra Tech normally is not a generator, but assists clients in managing their wastes. However, Tetra Tech may keep some or all of these records depending upon contractual requirements. It is imperative to keep records if Tetra Tech is involved in off-site transport or disposal.*	
			65. Records. Records are kept on-site for at least 3 years (or in project files if project ends earlier) of the following: a. copy of generator-signed manifest b. copy of exception reports c. copy of Biennial Hazardous Waste Report (or state equivalent) d. records to characterize wastes. (40 CFR 262.40)	
			66. Biennial/State Report. Biennial Haz. Waste Report has been prepared and submitted by March 1 of each even numbered year or according to timing and schedule of state requirement. (40 CFR 262.41) *Note: Determine what Tetra Tech scope of work is. At a minimum, Tetra Tech should provide client with notice that Biennial Report is required.*	
			67. Exception Reports. If copy of signed manifest from TSDF is not received within 35 days from off-site transport, transporter was contacted. If the manifest was not received within 45 days, an Exception Report was submitted to the EPA (or State). (40 CFR 262.43)	
			68. LDR Certification/Notices/Waste Analysis. Copies of all data to support characterization (either based upon knowledge of waste or testing), notices, certifications, demonstrations are kept on-site/in project files for at least 5 years. (40 CFR 268.7(a)(5))	
			Land Disposal Restrictions	
			69. Notice/Certification. LDR Notification forms are submitted with the first off-site shipment of each particular RCRA hazardous waste to a TSDF, **OR** generator has provided Certification form that waste is not prohibited from land disposal and waste meets LDR treatment standards. (40 CFR 268.7(a))	
			70. Exemption. If waste is determined to be exempt from RCRA Subtitle C subsequent to the point of generation, a one-time notice stating this determination is placed in the project files. (40 CFR 268.7(a)(6))	

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST - HAZARDOUS WASTE: STORAGE/TREATMENT/DISPOSAL IN LESS THAN 90 DAYS

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			71. Debris. ***(Note: Contact Project Env. Compliance Specialist for assistance).*** (40 CFR 268) Debris which contains a listed haz. waste (i.e., F, K, P or U codes) or exhibits a characteristic (i.e., D001-D043 codes) has: a. Obtained a "contained-in" determination by EPA; b. Has been treated and meets the LDR Debris performance standards and therefore is no longer regulated as hazardous; OR c. Meets the LDR standards and applicable Universal Treatment Standards. (Residues from treatment of hazardous debris must be managed as a hazardous waste and meet 40 CFR 268 standards prior to land disposal.)	

--End of Checklist--

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EHS 3-3 ATTACHMENT C

TETRA TECH EC, INC.

PESM INSPECTION CHECKLIST— LEAD-BASED PAINT ABATEMENT/ASSESSMENT/SAMPLING

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes No N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
	This checklist applies to projects where lead-based paint abatement, assessment, or sampling is being conducted	
	General Requirements	
	1. **Scope of Activities.** Project involves the following activities. *Please circle those that are applicable.* a. Assessment b. Sampling c. Abatement d. Other: _____	
	2. Certifications. Check on that the following certifications are in order: **Training Programs**: Contractor(s) who performs lead-based paint abatement, assessment, sampling, etc., has been trained under a current certification program that took effect on 6/23/2008. **Firms:** Ensure that the contractor firm has applied for certification on or after 10/23/2009. [**Note:** On or after April 22, 2010, no firm may perform, offer, or claim to perform renovations without certification from EPA under §745.89 in target housing or child-occupied facilities.] **Individuals:** Ensure that on or after 4/22/2010, all renovations are directed by renovators certified in accordance with §745.90(a) and performed by certified renovators or individuals trained in accordance with §745.90(b)(2) in target housing or child-occupied facilities. **Note:** There are some exceptions to the above. Check with ESQ if any of the certifications are lacking.	
	3. Permits. Notification submitted or permit issued prior to commencement of lead-based paint abatement, assessment, sampling, etc., activities. Verify that permits have been obtained and that project is operating in compliance with the terms/conditions of such permits. (State/local regulations) **Note:** On or after April 22, 2010, all renovations must be performed in accordance with the work practice standards in §745.85 and the associated recordkeeping requirements in §745.86(b)(6) and (b)(7) in target housing or child-occupied facilities.	

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EHS 3-3 ATTACHMENT C

TETRA TECH EC, INC.

PESM INSPECTION CHECKLIST— LEAD-BASED PAINT ABATEMENT/ASSESSMENT/SAMPLING

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			4. Cleanup Standards. Ensure that project is complying with federal/state cleanup requirements. (Federal/State/local regulations) **Note:** Federal clearance levels are found in §745.227.	
			5. Record-keeping. Ensure that all records and certifications pertaining to the renovation or remediation are being retained for a period of three years following completion of the renovation. Specific record-keeping requirements are listed in §745.86	
			6. OSHA. OSHA specifies requirements for workers conducting lead-abatement activities. Review SHSP implementation requirements. Discuss with ESS how requirements are being met at the Site.	

Waste Generation/Management/Disposal *(If hazardous wastes are being generated, also refer to Hazardous Waste: Storage Treatment Disposal in Less than 90 days Checklist)*				
			7. Recognized Test Kits. Ensure that only EPA recognized test kits for lead are being used at the project site. **Note:** This regulation took effective June 23, 2008.	

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EHS 3-3 ATTACHMENT C

TETRA TECH EC, INC.

PESM INSPECTION CHECKLIST— LEAD-BASED PAINT ABATEMENT/ASSESSMENT/SAMPLING

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			8. Waste Characterization. Waste has been characterized in accordance with hazardous or special waste requirements. EPA suggests the use of the guidance, "Applicability of RCRA Disposal Requirements to Lead-Based Paint Abatement Wastes," (EPA 747-R-93-0006). The following are EPA's recommendations for characterizing various waste streams. State and local regulations also need to be evaluated. All items must either be tested to determine if they are hazardous or generator knowledge must be used to characterize. a. **Bulk Items (Wood, Plaster, Doors, etc.).** Generally hazardous when the lead level in the paint exceeded 4 mg/cm^2. This threshold is not EPA policy. b. **Paint Chips/Dust/Debris.** May be hazardous or non-hazardous. c. **HEPA Filters/ HEPA Vacuum Debris.** May be hazardous or non-hazardous. d. **Stripping Sludge/Unfiltered Liquid Waste.** May be hazardous or non-hazardous. e. **Disposable Work Clothes.** Generally considered non-hazardous. f. **Respirator Filters.** Generally considered non-hazardous. g. **Filtered Wash-water.** Generally considered non-hazardous. h. **Plastic Sheeting and Tape.** Generally considered non-hazardous, unless a heat gun is used for paint removal or if enclosure or encapsulation abatement methods are used.	

--End of Checklist--

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST - OIL AND HAZARDOUS SUBSTANCES MANAGEMENT

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			This checklist applies when petroleum, oil, or hazardous substances are stored, used, or handled on the project site or transported on- or off-site.	
			General Requirements	
			1. Oil/Water Separators. Project involves the maintenance/pumping/ inspection of oil water separators. Proper waste management procedures are being implemented depending upon final disposition of pumped out product, sludges, etc. *Complete applicable EHS 3-3 Solid or Hazardous Waste Checklists.*	
			2. State Regulations. State/local regulations specify requirements for oil storage, handling or disposal which are more stringent than requirements specified in this checklist. *Check the Site Health and Safety Plan to determine if State/local regulations are applicable.*	
			3. Fire Marshall Approval. Project involves aboveground storage of oil (or other hazardous substance). State/local fire department may require approval of the design, location, handling procedures, etc. for oil storage. Check the Site Health and Safety Plan to see if these criteria have been met.	
			4. Uniform Fire Code Requirements. Storage of hazardous materials in certain amounts must comply with UFC requirements which include: permitting, incompatibility, posting, security, construction/maintenance requirements for tanks, containers, cylinders, pipe/valve/fittings criteria, placard, plan requirements, drainage, secondary containment, ventilation, etc. Specific requirements apply to storage/handling/use of oxidizers, reactive/water-reactive materials, cryogenic, highly toxic and toxic materials, corrosives, carcinogens, irritants, sensitizers, radioactive materials, organic peroxides, toxic and highly toxic compressed gases, and flammable solids/gases/liquids. The local fire department has informed project how to comply with these requirements. ESS has documented in project file any local requirements and requirements are being met.	
			5. Oil Product Handling/Disposition. Project involves the storage/disposition of oil product. The method by which the oil will be dispositioned will dictate the management/disposal requirements. *Complete waste checklists as appropriate. For example, the "Hazardous Waste Storage, Treatment and/or Disposal in Less than 90 Day Checklist", or the"Solid Waste Checklist."*	

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST - OIL AND HAZARDOUS SUBSTANCES MANAGEMENT

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			Spill Prevention Control and Countermeasure Plan (SPCC Plan) *Applies when oil is stored, transported or handled in the following quantities: Total aboveground storage is 1,320 gallons or more. Since requirement applies to "facilities," discuss with client the quantities of oil stored at its facility to ensure total "facility" volumes (including project site) are properly calculated. NOTE: The December 2008 Amendments have streamlined requirements for some facilities, however the effective date has been delayed – check with ESQ Dept. to find out current date. See Zip Bulletin 260 or check with ESQ Environmental Compliance Specialist for assistance. (Note: Requirements regulating completely buried tanks (which are already subject to all UST requirements) have been vacated.)*	
			6. Development. SPCC plan has been developed and project was constructed and is operating in compliance with its requirements. (40 CFR 112)	
			7. Contents. SPCC plan states that it meets all plan requirements as stated in 40 CFR 112.	
			8. Certification. Plan has been certified by a PE and contains appropriate management approvals, unless it meets the conditions for "self certification." (40 CFR 112.7); *See ZIP Bulletin 260*	
			9. Project Drainage. Facility drainage meets the following standards: a. For diked storage areas, drainage is restricted by valves, which are preferably manual open/close variety, and pumps/ejectors are manually activated and inspected. b. Undiked areas drain into ponds, lagoons or catchments basins which are designed not to flood. c. If treatment units are used, drainage is designed to gravity flow or flow into back-up pumping systems. d. Drainage is engineered to prevent oil from reaching navigable waters. (40 CFR 112.7(e)(1))	
			10. Containment/Diversionary Structures. Appropriate containment/ diversionary structures are at project site which may include: dikes, berms, retaining walls, curbing, culverts, gutters, drainage systems, weirs, booms, other barriers, spill diversion ponds, retention ponds, and sorbent materials. (40 CFR 112.7(c)).	
			11. Spill Control/Cleanup Equipment. Spill control materials are located on project site and may include: sorbent materials, oil retention booms, sand bags/temporary curbing devices, fuel recovery pumps/collection hoses, fuel recovery tank trucks, and protection equipment for project staff. (40 CFR 112.7(c))	
			12. Drainage Water Quality. Discuss spill history with ESS and determine if any oil spills to containment systems/drainage areas/anywhere on project site have occurred? Determine if procedures followed were in compliance with SPCC Plan and TtEC requirements.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			13. On-shore Bulk Storage. Bulk storage tank system complies with standards which include tank structure compatibility, secondary containment/alternative drainage, specific drainage requirements, periodic testing/inspections, tanks alarms, pumps and level sensors. (40 CFR 112.7(e)(2)) *Note: Check regional EPA definition of "bulk" storage which normally includes any aboveground storage greater than 12,000 gallons.*	
			14. Testing. Periodic integrity testing (including tanks supports/foundations/ internal heating systems, etc.) is being conducted. In addition, piping systems are pressure tested once per year. Project files document testing results. (40 CFR 112.7(e)(2) and (3))	
			15. Loading/Unloading. Loading and unloading procedures meet DOT requirements; project personnel are in continuous attendance during loading/unloading; if no catchment basin, quick drainage system is used, and lower most drain and all outlets are inspected for leaks after tank filling. (40 CFR 112.7(e)(8))	
			16. Security. Appropriate security is maintained at project site. (40 CFR 112.7(e)(9))	
			17. Recordkeeping. The following records are maintained: a. Copy of SPCC plan is kept at project site if it is normally attended more than 8 hours per day; otherwise it is kept at the nearest field office. b. Inspection records are kept for at least 3 years, including: written inspection procedures, inspections which are signed and dated by inspector, and notes describing repairs. (GMP; 40 CFR 112.7(e)(8))	
			18. Amendments. Material change in project design, construction, operation, or maintenance that alters potential for oil spill has occurred and the SPCC Plan has been amended. (40 CFR 112.5)	
			19. Review. SPCC Plan has been reviewed within last 5 years. If revisions were required, such revisions were made within 6 months of review. (40 CFR 112.5).	
			20. Designated Project Staff. A designated person is responsible for overall spill prevention. This person conducts workplace safety evaluations and inspections. (40 CFR 112.7(e)(10))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			21. Release. Has more than 1,000 gallons spilled in a single incident or "harmful quantity" been discharged in 2 incidents within 12 months? Reporting to EPA/state has been conducted. (40 CFR 112.4) *Note: In addition, CWA requires immediate notification/written notification for releases to waters of the US that causes a sheen. Notifications are made to the National Response Center Hotline (800-424-8802) and the State's Spill Hotline.*	
			22. Training. Project staff involved with management/handling of oil take part in periodic training in spill prevention/response. (40 CFR 112.7(e)(10))	
			23. Inspections. Inspections are conducted daily in accordance with SPCC plan.	
			24. Release of Accumulated Containment Liquids. Confirm with ESS procedures for releasing accumulated storm water from secondary containment surrounding tank. Is it documented on daily inspection documentation? a. Water is inspected for visible signs of contamination prior to release b. Water is removed daily, or as necessary to prevent excessive accumulation	
Facility Response Plan (*Applies if storage of greater than 1 million gallons of oil and certain location criteria/lack of secondary containment exists or involves transfer of oil over water from vessel to vessel.) For example, oil refineries and terminals.*				
			25. Develop/Submit Facility Response Plan. Facility response plan was developed in accordance with 40 CFR 112.20 and **submitted** to EPA in a timely manner for the project activities. (40 CFR 112.20)	
			26. No Substantial Harm. Project meets criteria of storage capacity/location but has requested an exemption because it believes "no substantial harm" will occur. (40 CFR 112.20(e))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
Hazardous Materials Storage *(Applies to storage of virgin hazardous materials, not hazardous and non-hazardous wastes)*				
			27. OSHA Hazardous Communication. Health and Safety Inspection has been conducted which addressed OSHA Hazardous Communication requirements. (29 CFR 1910.1200)	
			28. Hazardous Chemical Inventory Reporting. (EPCRA Section 312) Project site handles/stores: a. 10,000 pounds or more of a hazardous chemical; OR b. 500 pounds or the threshold planning quantity (TPQ) (whichever is less) of an extremely hazardous substance (EHS); c. Then project must submit a list of hazardous substances/copies of MSDS to state commission, local committee, and local fire department. (40 CFR 370)	
			29. Toxic Chemical Release Reporting. (EPCRA Section 313) Project involves work at a facility that manufactures or processes 25,000 pounds of a toxic chemical or uses 10,000 pounds of a toxic chemical, the client's facility is SIC code 20 - 39, AND it employs more 10 or more full-time employees. A Toxic Chemical Inventory Release Report must be submitted by March 1 of each year. (40 CFR 372) *Note: Site often only provides information to client for their reporting purposes. If Section 313 reporting is applicable, ensure project files reflect actions taken.*	
			30. Emergency Planning and Response. (EPCRA Section 301-303).Project stores extremely hazardous substances on-site above TPQ. State commission was notified within 60 days of commencing on-site work. The information provided to commission is up-to-date. (40 CFR 355.30) *Note: OSHA also has emergency planning requirements which should have been addressed in H&S inspection.*	
			31. Release. (EPCRA 304) Has a release of a hazardous substance occurred on the project site? If so, was the National Response Center and state/local agencies contacted verbally and in writing as required? (40 CFR 302 and 355, state/local regulations)	

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST - OIL AND HAZARDOUS SUBSTANCES MANAGEMENT

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes No N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
Hazardous Materials Transportation (*This section applies if DOT "hazardous materials", which may include hazardous wastes, are being transported on "public roads." Requirements are GMP for transport on private/in-facility roads.)*		
	32. Shipping Papers/Manifests. Discuss procedures for receipt and review of shipping papers with ESS. Ensure shipping papers are completed, reviewed, and approved by Tetra Tech EC personnel/client for shipment of samples, project-specific chemicals, etc	
	33. Packaging/Labeling/Marking. Based upon the classification of the hazardous material, the proper DOT packaging/labeling/marking is being chosen and the materials are being packaged by an employee/subcontractor who has been properly DOT trained. (40 CFR 172)	
	34. Training. Tetra Tech EC employees/subcontractor employees performing DOT functions have been trained at least every 3 years. (Bi-annually for IATA Shipments). Documentation of training is located at the project site. (40 CFR 172, Subpart G)	
	35. Placarding. Placards are being offered to transporter prior to shipment offsite. (40 CFR 172.500)	
	36. Transportation in Tetra Tech EC Vehicle. Project involves the transportation of hazardous materials (e.g., samples, supplies) on public roads in company vehicles. TTEC Shipping Paper was used to transport hazardous materials. Packaging, labeling, and training requirements also being complied with. *Note: Materials of Trade Exemption may apply.*	
	37. International Shipments. Project involves shipment of hazardous materials across international boundaries or through international waters. Shipment complied with International and/or other foreign country transportation and environmental requirements.	
	38. Prequalification. Review transporters used at project site and ensure all were pre-qualified prior to use. *(See EHS 1-4)*	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			39. DOT HM Security Plan. Project is required to have an HM Security Plan if project ships hazardous waste or hazardous materials in bulk containers having any of the following capacities: • 17.3 cubic yards for solids (Ex.: 20 cubic yard capacity roll-off container, end dump, dump truck, etc.); or • 3,500 gallons for liquids (Ex.: 5,000 gallon capacity tanker truck); or • Shipment is required by DOT regulations to be placarded (Ex.: More than 1,000 pounds of HM, except for Class 9). (49 CFR 172 Subpart 800)	

--End of Checklist--

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— POLYCHLORINATED BIPHENYLS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES

This checklist applies if project involves the management, generation or disposal of PCBs 50 ppm or greater (this includes PCB containing electrical equipment/transformers, PCB liquids, soils/rags from cleanup of 50 ppm PCB spill, and containers storing such materials). Exemptions as outlined in this checklist may apply for management/cleanup of PCBs conducted under CERCLA and spills which occurred prior to 1978 when the anti-dilution provisions of TSCA became effective. This checklist does not address state-specific requirements for PCBs less than 50 ppm. State regulations must be consulted for those requirements.

General Requirements				
			1. **PCBs 50 ppm or greater.** Liquid, transformer, capacitor, rags, debris, soil or other article/environmental media have been determined to contain PCBs at concentration 50 ppm or greater. (40 CFR 761.1(a))	
			2. **PCBs Resulting from Spill/Concentration Less than 50 ppm.** Determination has been made that materials/environmental media contaminated by PCBs resulted from a spill that occurred after 1978 and the material spilled contained 50 ppm or greater PCBs. (40 CFR 761.1(a))	
			3. **PCBs Resulting from Spill/CERCLA Activity.** Project is being conducted under CERCLA/IRP and a determination has been made that materials/environmental media contains 50 ppm or greater PCBs. (EPA Superfund Guidance -- PB90-274432 and OSWER 9355.4-01)	
			4. **Awaiting Analytical.** PCB wastes are being stored awaiting analytical regarding PCB concentration.	
Storage 30 Days or Less (*Applies if PCBs are stored at project site for 30 days or less.)* *Note: See General Requirements for additional requirements applicable to less than 30-day storage areas.*				
			5. **Designated Area.** A designated area has been established for accumulation of PCB wastes. (GMP)	
			6. **Accumulation Time.** Waste tracking log shows PCB wastes are stored in designated area for 30 days or less. (40 CFR 761.65(c)(1))	
			7. **PCB Article/Type of Wastes.** Only the following PCB wastes are stored:	
			a. Non-leaking PCB articles/PCB equipment.	
			b. Leaking PCB articles/equipment if placed in non-leaking container with sufficient absorbent.	
			c. PCB Containers containing non-liquid PCBs (soil/rags/debris).	
			d. Liquid PCBs between 50 and 500 ppm stored in containers. A Spill Prevention Control and Countermeasure Plan has been prepared in accordance with 40 CFR 112 and each container bears notation that liquids in drums do not exceed 500 ppm PCBs. (40 CFR 761.1.65(c)(1))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			e. Non-leaking/structurally undamaged PCB Large High Voltage Capacitors/PCB-Contaminated Electrical Equipment that have not been drained of free-flowing fluid are stored on pallets next to greater than 30 day storage facility and storage area has immediately available unfilled storage space to 10 percent of volume of capacitors/equipment stored outside. (40 CFR 761.65(c)(1))	
1-Year Storage Facility (*Applies if PCBs are stored at project site for less than 1 year, but greater than 30 days)* *Note: See General Storage Requirements for additional requirements applicable to greater than 30-days, but less than 1-year storage areas.*				
			8. Accumulation Time. Waste tracking log indicates PCB wastes are disposed of within 1 year of being placed into storage.	
			9. Roof and Walls. Storage facility has adequate roof and walls to prevent rain water from reaching PCBs and PCB Items. (40 CFR 761.65(b))	
			10. Curbing. Floor has continuous curbing with minimum six inch high curb.	
			11. Containment. Floor/curbing have containment volume equal to at least two times the internal volume of the largest PCB Article/PCB Container stored therein or 25% of all PCB Articles/Containers, whichever is greater.	
			12. Impervious Material. Floor/curbing are constructed of continuous smooth and impervious materials to prevent/minimize penetration of PCBs.	
			13. Floodplain. The facility is not located at a site that is below the 100-year flood water elevation.	
General Storage Requirements (*Applies to storage of PCBs in both: 1) Less than 30-day and 2) Greater than/equal to 30 days, but less than 1-year storage areas)*				
			14. Marking Storage Area. Storage area is clearly marked with "Caution-PCB" sign. (40 CFR 761.40(a)(10))	
			15. Marking Containers. PCB Containers/Article Containers are clearly marked with "Caution-PCB" mark and Out of Service Date (i.e., the date the item was removed from service or waste was generated) is clearly visible. (40 CFR 761.40(a) and 761.65(c)(1))	
			16. Management. Storage area is managed so that PCB Articles/Containers can be located by date they entered storage.	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— POLYCHLORINATED BIPHENYLS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			17. Decontamination of Equipment. Movable equipment used to handle PCBs/PCB Items in storage facility that comes in direct contact with PCBs has been decontaminated by swabbing surfaces contacted with PCBs with a solvent that contains less than 50 ppm PCBs/solubility 5 percent or more by weight prior to removal from area. (40 CFR 761.65(c)(4) and 761.79)	
			18. Inspection. All PCB Articles/Containers are checked for leaks at least once every 30 days. Inspection forms are maintained in on-site project files. (40 CFR 761.65(c)(5))	
			19. Leaking Articles/Containers. Leaking PCB Articles and PCB Containers and contents are transferred immediately to properly marked non-leaking containers. Spilled material is cleaned up immediately and PCB-contaminated material is disposed in incinerator or chemical waste landfill. (40 CFR 761.65(c)(5) and 761.60(a)(4))	
			20. Container Requirements. PCBs are contained in DOT Specification Containers. (49 CFR 172.101, GMP)	
			21. One-Year Disposal Requirement. PCB Articles/Containers are removed from storage and disposed of within one year from the date when they were first placed in storage. (40 CFR 761.65(a))	
PCB Stockpile Storage *(Applies to soils and other solid PCB wastes stored in stockpiles)*				
			22. Accumulation Time. Waste tracking log indicates PCB waste stockpiles are stored less than 180 days.	
			23. Type of Wastes. Only solid, non-flowing PCB solids may be stored in stockpiles.	
			24. Containment. The stockpile is covered when not in use to control dispersal by wind or water. Water is not used to prevent wind dispersal.	
			25. Leachate. No leachate is generated as a result of storage in the stockpile	
			26. Liner. Stockpiled waste is placed on a liner that prevents PCBs from migrating into soil or groundwater.	
			27. Storm Water Protection. Adequate run-on controls are present to withstand a 25 year storm event. Water ??	
Decontamination				
			28. Container Decontamination. PCB containers are decontaminated by 1) flushing internal surface of container at least 3 times with a solvent that contains less than 50 ppm PCBs/solubility 5 percent or more by weight prior to removal from area; 2) each rinse is at least 10 percent of the container's volume; and 3) rinse/solvent/residue is disposed of in accordance with 40 CFR 761.60. (40 CFR 761.79)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			29. Staging Area. Decontamination is conducted in engineered staging area where all rinsates/solvents/residues are collected in a sump or other containment system.	
Disposal				
			30. All PCBs. PCB-contaminated items, and materials are disposed of in an EPA-approved incinerator, high efficiency boiler, or chemical waste landfill, as required under 40 CFR 761.60.	
PCB Spill Cleanup Policy (*Applies if PCB from current or recent spill is being cleaned up (e.g., contaminated soil, concrete pads, buildings, containers, etc.)*)				
			31. Historical Spills. If spill occurred prior to May 4, 1987, it is a historical spill and cleanup is complying with case-by-case cleanup criteria established by EPA. Project files contain documentation outlining the cleanup criteria. (40 CFR 761.120(a)(1))	
			32. Current Spills. If spill occurred after May 4, 1987 (except those specified in 3 below), it is a current spill and is meeting the requirements of 40 CFR 761.125(a) and (b), unless EPA has specified more/less stringent cleanup criteria. (40 CFR 761.120(a)(3), (b), and (c))	
			33. Notification/Recordkeeping. EPA was notified as soon as possible (no later than 24 hours) if the spill directly contaminated surface water, sewer, drinking water, grazing lands, or exceeded 10 pounds. National Response Center was also contacted if spill exceeded 1 pound. Cleanup was begun immediately in accordance with the PCB Spill Cleanup Policy. (40 CFR 761.125)	
			34. Recordkeeping. Records and certifications specified in 40 CFR 761.125(a) are maintained in the project files. Records of spill/decontamination procedure were developed and are being maintained in project files. (40 CFR 761.125(a) and (b)(5))	
Recordkeeping *Note: These are generator requirements; Tetra Tech EC normally is not a generator, but assists clients in managing their wastes. However, Tetra Tech EC may keep some or all of these records depending upon contractual requirements. It is GMP to keep records if Tetra Tech EC is involved in off-site transport or disposal. Confirm that ESS understands and has documented who's responsibility it is to maintain documentation.*				
			35. Records. Project files contain the following records: a. Written annual document log regarding disposition of each PCB item prepared by July 1 for the previous year; b. Signed manifests; and c. Certificates of Disposal (40 CFR 761.180(a)). These records are kept for at least 3 years after project stops storing PCBs.	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— POLYCHLORINATED BIPHENYLS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			36. Exception Reports. If copy of signed manifest from disposer is not received within 35 days from off-site transport, transporter was contacted. If the manifest was not received within 45 days, exception report was filed with EPA. (40 CFR 761.215)	
			37. One-Year Exception Report. If waste is transferred to disposer within 9 months of date of removal from service and generator has not received within 13 months a Certificate of Disposal or the Certificate of Disposal confirms waste was disposed of more than 1 year after the date of removal from service, a one-year exception report was filed with EPA. (40 CFR 761.215)	
			38. Cleanup/Decontamination Report. If project involves cleanup of a current spill, record/certification of cleanup/decontamination is being maintained for 5 years. (40 CFR 761.125(b)(3) and (c)(5))	
Off-Site Transportation/Disposal				
			39. EPA Notification Number. If the project involves storage of PCBs for more than 30 days or storage of bulk liquid PCBs in large non-DOT containers, the client has obtained an EPA Notification number. (40 CFR 761.202 and .205) *Note: Generators who do not store PCBs for greater than 30 days may use either their EPA Identification number under RCRA or the generic number "40 CFR Part 761".*	
			40. Transporter/Disposer. Transporters and disposers used for the project PCB wastes have EPA Notification numbers. (40 CFR 761.202(b))	
			41. Manifesting. Completed hazardous waste manifests are used each time a PCB waste is transported off-site. The following information is included based upon the type of PCB waste. (40 CFR 761.207) a. Bulk PCBs: identify waste, date of removal from service (Out of Service Date), and weight of PCBs. b. PCB Article Container/Container: unique identifying number; type of waste, date of removal from service, and weight. c. PCB Article not in Container: serial number/identification; date of removal from service, and weight of PCB waste in the article.	
			42. Certificate of Disposal. Certificate of Disposal was received by generator within 30 days of the date that PCB waste was disposed of.	

--End of Checklist--

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— NON-HAZARDOUS IDW/SOLID WASTE

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES

This checklist applies when project generates, manages, transports, or disposes of solid waste (except hazardous waste or TSCA-regulated PCB waste), including Investigation Derived Waste, special waste, unexploded/exploded ordnance, chemical warfare agents, and used oil.

General Requirements

			1. **Waste Determination.** Waste has been characterized. (State/local regulations, TTEC Environmental Field Procedures)	
			2. **Waiting Analytical.** Wastes being stored awaiting waste determination.	

Investigation Derived Waste

			3. **WMP Plan.** A Waste Management (WMP) Plan has been developed which identifies how IDW and other solid waste is to be characterized, managed and disposed of based upon suspected/ known contamination. IDW Plan requirements are being fully complied with. (GMP; CERCLA guidance). Circle which types of IDW are being generated. Soil cuttings — Treatment residues — Disposable Sampling Equipment Purge water — Deconwater — PPE Other:_____	
			4. **Suspected Hazardous Waste.** IDW, which is suspected of being hazardous is containerized and managed as hazardous waste until proven otherwise. (Note: If hazardous, refer to Hazardous Waste checklist for requirements. This checklist is not required.)	
			5. **Container/Stockpile Labeling.** Drums awaiting analytical results are labeled with "source/location of contents"; "contents/quantity"; "date of sampling"; "Analysis Pending", and any other requirement identified in the (WMP) Plan. If contents of drum are known, it is labeled in accordance with regulatory requirements.	
			6. **Containers are being managed in accordance with BMPs. (containers closed, inspected, tracked)**	

Special Waste/Solid Waste (*Special Waste may include petroleum-contaminated waste, soils that exceed state/federal cleanup levels but are not hazardous, PCB wastes not regulated under TSCA, etc. Solid waste may include construction debris, demolition debris, decontamination wastewater, non-hazardous soil, scrap metal, etc. Check state/local regulations for definitions.)*

			7. **Stockpiles.** Waste is being stored in stockpiles in compliance with liner, size, covering, etc. requirements. (State/local regulations)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			8. Container Management. Waste is being stored in containers that meet condition, compatibility, closure/covering, and marking/labeling requirements. Containers are handled so as to prevent rupture/leaking. ESS demonstrates appropriate understanding of proper storage and handling.	
			9. Labeling. Waste is labeled in accordance with the WMP. ESS understands WMP requirements for labeling.	
			10. Inspections. Documented inspections are in maintained in the project files. If no regulatory requirements exist, waste and accumulation areas are inspected at least weekly. ESS demonstrates understanding of good container management procedures: a. containers kept closed, except when adding/removing wastes, b. containers handled/stored to prevent leaking/rupturing and allow for inspection, c. accumulation/storage areas are kept free of precipitation, debris, etc.	
			11. Drum/Waste Logs. Drum/Waste logs are reviewed and were noted to be up-to-date.	
			12. Treatment. Waste is being treated on-site. Regulations may require that a treatment plan be submitted for approval from the regulatory agency, permit be obtained, specified treatment goals be met, records be kept, reports submitted, etc. *Note: Complete "Air Quality" and "Wastewater/Stormwater Discharges/UIC" checklists, if applicable.* (State/local regulations)	
			13. Accumulation Time. Waste is moved off-site within time-period required by regulation (if applicable) or, if available, an extension is obtained from the regulatory agency. Extension documentation is maintained in project files. (State/local regulations)	
			14. On-Site Disposal. Waste is being disposed of on-site in accordance with state/local regulations. Permit, if required, has been obtained and project activities are in compliance with its terms/conditions. (State/local regulations)	
			15. Transportation. Transportation of waste complies with state/local solid waste and transportation requirements. Transportation vehicles are inspected in accordance with regulatory requirements. *Note: If hazardous materials being transported off-site, complete "Oil and Hazardous Substance Management" checklist.*	
			16. Off-Site Disposal. Off-site landfills which receives waste is pre-qualified under TTEC procedures. (State/local regulations)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			17. Recordkeeping. All required records are maintained in project files. These records may include inspection logs, sampling results, off-site disposal manifests/trip-tickets, agency correspondence, etc. (State/local regulations)	
			18. State-Specific Requirements. Waste management, transportation and disposal comply with other state/local regulatory requirements. (See WMP for state requirements)	
Medical/Infectious Wastes *Note: Compliance with 40 CFR 259 has been vacated by EPA. Medical/infectious waste is primarily regulated by states. Refer to WMP to determine if plan requirements are being followed for medical/infectious waste. The checklist items below are common to many state requirements and are considered BMPs. Note: DOT often regulates medical/infectious waste as a class 6.2 hazardous material due to potential for disease transmission.*				
			19. WMP. WMP addresses medical/infectious waste management. ESS understands medical waste management requirements including transportation requirements.	
			20. Segregation. Medical/infectious wastes are segregated.	
			21. Packaging. Medical/infectious waste is packaged in accordance with regulatory requirements which may include using rigid, leak-resistant packaging that is impervious to moisture, sufficiently strong to prevent tearing, and sealed to prevent leakage.	
			22. Storage. Medical /infectious waste is stored in a secure, protected area in a way that maintains integrity of packaging. Waste is maintained in a nonputrescent state.	
			23. Labeling. Untreated medical waste is affixed with label "Medical Waste" or "Infectious Waste" or "Biohazard symbol." Treated medical waste need not be labeled.	
			24. Disposal/Transportation. ESS follows and understands labeling, marking, packaging, manifesting requirements for shipping medical /infectious waste.	
			25. Disposal. Disposal facility was prequalified under TTEC procedures to dispose of medical/infectious waste.	
USDA Soil Permits				
			26. Quarantine State/Area. Project activities involve the interstate shipment or receipt of soils from on- or off-site sources and project is located within a quarantine state/area. These states include, but are not limited to, AL, AR, FL, GA, LA, MI, NC, SC, OK, PR, TN, TX. (7 CFR 301.80 , .81, .85, and .90)	
			27. Certificate/Permit. Certificate or permit has been obtained for the interstate shipment unless specific conditions are met allowing transport without a permit/certificate.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			28. Attachment of Certificate/Permit To Container/Shipping Paper. Certificate/permit is attached to outside of container holding soils or attached to bill of lading/shipping paper.	
On-Site Landfill				
			29. Design. Landfill meets design requirements specified in regulations or alternative design has been approved by state/local agency. Design requirements may include liner, cover, leachate collection/gas collection, location criteria, etc. (40 CFR 258, State/local regulations)	
			30. Permitting/Licensing. Permit/license has been obtained to construct/operate landfill. Construction/operation complies with conditions of permit. (State/local regulations)	
			31. Operation. Landfill is operating in compliance with permit including, if applicable, O&M Plan, inspection, waste acceptance, monitoring, reporting, and recordkeeping requirements. (40 CFR 258, State/local regulations)	
			32. Stormwater. individual NPDES Stormwater permit has been obtained or coverage under a multi-sector/general permit has been obtained. *Complete "Wastewater/Stormwater Discharges/UIC" checklist to evaluate compliance.*	
Unexploded Ordnance/Ordnance Explosive Waste/Chemical Warfare Material				
			33. Site-Specific UXO Work Plan. A site-specific workplan has been developed for the project.	
			34. UXO Team On-site. UXO team is on-site to oversee all operations which have potential for UXO/OEW.	
			35. Management. OEW and CWM may be RCRA regulated material. *Complete "Hazardous Waste" checklists, as appropriate.*	
Used Oil *Note: State regulations may require that used oil be managed as a hazardous waste. If so, skip this section and complete the "Hazardous Waste" checklist.*				
			36. Testing. Used oil has been tested and determined: a. Not to be mixed with a listed hazardous waste. b. If mixed with a characteristically hazardous waste, it does not exhibit a characteristic of hazardous waste. c. Not contain more than 1,000 ppm total halogens unless it is documented that it does not contain a hazardous waste. (40 CFR 279.10, State regulations)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			37. Prohibitions. Used oil is: a. Not managed in a surface impoundment or waste pile. b. Used as dust suppressant without state/EPA approval. c. Burned in units, except industrial furnace, boiler, utility boiler, used oil fired space heater or hazardous waste incinerator. (40 CFR 279.12, State regulations)	
			38. Storage. Used oil is stored as follows: a. In tank/container/unit subject to regulation under 40 CFR 264/265. b. Container/tank is in good condition. c. Labeled with words "Used Oil." d. Fill pipe connecting to UST is labeled with "Used Oil". (40 CFR 279.22, State regulations) *Note: Storage may also need to comply with SPCC plan requirements under 40 CFR 112 or UST requirements under 40 CFR 280. Complete "Oil and Hazardous Substances Management" and "UST/AST Installation and Closure" checklists, as appropriate.*	
			39. Oil-Fired Space Heaters. Used oil is burned in generator's (client's) space heater which has rated capacity of no more than 0.5 mmBtu/hr. (40 CFR 279, State regulations)	
			40. Off-Site Shipment. Used oil is being shipped by a transporter with an EPA Identification number or under tolling agreement where reclaimed oil is returned to project site/client's facility. (40 CFI 279.24, State regulations)	
			41. Off-Site Disposal. Used oil is transported to a facility that has been approved for used oil recycling/disposal and prequalified under TTEC procedures.	
			42. DOT Compliance. Used oil is transported in accordance with DOT requirements including shipping papers, packaging, marking, labeling, and placarding. *Complete "Oil and Hazardous Substances Management" Checklist to evaluate compliance*. (49 CFR 171-178)	

--End of Checklist--

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— UNDERGROUND/ABOVEGROUND STORAGE TANK INSTALLATION AND CLOSURE

CONFIDENTIAL

Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**

This checklist applies when project involves the installation, closure or corrective action of underground or aboveground storage tanks that store hazardous substances/oil. Under federal regulations, regulated USTs include tank systems used to contain hazardous substances/oil the volume of which is 10% beneath the ground. The following are <u>not</u> regulated USTs: heating oil tank used for consumptive use on premises, septic tanks, surface impoundment, pit, stormwater/wastewater collection, flow through process tanks, tanks which contain de minimum amounts of hazardous substances, hazardous waste tanks, wastewater treatment units that are part of a POTW/NPDES permitted facility, equipment/machinery that contains hazardous substances for operational purposes, emergency spill/overfill tanks that are emptied immediately, and tanks which are less than 110 gallons.

PESM should reference 40 CFR Part 282, especially Appendix A to Part 282 which details various State requirements incorporated by reference for states that have State administered UST programs to ensure State requirements are being met.

General Information				
			1. Activity. Project involves the following activity at an UST/AST: (*Please circle applicable activity):* a. Installation b. Upgrading c. Closure: Demolition/In-place d. Investigation e. Corrective Action f. Other: _____	
			2. Type of Substance. For each UST/AST which is part of the project activities, identify the hazardous substance/oil it stores or historically has stored and its quantity in the adjacent column. Attach a table/list, if necessary.	
USTs Installed AFTER December 22, 1988 (*Applies if project involves installation /repairs of a new tank or upgrading to "new" tank requirements of a tank installed before December 22, 1988.) Note for item 4.) Not every state has the 1991 overfill prevention alternatives for overfill prevention in their state specific rules. NFPA does not have 1991 alternatives, but actually requires both 90% alert and the 95% shut off.*				
			3. Corrosion Protection. USTs meet one of following standards: a. Constructed of fiberglass-reinforced plastic (FRP); b. Constructed of steel and cathodically protected with dielectric material coating; field-installed cathodic protection system designed by corrosion expert; impress-current cathodic protection system and inspected every 60 days; c. Constructed of steel/FRP composite; d. Constructed of steel with no corrosion protection if site determined by corrosion expert to not be corrosive enough to cause release; or e. Alternative design approved by regulatory agency. (40 CFR 280.20(a) and (b))	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— UNDERGROUND/ABOVEGROUND STORAGE TANK INSTALLATION AND CLOSURE
CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			4. Spill and Overfill Prevention. If tank system is filled by transfer of more than 25 gallons, it has spill/overfill protection which include: a. Equipment that will prevent release of product when transfer hose is detached from fill pipe (e.g., catchment basin); b. Overfill equipment that: when tank is no more than 95% full shuts off automatically; when tanks is no more than 90% full, it has a high-level alarm; and for tanks with > 4,000 gal capacity, flow is restricted 30 minutes prior to overfilling with high-level alarm 1 minute before overfilling; tank has automatic shut-off flow; or c. Alternative equipment approved by regulatory agency. (40 CFR 280.20(c))	
			5. Proper Installation/Certified Installer. Regulatory agency was notified of installation by ONE of the following certifications: a. Checklist showing that all work in manufacturer's checklist is completed; b. Installer is certified by tank/piping manufacturers or regulatory agency; c. Installation has been inspected and certified by registered PE with experience in UST installation; d. Installation has been approved by regulatory agency; or e. Another method approved by regulatory agency. (40 CFR 280.20(d) and (e)) *Note: State regulations may specifically require one type of certification. Check state regulations.*	
			6. Release Detection. ONE of the following release detections is being used: a. Every 30 days monitoring for release is conducted through automatic tank gauging/inventory control; vapor monitoring; groundwater monitoring; interstitial monitoring; or alternative method approved by regulatory agency; b. Inventory control is conducted on a monthly basis to detect any release of at least 1% of flow-through plus 130 gallons AND tightness testing every 5 years until tank is 10 years old, then tank is monitored every 30 days for releases; OR c. Weekly manual tank gauging is conducted if tank is 550 gallons or less. (40 CFR 280.41(a)) Records are kept documenting compliance with inspection/monitoring/ testing requirements.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			7. Petroleum UST Release Detection for Piping. If project involves installation of an UST which stores petroleum, the UST has release detection in piping which consists of: a. Pressurized piping which is equipped with automatic line leak detector and EITHER tested annually for line tightness OR monitored monthly for releases by vapor/groundwater/interstitial/agency-approved alternative monitoring; or b. Suction piping requirements: below grade piping operates at less than atmospheric pressure and is sloped so that contents of pipe will drain back into tank if suction is released; only 1 check valve is included in each suction line and it is located directly below and as close as practicable to suction pump; and method is provided to check suction requirements. c. No release detection is required if meet suction piping requirements. d. If suction piping requirements are not met, piping must have line tightness test every 3 years OR monitored monthly for releases described for pressurized piping. (40 CFR 280.41(a)) Records are kept documenting compliance with inspection/monitoring/ testing requirements.	
			8. Hazardous Substances USTs/Secondary Containment. Secondary containment is designed/constructed/installed to: a. Contain substances released from tank system until they are detected and removed and prevent release to environment during operational life. b. Containment is checked for releases every 30 days. Records are kept of these inspections. c. Tank and piping designed with double-wall or external liners, including vaults to contain 100% capacity of largest tank. d. Pressurized piping is equipped with automatic line leak detector. (40 CFR 280.42)	
USTs Installed BEFORE December 22, 1988				
			9. Criteria. Project involves the repair/reinstallation or closure of an UST which will meet one of the following standards: 1) UST will meet new tank systems described above; 2) UST will meet upgrading requirements described below; OR 3) UST will be closed. (40 CFR 280.21)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			10. Release Prevention Upgrades. If the UST is a steel tank it has: a. Internal lining which is inspected annually for 10 years/every 5 years thereafter; b. Cathodic protection which is installed and integrity of tank is ensured through internal inspection, monitoring every 30 days (if tank is less than 10 years old) OR tightness testing prior to installation of cathodic protection, and between 3 and 6 months (if tank is less than 10 years old); OR c. Alternative approved by regulatory agency. (40 CFR 280.21(b) and (c)). d. Piping that contains regulated substances and is in contact with ground has been upgraded by installing cathodic protection system described for new tanks (above in question 1), except that no dielectric material coating is required. e. Spill/overfill prevention equipment described for new tanks (above in question 2) has been installed.	
			11. Release Detection. Depending upon when tank was installed, release detection/pressurized piping was installed according to timetable in regulations. Release detection includes ONE of the following. a. Every 30 days monitor release through automatic tank gauging/inventory control, vapor /groundwater /interstitial/ alternative approved monitoring; b. Weekly manual tank gauging (if tank is 550 gallons or less); c. If tank meets upgrade/new tank requirements, on a monthly basis use inventory control to detect release of at least 1% of flow-through plus 130 gallons, tightness testing every 5 years until 10 years old, then monitor every 30 days; OR d. If tank does not meet upgrade/new tank requirements, on a monthly basis conduct inventory control to detect release of at least 1% flow-through plus 130 gallons and tightness test EVERY year. e. If tank contains hazardous substances, secondary containment specified above for new tanks was installed. (40 CFR 280.40). Records of monitoring/inspections/tests are maintained in project files.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			12. Piping Release Detection. Depending upon when tank was installed, release detection for piping has been installed according to timetable in regulations. a. Pressurized piping which is equipped with automatic line leak detector and EITHER tested annually for line tightness OR monitored monthly for releases by vapor /groundwater /interstitial/ agency-approved alternative monitoring; OR b. Suction piping requirements: below grade piping operates at less than atmospheric pressure and is sloped so that contents of pipe will drain back into tank if suction is released; only 1 check valve is included in each suction line and it is located directly below and as close as practicable to suction pump; and method is provided to check suction requirements. c. No release detection is required if meet suction piping requirements. d. If suction piping requirements are not met, piping must have line tightness test every 3 years OR monitored monthly for releases described for pressurized piping. e. Hazardous substance tanks must have secondary containment as described for new tanks. (40 CFR 280.40). Records of monitoring/inspections/tests are kept in files.	
All UST Systems (*Applies to installation, operation, repair, maintenance, etc. of <u>all</u> UST tanks.)*				
			13. Cathodic Protection System Operation/Maintenance. Cathodic protection systems must be tested by qualified tester within 6 months of installation and every 3 years. Impressed current systems are inspected every 60 days. Records of operation of cathodic protection system are maintained in project files. (40 CFR 280.31)	
			14. Repairs. Repairs must prevent releases due to structural failure or corrosion. Proper personnel, specific requirements for metal/FRP piping, and testing after repairs are being complied with. (40 CFR 280.33)	
			15. Compatibility. UST system is compatible with substance stored. (40 CFR 280.32)	
			16. Filling. When UST is being filled, the volume in tank is checked before transfer and transfer operation is constantly monitored to prevent spills/overfills. (40 CFR 280.30(a))	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— UNDERGROUND/ABOVEGROUND STORAGE TANK INSTALLATION AND CLOSURE
CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			17. Reporting. Has a spill/overfill occurred at the project site? If so, was the following reported by the client or by TtEC in consultation with the client within 24 hours (*note that states may have more stringent requirements for spill reporting for their UST programs – check state reporting requirements)*: a. Spills/overfill of 25 gallons of petroleum if released to environment. b. Spill of petroleum which causes sheen on surface water. c. Spills of more than RQ of hazardous substance. If not meet these criteria, was spill cleaned up within 24 hours or agency notified that cleanup was not conducted within 24 hours? (40 CFR 280.53)	
			18. Temporarily Out of Service. Maintenance requirements specified in 40 CFR 280.70 must be met for USTs temporarily taken out of service. (40 CFR 280.70)	
			19. Conversion. UST system is being converted to store nonregulated substances. a. The regulatory agency has been/will be notified 30 days prior to conversion. b. Tank is being emptied and cleaned by removing all liquids/accumulated sludges. c. Assessment is being performed to measure for contamination unless other monitoring indicates no release present. d. If release confirmed, notification has been made. (40 CFR 280.71 and .72)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			20. Records. Project files contain the following applicable records *(Mark each applicable record contained in the file.)*: a. Corrosion expert's analysis of site's corrosion potential if corrosion protection is not used on steel tank. b. Proper operation of cathodic protection system -- last 2 inspections for operation of system; last 3 inspections if an impressed current CPS is used. c. Repairs made in compliance with 40 CFR 280.33. d. Performance claims pertaining to any release detection system used and manner in which those claims were tested/justified by manufacturer (5 years from installation). e. Schedules of required calibration/maintenance provided by manufacturer of release detection equipment (5 years from installation). f. Results of tank tightness test (until next test conducted). g. Calibration, maintenance, repairs of release detection equipment (1 year). h. Results of site investigation if permanent closure conducted. i. Copies of permits, notification forms, release reports, corrective action reports, other information submitted to regulatory agency. (40 CFR 280.34(b))	
			21. Reporting. Project files contain the following applicable records *(Mark each applicable record contained in the file.)*: a. Notification for all UST systems (certification of installation). b. Reports of releases, suspected releases, spills/overfills and confirmed releases described in this checklist. c. Corrective action planned or taken -- initial abatement measure, initial site characterization, free product removal, investigation of soil/groundwater cleanup, corrective action plan. d. Notification prior to permanent closure or change in service. (40 CFR 280.34(a))	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			Investigation of Release/Corrective Action/Closure	
			22. Suspected Release Reporting. The following was reported to regulatory agency within 24 hours: a. Discovery of released regulated substances at UST site. b. Unusual operating conditions unless equipment is found to be defective but not leaking and is repaired/replaced immediately. c. Monitoring results that indicate release may have occurred, unless monitoring device is defective and it is repaired/replaced and additional monitoring is satisfactory, or second month of inventory control does not confirm initial results. (40 CFR 280.50)	
			23. Investigation. Suspected release is investigated and confirmed within 7 days using tightness testing of tank, piping or both. If environmental contamination is basis of suspected release and UST has passed tank tightness, sampling is conducted in area where release is most likely to have occurred. (40 CFR 280.52)	
			24. Confirmed Release Reporting. Confirmed release has been reported by the client or by TtEC in consultation with the client to regulatory agency within 24 hours. (40 CFR 280.60)	
			25. Corrective Action. Corrective action is being taken to cleanup spill. *Circle which of the following is included in Tetra Tech EC scope of work.* a. Identification/mitigation of fire/explosion/vapor hazards, b. Removal of regulated substance from UST, c. Prevention of further migration of released substance, d. Investigation to determine presence of free product, e. Initial site characterization, f. Free product removal, g. Investigation for soil/groundwater cleanup, h. Development of corrective action plan. (40 CFR 280.60 - .66)	
			26. Closure. The following steps were completed for closure of the UST. (40 CFR 280.71 and .72)	
			a. **Notification.** Regulatory agency was notified 30 days prior to conducting closure. Notice is maintained in files.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			b. **Emptying.** UST was emptied of all product and sludges and cleaned. *Note: Sludges/product may be "hazardous" or "special" waste or "hazardous material" subject to specific management, handling, transportation, disposal, or reuse requirements. Complete applicable checklists to demonstrate compliance with these requirements.*	
			c. **Type of Closure.** UST was closed EITHER through permanent removal of all liquids and accumulated sludges OR by filling with inert material. *Please circle applicable activity.*	
			d. **Site Assessment.** Site assessment was performed to measure for contamination unless vapor or groundwater monitoring detected no release.	
			e. **Notification if Contamination Found.** If contamination was found during assessment, was notification provided to regulatory agency within 24 hours?	
			27. Records. Copies of permits, notification forms, release reports, corrective action reports, other information submitted to regulatory agency is maintained in project files. (40 CFR 280.34(b))	
			28. Reporting. The following reports have been submitted to regulatory agencies: a. Reports of releases, suspected releases, spills/overfills and confirmed releases described in this checklist. b. Corrective action planned or taken -- initial abatement measure, initial site characterization, free product removal, investigation of soil/groundwater cleanup, corrective action plan. c. Notification prior to permanent closure or change in service. (40 CFR 280.34(a))	
Aboveground Storage Tanks (*Applies if project involves the design/construction/repair/cleanup/closure of aboveground storage tanks that store hazardous substance/oil.)*				
			29. Installation/Repair. Design/construction requirements for aboveground storage tanks that store petroleum/hazardous substances are dictated by Uniform Fire Code and state or local oil/hazardous substances regulations. Also, depending upon the size of the tank, an SPCC plan may be required. (UFC, state/local regulations) *Please also complete the "Oil and Hazardous Substances Management" Checklist.*	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			30. Cleanup/Closure. Project involves the cleaning/closure of aboveground storage tanks. ASME standards may apply. Closure of tank will likely be subject to state mini-CERCLA cleanup law if release or suspected release occurred. The state/local law may require that notifications, reports, sampling/analysis plans, QAPP plans, etc. be submitted for review and approval. (ASME, State/local regulations)	
Federal USTs (*This section applies to USTs owned by Federal Agencies and are a result of the Federal Policy Act of 2005*)				
			31. Inspection Requirements. USTs not inspected since December 22, 1998 must be inspected by EPA or State every three years. The first three-year inspection cycle must be completed by August 8, 2010.	
			32. Delivery Prohibition. USTs must meet State eligibility requirements. (Note: Most states have set up tag programs where a green tag means that the UST is eligible to receive a delivery and a red tag means that the UST is ineligible to receive a delivery.)	
			33. Operator Training. States are to have UST operator training requirements developed by August 8, 2009. All UST operators must be trained by August 8, 2012. There are three classes of operators: **Class A:** Personnel having primary responsibility to operate and maintain UST tank systems. **Class B:** Personnel who are responsible for implementing UST state/federal regulatory requirements in the field. **Class C:** Personnel who are responsible for the first line of response events indicating emergency conditions.	
			34. Groundwater Protection. Each new or replaced UST or piping system connected to a new or replaced UST, and new fuel dispenser system, that are located within 1,000 feet of an existing community water system or existing potable drinking water well, must be equipped with secondary containment (including under dispenser containment) and be monitored for leaks. (**Note:** Does not apply to repairs needed to maintain existing UST system.)	

--End of Checklist--

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— WASTEWATER/STORMWATER DISCHARGES/UIC

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			This checklist applies when wastewater/stormwater is discharged to surface water, ground, or groundwater, or if any fluids are emplaced in an Underground Injection Well.	
			Surface Wastewater Discharges	
			1. Point Source Discharge. If the discharge constitutes a "point source" discharge into waters of the U.S., an NPDES permit has been obtained. (40 CFR 122.1(b)) *Note: Reference to NPDES permit in this section includes state-authorized NPDES permit.*	
			2. Exemption. Certain point source discharges to waters of the U.S. are exempt from NPDES permitting, for instance, discharges to POTW or privately owned treatment works. See exclusions in 40 CFR 122.3. Project's discharge is exempt from obtaining an NPDES permit.	
			3. § 401 Water Quality Certification. If NPDES program is not delegated to a state and EPA issues the permit, state has issued a Clean Water Act § 401 Certification. Project activities are conducted in compliance with these terms/conditions. (40 CFR 121, State/local regulations)	
			4. Permit Conditions. The permit is valid. The permit terms and conditions have been reviewed and the project is operating in compliance with all terms and conditions of the permit. *Note: For CERCLA activities, for which a "permit" does not need to be obtained, project files contain documentation specifying effluent limits, control technology, monitoring, and if applicable, reporting/recordkeeping requirements. Project is being performed in compliance with these requirements.*	
			a. **Effluent Limits.** Based upon review of discharge monitoring reports (DMR) and permit conditions, verify that permit discharge limits are being met.	
			b. **Bypass/No Effluent Exceedance.** Effluent bypass has occurred which did not cause effluent limitations to be exceeded. Verify that bypass was: essential to maintenance to assure efficient operation; unavoidable to prevent loss of life, personal injury, severe property damage; no feasible alternatives to bypass; exercise of reasonable engineering judgment; or adequate back-up equipment could not have been installed to prevent bypass that occurred during normal periods, equipment downtime, or preventative maintenance. [40 CFR 122.41(m)]	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			c. **Bypass/Effluent Exceedance**. Bypass has occurred and effluent limitations were exceeded. Notification was provided to regulatory agency. - If planned bypass, 10-day prior notice and approval was obtained. - If unanticipated bypass occurred, 24-hour notice was provided. [40 CFR 122.41(m)(3) and (4)]	
			d. **Upset.** Upset occurred and permittee can identify cause for upset. At time of upset project was operating properly, all remedial measures required by agency were complied with. [40 CFR 122.41(n)]	
			e. **Maintenance/Operation.** Project site and treatment/control systems are being properly operated and maintained Project files contain documentation demonstrating compliance. [40 CFR 122.41(e)]	
			5. Treatment Unit. Wastewater is treated at the project site prior to discharge. The following requirements are being complied with (if applicable).	
			a. **Training.** Personnel who maintain/operate water pollution control unit are trained. (State/local regulations) *Note: This requirement usually applies to large treatment plants.*	
			b. **Operation/Maintenance Log.** Operation/maintenance logs comply with requirements in state/local regulations and/or permit. Operation logs document when unit is non-operational due to maintenance/equipment failure, etc., or not operable, as well as showing when unit is operating properly.	
			c. **Sludge/Treatment Residue/Filters.** Management and disposal of sludge, treatment residue, and filters are complying with federal/ state solid, hazardous or special waste regulations.	
			d. **Operating/Startup/Shutdown Procedures.** Operating and start-up/shutdown procedures required under permit are being complied with including requirements for maintenance, inspections, alarm response, etc. (Permit conditions)	
			6. Notification/Discharge Limit Exceedances. If NPDES permit limit was exceeded, regulatory agency was notified orally (within 24 hours) and written notification was submitted within 5 days. Notification was also made in monthly monitoring report. [40 CFR 122.41(l)(6) and (7)]	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			7. Monitoring. Monitoring requirements specified in NPDES permit and 40 CFR 122, Subpart C are being met. Sampling is being conducted in accordance with 40 CFR 136 unless alternative method has been approved.	
			a. **Recordkeeping.** Adequate documentation is being maintained of sampling date/time/location; analyses dates; individuals performing sampling/analysis; analytical methods/techniques used; and analytical results.	
			b. **DMR.** Monitoring results are reported and submitted on a DMR, and signed by responsible party. [40 CFR 122.41 and 122.22(b)]	
			a. **Notification.** Regulatory agency was notified as soon as project personnel knew or had reason to believe that: b. Activity has occurred or will occur that will result in discharge on a routine or frequent basis of any "toxic pollutant" for which the permit does not establish a limit and it exceeds "notification levels" in 40 CFR 122.44(f). c. - Activity has occurred or will occur that would result in any discharge on a non-routine or infrequent basis of "a toxic pollutant" not limited in the permit, if discharge will exceed "notification levels" specified in 40 CFR 122.44(f).	
			8. Best Management Plan. If permit requires a BMP, project site has the plan & implements the requirements. This may be applicable if the project site uses, manufacturers, stores, handles, or discharges any toxic pollutant listed in CWA □307(a)(1) or pollutant listed in CWA □311.	
			9. Discharge of Toxic Pollutants. Project discharges aldrin/dieldrin, DDT, endrin, toxaphene, benzidine, or PCBs which have effluent standards or any other toxic pollutant listed in CWA□307(a)(1). a. Specified toxic pollutant effluent limits are being met. b. Regulatory agency has been notified within 60 days from date of promulgation of toxic pollutant standard. c. Reporting is being conducted in compliance with 40 CFR 129.5(d)(2).	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			10. Permit Modification. Regulatory agency has been notified as soon as practicable of any of the following events and the permit has been modified. a. Any significant changes in operation. b. Planned physical alterations/additions to project if it constitutes a "new source" under 40 CFR 122.29(b). c. Alteration/addition could significantly change the nature or increase quantity of pollutants discharged. d. Change affects pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1). [(40 CFR 122.41(l)(1)]	
			11. Permit Transfer. If transfer of NPDES permit to new permittee has occurred, the permit was revoked/reissued/modified, unless former permittee notified regulatory agency at least 30 days prior to transfer, notice described agreement between former/new permittee containing specific date of transfer/coverage/liability, and regulatory agency did not notify former permittee of intention to revoke/reissue/modify permit. (40 CFR 122.61)	
			12. Permit Renewal. Permit will expire within 6 months. An application for NPDES permit was submitted at least 180 days prior to expiration of existing permit. (40 CFR 122.21(a))	
			13. Recordkeeping. The following records are being kept for at least 3 years: a. All data used to complete permit applications and any supplemental information. [40 CFR 122.21(p)] b. Discharge monitoring reports. c. Notification required for routine/non-routine discharge of toxic pollutants not specified in permit under 40 CFR 122.44(f). d. Reports required by the permit. [40 CFR 122.44(i)(2)] e. Equipment calibration/maintenance records/original strip chart recordings for continuous monitoring instrumentation. f. Quality assurance records.	
			14. State-Specific Requirements. Discharge is in compliance with state-specific permit/regulatory requirements. (State regulations)	
Discharge To Publicly Owned Treatment Works/Federally Owned Treatment Works (*Applies when project discharges to POTW/FOTW.)*				
			15. Permit/Approval. Pre-discharge permit/approval has been obtained authorizing the discharge of wastewater to the POTW/FOTW. *Note in adjacent column, if the discharge permit/approval is batch, one-time approval or is sufficient for life of the project. (40 CFR 403.5)*	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			16. Waste Acceptance Criteria. Wastewater complies with the acceptance criteria of the receiving POTW/FOTW. Documentation exists in project files signed by FOTW/POTW that they have reviewed analytical data and wastewater meets their acceptance criteria. *Note: This may be part of permit/approval described above. (40 CFR 403.5)*	
			17. Treatment Unit. Wastewater is treated at the project site prior to discharge. The following requirements are being complied with (if applicable). *[40 CFR 122.21(j)(6)(iii)(B)]*	
			a. **Training.** Personnel who maintain/operate water pollution control unit are trained. (State/local regulations) *Note: This requirement usually applies to large treatment plants. (USC 33:26:1341)*	
			b. **Operation/Maintenance Log.** Operation/maintenance logs comply with requirements in state/local regulations and/or permit. Operation logs document when unit is non-operational due to maintenance, equipment failure, etc., or not operating, as well as when unit is operating properly. (40 CFR 403.12)	
			c. **Sludge/Treatment Residue/Filters.** Management and disposal of sludge, treatment residue, and filters are complying with federal/state solid or hazardous or special waste regulations.	
			d. **Operating/Startup/Shutdown Procedures.** Operating and start-up/shutdown procedures required under permit are being complied with including requirements for maintenance, inspections, alarm response, etc. (Permit conditions)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			18. General Pretreatment Standards. Discharge to POTW complies with general pretreatment standards. [40 CFR 403.5(b)] The following is prohibited from discharge: a. Fire/explosion hazards or waste streams with flashpoint below 140°F. b. Pollutants that will result in toxic gases/vapors/fumes in POTW in quantity to cause acute worker health/safety problems. c. Trucked/hauled pollutants except at discharge points designated by POTW. d. Pollutants that will cause corrosive damage to POTW or pH less than 5.0 unless POTW is designed to handle such discharges. e. Petroleum oil, non-biodegradable cutting oil, oil products of mineral oil origin, or solid or viscous pollutants that will obstruct flow/cause operation interference or pass-through. f. Heat in amounts that will inhibit biological activity or in such quantities that temperature at POTW influent exceeds 104°F unless POTW approves. g. Any pollutant, including oxygen-demanding pollutants, at flow rate or concentration that will cause interference with POTW.	
			19. Categorical Pretreatment Standards. Discharge is subject to categorical pretreatment standards for industrial facilities which specify concentrations of pollutants that may be discharged to POTW, and monitoring, analysis, reporting, and recordkeeping requirements. (40 CFR 403, Appendix C; 40 CFR 403.6 and .12)	
			20. No dilution. Process water or other methods are not used to dilute discharge as partial or complete substitute for treatment to achieve compliance with waste acceptance criteria/pretreatment standards. [40 CFR 403.6(d)]	
			21. No Hazardous Waste. No hazardous waste is discharged to POTW. [Good Management Practice (GMP)]	
			22. Reports/Recordkeeping. Reports/records required under permit/ approval and local/state regulations are being submitted/maintained. Reporting may be required prior to discharge, when upset occurs, etc. Records that may need to be maintained in project files include: copy of permit application, approval/permit, sampling/analysis, treatment unit maintenance/calibration, etc. (State/local regulations/permit)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			23. State/Local-Specific Requirements. Discharge complies with state/local agency permit and regulatory requirements. (State regulations)	
Discharge to Private Treatment Works (*Applies if wastewater is discharged to treatment system owned by a private party.)*				
			24. Contract. A contract has been signed by our client and owner of treatment system allowing discharge of wastewater to private treatment works.	
			25. State Permit. State permit is required to discharge to private treatment works. Project is in compliance with terms/conditions of permit, including discharge limitation, pretreatment requirements, monitoring, inspections, solid waste management plans, spill contingency plans, etc. (State regulations)	
Discharge to Ground/Groundwater				
			26. Permit. State/local agency requires that permit be obtained for the discharge of wastewater to the ground/groundwater. Verify that the project is in compliance with terms and conditions of the permit and regulations. (State/local regulations) *Note: For CERCLA activities for which a "permit" does not need to be obtained, project files contain documentation specifying effluent limits, control technology, monitoring, and if applicable, reporting/ recordkeeping requirements. Project is being conducted in compliance with these requirements.*	
			a. **Effluent Limits.** Based upon review of monitoring reports and permit conditions verify that permit discharge limits are being met.	
			b. **Maintenance/Operation.** Project site and treatment/control systems are being properly operated and maintained. O&M plan has been developed (if required) and is being complied with. Operation logs document when unit is non-operational due to equipment failure, maintenance, etc., not operating, or operating properly.	
			c. **Other Plans.** Permit/regulations require development of other plans (e.g., solid waste management plan, spill contingency plan). These plans have been developed and are being complied with.	
			27. Treatment Unit. Wastewater is treated at the project site prior to discharge. The following requirements are being complied with (if applicable):	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			a. **Training.** Personnel who maintain/operate water pollution control unit are trained. (State/local regulations) *Note: This requirement usually applies to large treatment plants.*	
			b. **Operation/Maintenance Log.** Operation/maintenance logs comply with requirements in state/local regulations and/or permit.	
			c. **Sludge/Treatment Residue/Filters.** Management and disposal of sludge, treatment residue, and filters comply with federal/state solid, hazardous, or special waste regulations.	
			d. **Operating/Startup/Shutdown Procedures.** Operating and start-up/shutdown procedures required under permit are being complied with including requirements for maintenance, inspections, alarm response, etc. (Permit conditions)	
			28. Monitoring. Monitoring requirements specified in permit and regulations are being met. (State/local regulations/permit)	
			a. **Recordkeeping.** Adequate documentation is being maintained of sampling date/time/location; analyses dates; individuals performing sampling/analysis; analytical methods/techniques used; and analytical results.	
			b. **Monitoring Reports.** Monitoring results are reported and submitted in a timely fashion.	
			c. **Notification.** Regulatory agency was notified as soon as project personnel knew or had reason to believe exceedance occurred or other permit condition was violated.	
			29. Permit Renewal. Permit will expire within 6 months, and an application for permit has been submitted in a timely fashion. (State/local regulations)	
			30. Reports/Recordkeeping. Reports/records required under permit/ approval and local/state regulations are being submitted/maintained. Reporting may be required prior to discharge, when upset occurs, etc. Records that may need to be maintained in project files include copy of permit application, approval/permit, sampling/analysis, treatment unit maintenance/calibration, etc. (State/local regulations/permit)	

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ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— WASTEWATER/STORMWATER DISCHARGES/UIC

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
Stormwater Discharges				
			31. Applicability. Project activities involve discharge of stormwater and a. Involve construction activities (i.e., clearing, grading, excavation, land disturbing) that impact greater than 5 acres under a common plan [40 CFR 122.26(a)(9)(B) & (b)(15)], OR b. Involve construction activities (i.e., clearing, grading, excavation, land disturbing) that impact equal to or greater than 1 acre; also includes disturbance of less than 1 acre of total land area that is part of a larger common plan that will ultimately disturb more than 1 acre. (does not apply if waiver received – see 122.26(b)(15)(i)(A) & (B)), OR c. Constitute an "industrial activity" (common types of remediation projects that are "industrial" are: landfill closures/construction; RCRA TSDF facilities, etc.). [40 CFR 122.26(b)], OR d. Involve construction activities impacting less than 5 acres at a client's facility which has an existing NPDES stormwater permit. e. Construction activities that result in land disturbances less than 1 acre based on the potential for contribution to a violation of a water quality standard or a significant contribution of pollutants to water of the U.S.A. [122.26(b)(15)(ii)].	
			32. Permit. Coverage under a general permit, individual, group, or multi-sector permit has been obtained. For general/multi-sector permit, NOI was submitted in a timely fashion per federal/state regulations. For individual permits, permit was obtained prior to discharge commencing. *Note: Project may constitute an "industrial activity" at a client's facility which already has an NPDES permit. In such cases, the client has been consulted regarding modifications to individual permit, NOI, and/or Stormwater Pollution Prevention Plan (SWPPP) to include project activities. (40 CFR 122.26)* *Note: For CERCLA activities, although NOI/permit does not need to be obtained, project files must contain documentation showing that "substantive" requirements have been identified and project is in compliance with these requirements. These requirements include effluent limits, BMPs, development of SWPPPs, monitoring, and if applicable reporting/recordkeeping.*	
			33. Permit Conditions. a. **Discharge of Non-Stormwater.** Non-stormwater is not combined with stormwater.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			b. **Release of Reportable Quantity of a Hazardous Substance.** If hazardous substance was released above RQ, NRC/other agencies were notified, SWPPP was modified in accordance with permit terms (normally about 2 weeks), and written notice was provided to regulatory agency within specified timeframe. [40 CFR 122.26(c)(1)(iii)]	
			c. **SWPPP Development.** SWPPP was developed in a timely fashion. State may require submittal of a certification that SWPPP was developed.[40 CFR 122.26(d)(1)(v) & (d)(2)]	
			d. **EPCRA § 313 Sources.** If project is located at a client's facility which is subject to EPCRA § 313 TRI reporting, other permit requirements such as monthly Discharge Monitoring Reports may apply. [Check facility's stormwater permit.)	
			34. Stormwater Pollution Prevention Plan. Under general, individual, or multi-sector permits, SWPPP has been developed which identifies the following. SWPPP has been reviewed and project is in compliance with its terms. [40 CFR 122.26(d)(2)(iv)] a. Pollution prevention team, b. Describes potential pollutant sources, c. Identifies Best Management Practices, d. Housekeeping/preventative maintenance, e. Spill prevention/response procedures, f. Inspections, g. Employee training, h. Recordkeeping/reporting, i. Sediment/erosion control, j. Management of runoff, and k. Comprehensive site evaluation, including schedule.	
			35. Amendment of SWPPP. SWPPP has been amended if there is a change in design, construction, operation, or maintenance at project site which has a significant effect on potential for discharge of pollutants OR if plan has been ineffective.	
			36. Monitoring. Monitoring is being conducted in compliance with permit and SWPPP. (Permit condition/SWPPP)	
			37. Reporting. Reporting to regulatory agency is being conducted in accordance with permit conditions. This may include monitoring results/DMRs, certifications, notifications, etc. (Permit conditions)	
			38. Recordkeeping. Copy of permit/NOI and SWPPP is maintained at project site. Inspection results, monitoring records, correspondence with regulatory agencies, and any other records required to be kept under the permit are maintained in the project files. (Permit conditions)	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			39. State-Specific Requirements. Some states require that Stormwater Management Plan be submitted to state for review and approval for excavation activities, waste pile/stockpile management, etc. If permit is required, verify that project is in compliance with all terms and conditions of permit. (State regulations)	
			Discharge to Underground Injection Wells (*Applies if project discharges wastewater to UIC or injection gallery.)*	
			40. Permit/Authorization by Rule. Discharge to injection well has an operating permit or is authorized by rule and the UIC is registered with the regulatory agency. The permit was obtained prior to construction of the well. (40 CFR 144.11, State/local regulations) *Note: Injection well is any dug hole which is deeper than it is wide into which fluids (may include oxygen) are emplaced.*	
			41. Inventory Information. UIC is authorized by rule and an inventory form has been submitted to EPA/state delegated agency. (40 CFR 144.26, State/local regulations)	
			42. Closure Notification. Upon closure of well, UIC inventory form is submitted in a timely fashion (normally within 30 days of closure). Closure complies with EPA/State guidance. If required, agency reviewed/approved cleanup plan. (State/local regulations)	
			43. Authorized by Rule -- Existing Class I, II, or III Wells. Project site discharges to an existing Class I, II, or III well authorized by rule. A plugging/abandonment plan has been developed in accordance with 40 CFR 144.28(c), operating requirements under 40 CFR 144.28(f), monitoring requirements under 40 CFR 144.28(g) are being met, and notification, reporting, and recordkeeping requirements specified in 40 CFR 144.28(b), (h), (j), (k), (l) and (l) are being met. *See definitions for Well Classification in 40 CFR 144.6.*	
			44. Authorized by Rule -- Class IV Well. Project site discharges to or involves the closure of a Class IV well which is authorized to discharge for up to 6 months after UIC program was approved/promulgated. Well is closed/plugged as approved by EPA, and EPA was notified 30 days prior to abandonment (40 CFR 144.23). *Note: 6 month date is 1985. Most projects involving Class IV wells will involve the closure of the well, otherwise a permit must be obtained.*	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			45. Authorized by Rule -- Class V Well. Project involves discharge or closure of a Class V well which is authorized by rule until further requirements under future regulations become applicable. Well authorization expires if EPA requires issuance of permit or upon closure of well. (40 CFR 144.24) *Note: To date, EPA has not issued requirements to permit Class V wells.*	
			46. Permitting. Project site discharges to a permitted well.	
			a. **Permit Acquisition.** Permit has been obtained by the "operator" prior to construction. (40 CFR 144.31)	
			b. **General Permitting Requirements.** General permit requirements are being complied with for operation/maintenance (e.g., operating training, laboratory QA/QC, effective performance, funding, operation backup facilities); monitoring, reporting, recordkeeping and abandonment. (40 CFR 144.51)	
			c. **Class I, II or III Wells.** Mechanical integrity of well has been established and is being maintained. (40 CFR 144.51(q) and 146.8)	
			d. **Well-specific Requirements.** Operation/maintenance, effluent limits, monitoring, and recordkeeping/reporting are in compliance with permit terms and conditions. (40 CFR 144.55)	
			e. **Corrective Action.** If permit contains corrective action requirements, project is in compliance with those conditions. (40 CFR 144.55)	
			47. Class I Nonhazardous Well. Project discharges to a Class I nonhazardous well that meets: a. Criteria and standards for construction specified in 40 CFR 146.12. b. Operating, monitoring, and reporting specified in 40 CFR 146.13.	
			48. Class II Wells. Project discharges to a Class II well that meets: a. Criteria and standards for construction specified in 40 CFR 146.22. b. Operating, monitoring, and reporting specified in 40 CFR 146.23.	
			49. Class III Wells. Project discharges to a Class III well that meets: a. Criteria and standards for construction specified in 40 CFR 146.32. b. Operating, monitoring, and reporting specified in 40 CFR 146.33.	

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			50. Class I Hazardous Waste Injection Well. Project discharges hazardous waste into a Class I injection well that meets the following criteria: a. Waste is not prohibited from discharge or a waiver has been obtained under 40 CFR 148.1 and 148.10-.17. b. Siting under 40 CFR 146.61. c. Manifesting, notification, identification, maintenance of operating records, reporting, personnel training, certification of closure in accordance with 40 CFR 264 requirements. d. Corrective action requirements, if applicable, under 40 CFR 146.64. e. Construction requirements under 40 CFR 146.65 and .66. f. Operating requirements under 40 CFR 146.67. g. Continuous recording devices for monitoring compliance in accordance with 40 CFR 146.67. h. Testing and monitoring requirements under 40 CFR 146.68. i. Reporting requirements under 40 CFR 146.69. j. Well closure plan/post-well closure plan in accordance with 40 CFR 146.71 and .72. k. Land disposal restrictions in accordance with 40 CFR 148 and 268.	

-- End of Checklist--

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EHS 3-3 ATTACHMENT C
TETRA TECH EC, INC.
PESM INSPECTION CHECKLIST— WETLANDS/STREAMS/FLOODPLAINS

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Project:	**Inspector:**	**Date:**

Yes	No	N/A	**REQUIREMENTS**	**COMMENTS/NOTES**
			This checklist applies to all projects that could potentially impact wetlands, streams, and floodplains.	
			Wetlands (*This section applies if wetlands are **suspected to be** located adjacent to or within the project site.)*	
			1. Delineation. Wetlands have been delineated by client or Tetra Tech EC, Inc. wetlands biologist. If wetlands are found to be adjacent to or within project site, the wetlands are staked so that project mitigation measures are effective. (E.O. 11990, State/local regulations)	
			a. **Non-Jurisdictional Wetlands.** Jurisdictional status of wetlands has been determined and supporting documentation is in file. *Note: documentation may be in the form of 1) a Jurisdictional Determination from the Army Corps of Engineers or State Agency, or 2) included in as part of an Army Corps of Engineers or State Permit.*	
			2. Buffer. Protective buffers have been identified and area staked so that project mitigation measures are effective. Regulatory agency approved buffers & documentation in file. (State/local regulations)	
			3. CWA § 404 Permit. If a permit was required, project activities are in compliance with the terms/conditions of the permit. (33 CFR 320-330; 40 CFR 230, state/local regulations) *Note: For activities conducted at CERCLA sites, coordination with EPA is required instead of Army Corps of Engineers. Project files were reviewed to verify that sufficient documentation exists to demonstrate that project underwent EPA review for wetlands impact/avoidance/mitigation. In addition, project files document that proper notification was made by EPA/client/Tetra Tech EC to state, USFWS, NMFS, State Fish and Game, SHPO, local agency.*	
			a. **Mitigation.** If mitigation was required, a plan was developed and approved by the regulatory agency. Project activities are being conducted in compliance with the plan.	
			b. **Notification to USFWS, NMFS, State Fish and Game, SHPO, Local Agency.** Notification was made to these agencies and project file contains their documented response to demonstrate that project will not have an adverse impact on threatened/endangered species, cultural resources, and meets local wetlands requirements OR if agencies require mitigation, such measures are being taken.	
			c. **Specific Conditions/Terms.** Terms and conditions of the individual or Nationwide Permit were reviewed and project is in compliance with all terms/conditions.	

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PESM INSPECTION CHECKLIST— WETLANDS/STREAMS/FLOODPLAINS

CONFIDENTIAL

Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			4. Exemption. Certain discharges of dredged or fill material are exempt from permitting. See exemptions in 33 CFR 320. If project activities are exempt from permitting, the EHS Plan or Work Plan contains exemption rationale.	
			5. CWA § 401 Water Quality Certification. § 401 WQC was obtained from state authorizing work in wetlands. Project is in compliance with terms and conditions of that certification. (40 CFR 121, State/local regulations)	
			6. Temporary Water Quality Modification. If project activities will cause the temporary exceedance of water quality criteria (normally due to excavation activities -- turbidity), state/local agency may require that a temporary water quality modification be obtained. If applicable, project activities are complying with the terms and conditions of the approval. (State/local regulations)	
			7. Coastal Zone Management (CZM) Certification. If wetland also located within a coastal zone, CZM Act Certification was obtained from local/state agency. If applicable, project files contain documentation and activities are complying with the terms of the CZMA. (CZMA, State/local regulations)	
Stream Bed/Bank Disturbance (*Applies if project activities involve filling, dredging, altering, or otherwise impacting water quality in or near stream or river.)*				
			8. USACE § 10 or CWA § 404 permit. Project activities involve dredging, filling, or land disturbing activity within "navigable waters" or "waters of the U.S." (normally below "high water mark") of stream/river. USACE § 10/CWA § 404 permit has been obtained. Project is in compliance with terms and conditions of permit. (33 CFR 320-330, 40 CFR 230)	
			9. State Fisheries. Project activities involve dredging, filling, land disturbing activity, or otherwise is impacting water quality within regulated area of stream bed (normally "high water mark"). Permit/approval has been obtained from state fish/game which specifies requirements for the protection of fish. Project is in compliance with terms and conditions of the permit (e.g., erosion control, monitoring, etc.). (State/local regulations)	
			10. Shoreline Protection. Project activities are located within protected shoreline area in the state and constitute a regulated activity. A Shoreline Protection permit has been obtained and project is in compliance with terms and conditions of the permit. (State/local regulations) *Note: If project is located within shoreline but does not constitute a "regulated activity," explain in adjacent column.*	

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PESM INSPECTION CHECKLIST— WETLANDS/STREAMS/FLOODPLAINS

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			11. Temporary Water Quality Modification. If project activities will cause the temporary exceedance of water quality criteria (normally due to excavation activities -- turbidity), state/local agency may require that a temporary water quality modification be obtained. If applicable, project activities are complying with the terms and conditions of the approval. (State/local regulations)	
			12. CWA § 401 Water Quality Certification. If a federal permit/approval was obtained, § 401 WQC was obtained from the state authorizing work in wetlands. Project activities are complying with the terms of the certification. (40 CFR 121, State/local regulations)	
			13. Coastal Zone Management Certification. Project activities are located within a designated coastal zone. CZMA Certification was obtained from local/state agency. Project files contain documentation, and activities are being conducted in compliance with the certification. (CZMA, State/local regulations)	
			14. Riparian Zones. If project activities will cause the removal of near-stream vegetation, activities may require authorization or compliance with State regulations or local ordnances. The riparian zone width depends on the environmental resources being protected. Permit/approval has been obtained, if applicable. Project files contain documentation and activities are in compliance with permit conditions. (State/local regulations)	
Floodplain/Flood Control (*Applies when project will potentially impact floodplains or is located in a flood control area)*				
			15. Floodplain. Project is located within a floodplain as determined through evaluation of FEMA maps or state generated floodplain maps. The project is avoiding/minimizing impacts to floodplains. Measures used to avoid/minimize impacts are documented in project files and have been reviewed/approved by applicable regulatory agency. Permit/approval has been obtained, if applicable. Field activities are in compliance with terms/conditions of permit/approval. (E.O. 11988, State/local regulations)	
			16. Flood Control. Project activities involve excavation or other land disturbing activities in an area which has potential for flood problems. An evaluation has been made of pre- and post-construction flows, and measures to minimize runoff (e.g., stormwater detention/retention) are being implemented.	

--End of Checklist--

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TETRA TECH EC, INC.

PESM INSPECTION CHECKLIST— RADIOACTIVE MATERIAL/RADIATION FOR DEPARTMENT OF ENERGY PROJECTS

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Project:	Inspector:	Date:

Yes	No	N/A	REQUIREMENTS	COMMENTS/NOTES
			This checklist applies to projects where radioactive material and/or types of radiation are present.	
			Determination of License Type	
			1. DOE requires that persons/company conducting work with radioactive material be licensed for specific amounts and types of radioactive material. Is there a license? (DOE)	
			2. Is there a documented Radiation Protection Program (RPP)? (10 CFR 835.101(a))	
			3. Is the RPP content commensurate with the nature of the activities performed and shall include formal plans and measures for applying the ALARA process to occupational exposures? (835.101(c))	
			4. Does the RPP specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP? (835.101(d))	
			5. If the RPP was updated, was a revision was submitted to DOE? (835.101(g))	
			Internal Audits (*Applies if a radioactive material license exits.)*	
			1. Are the audits of the Radiation Protection Program every 36 months? (835.102)	
			Radiation Protection Program Management Qualifications (*Applies if a radioactive material license exits.)*	
			1. Do the individuals responsible for developing, implementing, and compliance with the requirements have the appropriate education, training, and skills? (835.103)	
			Procedures (*Applies if a radioactive material license exits.)*	
			1. Are there written procedures developed that are consistent with the ability of the individuals exposed to the hazards? (835.104)	
			Occupational Dose Limits (*Applies if a radioactive material license exits.)*	
			1. Are the annual limits to the occupational workers: a. 5 rem TEDE/yr (835.201(a)(1)) b. 50 rem/yr to internal organs except the eye (835.201(a)(2)) c. 15 rem/yr to the eye (835.201(a)(3)) d. Shallow dose to the skin of 50 rem/yr? (835.201(a)(4))	
			2. Is there a means to authorize a Special Planned Exposure? (835.204)	
			3. Is the dose limit to the fetus/embryo 0.1 rem/9 months? (835.206)	
			4. Is the dose limit to minors 0.1 rem/yr? (835.207)	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			5. Is the DAC used to calculate internal dose from the inhalation of radioactive material but is this the primary means of determining dose? (835.209)	
Surveys and Monitoring (*Applies if a radioactive material license exits.)*				
			1. Is monitoring performed to demonstrate: a. Detection of buildup of radioactive material (835.401(a)(4) b. Verify effectiveness of engineering and process controls in containing radioactive material and reducing radiation exposure (835.401(a)(5) c. Identify and control potential sources of individual exposure to radiation and/or radioactive material? (835.401(a)(6))	
			2. Are the instruments and equipment used for monitoring: a. Periodically maintained and calibrated on an established frequency (835.401(b)(1)) b. Appropriate for he types(s), levels, and energies of the radiation(s) encountered (835.401(b)(2)) c. Appropriate for existing environmental conditions (835.401(b)(3)) d. Routinely tested for operability? (835.401(b)(4))	
			3. Is monitoring of individual exposures to external radiation when radiological workers who, under typical conditions, are likely to receive: a. An effective dose equivalent to the whole body of 0.1 rem or more in a year, or (835.402(a)(1)(i)) b. A shallow dose equivalent to the skin or to any extremity of 5 rem or more in a year, or (835.402(a)(1)(ii)) c. A lens of the eye dose equivalent of 1.5 rem or more in a year? (835.402(a)(1)(iii))	
			4. Are there declared pregnant workers who are likely to receive from external sources a dose equivalent to the embryo/fetus in excess of 10 percent of the limit of 0.5 rem? (835.402(a)(2))	
			5. Are there occupationally exposed minors likely to receive a dose in excess of 50 percent of the limit of 0.1 rem in a year? (835.402(a)(3))	
			6. Are there individuals entering a high or very high radiation area? (835.402(1)(5))	
			7. Is monitoring of airborne radioactivity performed when: a. An individual is likely to receive an exposure of 10 or DAC-hrs in a year (835.403(a)(1)) b. As necessary to characterize the airborne radioactivity hazard where respiratory protective devices have been prescribed? (835.403(a)(2))	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			8. Is real-time air monitoring is performed as necessary to detect and provide warning of airborne radioactivity concentrations that warrant immediate action to terminate inhalation of the insult? (835.403(b))	
Access Control to Radiological Areas (*Applies if a radioactive material license exits.*)				
			1. Is there a means for personnel entry control using one or more of the following: a. Signs and barricades (835.501(c)(1)) b. Control devices on entrances (835.501(c)(2)) c. Conspicuous visual and/or audible alarms (835.501(c)(3)) d. Locked entrance ways; or (835.501(c)(4)) e. Administrative controls (835.501(c)(5)) f. No control(s) shall be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions? (835.501(e))	
			2. Are the following measures implemented for each entry in to a high or very high radiation area? a. The area is monitored as necessary during access to determine the exposure rates to which the individuals are exposed (835.502(a)(1)) b. Each individual is monitored by a supplemental dosimetry device or other mans capable of providing an immediate estimate of the individual's integrated deep dose? (835.502(a)(2))	
			3. Are one or more of the following features used for each entrance or access point to a high radiation area: a. A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining a HRA (835.502(b)(1)) b. A device that functions automatically to prevent use or operation of the radiation source or field while individuals are in the area (835.502(b)(2)) c. A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry (835.502(b)(3)) d. Entryways that are locked. During periods when access to the area is required, positive control over each entry is maintained (835.502(b)(4)) e. Continuous direct or electronic surveillance that is capable of preventing unauthorized entry (835.502(b)(5)) f. A control device that will automatically generate audible and visual alarm signals to alert personnel I the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source? (835.502(b)(6))	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			4. In addition to the above requirements, are additional measures implemented to ensure individuals are not able to gain unauthorized or inadvertent access to very high radiation areas? (835.502(c))	
Posting and Labeling (*Applies if a radioactive material license exits.)*				
			1. Are the postings and labels include the standard radiation warning trefoil in black or magenta imposed upon a yellow background? (835.601(a))	
			2. Are the access points to a controlled area posed whenever radiological areas or radioactive material areas exist where the total effective dose equivalent is not more than 0.1 rem in a year? (835.602(a))	
			3. Is each access point to radiological areas and radioactive material areas posted with signs bearing the following wording: a. Radiation area (835.603(a)) b. High radiation area (835.603(b)) c. Very high radiation area (835.603(c)) d. Airborne radioactivity area (835.603(d)) e. Contamination area (835.603(e)) f. High contamination area (835.603(f)) g. Radioactive material area? (835.603(g))	
			4. Are areas excepted from the posting requirements for periods of less than8 continuous hours when placed under continuous observation and control of an individual knowledgeable of, and empowered to implement, required access and exposure control measures? (835.604(a))	
Respiratory Protection and Controls to Restrict Internal Exposures (*Applies if a radioactive material license exits.)*				
			1. Is there air monitoring as necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed? (835.403(a)(2))	
Radiological Records (*Applies if a radioactive material license exits.)*				
			1. Are there records documenting doses received by all individuals for whom monitoring was required? (835.702(a))	
			2. Are the results of individual external and internal dose monitoring that is performed, but not required, recorded? (835.702(b))	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			3. Are the following results of monitoring for radiation and radioactive material documented: a. Results from monitoring entries into high and very high radiation areas and contamination and high contamination areas; (835.703(a)) b. Results of monitoring used to determine individual occupational dose from external and internal sources; (835.703(b)) c. Results of monitoring for the release and control of material and equipment; and (835.703(c)) d. Results of maintenance and calibration performed on survey and monitoring instruments and equipment? (835.703(d))	
			4. Are training records maintained to show: a. Radiation safety training (835.704(a)) b. Actions taken to maintain occupational exposure ALARA (835.704(b)) c. Documentation of the results of internal audits and other reviews of program content and implementation (835.704(c)) d. Written declarations of pregnancy (835.704(d)) e. Changes in equipment, techniques, and procedure used for monitoring (835.704(e)) f. As necessary to demonstrate compliance with the requirements for sealed radioactive source control, inventory, and source leak tests? (835.704(f))	
Reports to Individuals and Licensor (*Applies if a radioactive material license exits.)*				
			1. Is a report to individuals concerning their radiation exposure being reported when: a. Is reported in writing and includes the DOE site or facility name, the individuals name, SS number, employee number, or other unique identification number (835.801(a)) b. Upon request of the individual terminating employment (835.801(b)) c. Annually (835.801(c)) d. Upon request (835.801(d)) e. When a DOE contractor is required to report to the DOE for occurrence reporting and processing? (835.801(e))	
Sealed Radioactive Source Control (*Applies if a radioactive material license exits.)*				
			1. Is there a program for control of sealed radioactive sources that are used, handled, and stored? (835.1201)	
			2. Is each accountable sealed source inventoried at intervals not to exceed six months and the inventory contains: a. Physical location of each accountable sealed radioactive source (835.1302(a)(1)) b. Verify the presence and adequacy of associated postings and labels(835.1302(a)(2)) c. Establish the adequacy of storage locations, containers, and devices? (835.1302(a)(3))	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			Radiological Criteria for License Termination (*Applies if a radioactive material license exits.)*	
			Radiation Safety Training or Instruction to Workers (*Applies if a radioactive material license exits.)*	
			1. Does each individual complete radiation safety training on the topics in 835.901(c) commensurate with the hazards in the areas and the required controls? (835.901(a))	
			2. Is this training completed before being permitted unescorted access and before receiving occupational dose? (835.901(b)(1-2))	
			3. Does each individual demonstrate knowledge of the radiation safety training topics in 835.901(c) commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstration? (835.901(b)	
			4. Does the Radiation safety training include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards: a. Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure; (835.901(c)(1)) b. Basic radiological fundamentals and radiation protection concepts; (835.901(c)(2)) c. Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions; (835.901(c)(3)) d. Individual rights and responsibilities as related to implementation of the facility radiation protection program; (835.901(c)(4)) e. Individual responsibilities for implementing ALARA measures required by 835.101, and; (835.901(c)(5)) f. Individual exposure reports that may be requested? (835.901(c)(6))	
			Design and Control (*Applies if a radioactive material license exits.)*	
			1. Are measures taken to maintain radiation exposure in controlled areas ALARA through physical design features and administrative control as as supplementary method? (835.1001(a))	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			2. During the design of new facilities or modification of existing facilities, are the following objectives adopted: a. Optimization methods are used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls (835.1002(a)) b. The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy are maintained at exposure levels below an average of 0.5 mrem per hour and far below this average as possible (835.1002(b)) c. The design objective for the control of airborne radioactive material is under normal conditions, to avoid releases to the workplace atmosphere and in any situation to ALARA levels; confinement and ventilation is normally used; (835.1002(c)) d. The design or modification and the selection of materials includes features that facilitate operations, maintenance, decontamination, and decommissioning? (835.1002(d))	
			3. Does the licensee, during routine operations, use the combination of physical design features and administrative control provided that: a. The anticipated occupational dose to general employees does not exceed 835.202 limits, and (835.1003(a)) b. The ALARA process is utilized for personnel exposure to ionizing radiation? (835.1003(b))	
Radioactive Contamination Control (*Applies if a radioactive material license exits.)*				
			1. Are there means to release material and equipment in contamination areas, high contamination areas, and airborne radioactivity areas to a controlled area, if: a. Removable surface contamination levels on accessible surfaces exceed the removable surface contamination levels specified; (835.1101(a)(1)) b. Prior use suggests that the removable surface contamination levels on inaccessible surfaces are likely to exceed the removable contamination levels specified? (835.1101(a)(2))	
			2. Is there a means for material and equipment exceeding the removable surface contamination values specified, to be conditionally release for movement on-site from one radiological area for immediate placement in another radiological area only if appropriate monitoring is performed and appropriate controls for the movement are established and exercised? (835.1101(b))	

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Project:	Inspector:	Date:

Yes	No	N/A	Requirements	Comments/Notes
			3. Is there a means for material and equipment with fixed contamination levels that exceed the total contamination values specified, to be released for use in controlled areas outside of radiological areas only under the following conditions: a. Removable surface contamination levels are below the removable surface contamination values specified; and (835.11019(c)(1)) b. The material or equipment is routinely monitored and clearly marked or labeled to alert personnel of the contamination status? (835.1101(c)(2))	
			4. Does the licensee maintain and verify appropriate controls which prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions? (835.1102(a))	
			5. Are areas accessible to individuals where the measured total surface contamination levels are less than, corresponding surface contamination values specified, controlled as follows when located outside of radiological areas: a. The area is routinely monitored; (835.1102(c)(1)) b. The area is conspicuously marked to warn individuals of the contaminated status? (835.1102(c)(2))	
			6. Are individuals exiting contamination, high contamination, or airborne radioactivity areas be monitored, as appropriate, for surface contamination? (835.1102(d))	
			7. Do individuals entering areas in which removable contamination exists at levels exceeding the removable surface contamination values specified, wear protective clothing? (835.1102(e))	

-- End of Checklist --

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APPENDIX D

NAVFAC MIDLANT MISHAP HEADS-UP INITIAL NOTIFICATION FORM

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CONTRACTOR INCIDENT REPORT SYSTEM (CIRS) INSTRUCTIONS
Complete Only Sections Appropriate to Incident (Rev. 03/11).

NOTE: THE ATTACHED CIRS FORM IS TO BE USED BY CONTRACTORS TO RECORD THE RESULTS OF THEIR ACCIDENT/INCIDENTS INVESTIGATIONS AND SHALL BE PROVIDED TO THE CONTRACTING OFFICER WITHIN THE REQUIRED TIMEFRAMES.

GENERAL. Complete a separate report for each person who was injured in the accident pages 5-6. A report needs to be completed for all OSHA recordable accidents and property damage cases. Please type or print legibly. Appropriate items shall be Checkd/Bolded, non-applicable sections shall be marked "N/A". If additional space is needed, provide the information on a separate sheet of paper and attach to the completed form.

Mark the report: (Check/Bold)
Initial: If this form is being used as initial notification of a Fatality or High Visibility Mishap. The initial form is due within 4 hours of a serious accident. A form marked 'Follow-up' or 'Final' is required within 5 days.

Follow-Up: If you are providing additional information on a report previously submitted.

Final: If you are providing a completed report and expect no changes.

Incident Information

Section 1 Contract Information – Incident Information
Prime Contractor: Name as it appears on contract documents.

Cage Code: If known.

Contract Number: Number as it appears on the contract documents.

Installation: Name of installation where incident occurred.

Task Order #: Insert number if applicable.

Contracting Activity/ROICC Office: Enter the name and address of the Contracting Office administering the contract under which the mishap took place (e.g. ROICC MCBH, ROICC NORFOLK, PWC GUAM, etc.).
Contractor Contact Information: (Contractor point of contact information for the individual responsible for completing the form) Self Explanatory

Section 2 Incident Type: Check/Bold most applicable category, if you select Industrial you must Check/Bold at least one additional category from the **Industrial Incident Additional Information Section**.

Section 3 General Information Incident Information
Date of Accident: Enter the month, day, and year of accident.

Time of Accident: Enter the local time of accident in military time. Example: 14:30 hrs (not 2:30 p:m.).

Describe the Accident in Detail in your words: Fully describe the accident in the space provided. If property damage involved, give estimated dollar amount of damage and/or repair costs involved. If additional space is needed continue on a separate sheet and attach to this report. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Ensure questions below regarding direct cause(s), indirect cause(s), and actions taken are answered. **NOTE!** Review questions in Section 4 (Fully Explain What Allowed or Caused the Incident - Incident Information) below before completing.

Exact Location of Accident: Enter facts needed to locate the accident scene (e.g. installation/project name, building/room number, street, direction and distance from closest landmark, etc.).

Were Hazardous Material(s) Involved Yes No

If Yes, Explain What Hazardous Materials Were Involved and Why: Check or Bold appropriate block and list name(s) and quantities of hazardous materials spilled/released during the mishap. List why the hazardous chemicals were being used.

Activity at the time of incident: What type of work/task was being performed by the injured when the injury took place or property damage occurred.

Personal Protective Equipment– Check/Bold appropriate items and list PPE which was being used by the injured person at the time of the accident (e.g. protective clothing, shoes, glasses, goggles, respirator, safety belt, harness, etc.)

Section 4 Fully Explain What Allowed or Caused the Incident - Incident Information
Direct Cause(s): The direct cause is that single factor which most directly lead to the accident. See examples below.

Indirect Cause(s): Indirect cause are those factors, which contributed to, but did not directly initiate the occurrence of the accident.

Examples for Direct and Indirect Cause:
1. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: Failure to provide fall protection at elevation
Indirect causes: Failure to enforce safety requirements: improper training/motivation of employee (possibility that employee was not knowledgeable of fall protection requirements or was lax in his attitude toward safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

2. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by contractor vehicle. (note contractor vehicles was in proper safe working condition.)
Direct cause: Failure of contractor driver to maintain control of and stop contractor vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

Additional Action Taken: Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue in the additional box and or on additional sheets of paper if necessary to fully explain and attach to the completed report form.

Please Include a Begin Date and Estimated Completion Date in Description
(1) Begin: Enter the date when the corrective action(s) identified above will begin.
(2) Est. End Date - Enter the date when the corrective action(s) identified above will be completed.

Section 5 Contributing Factors Incident Information: Check/Bold appropriate items fill in information where required
Other Contributing Factors: Describe in detail any additional contributing factors not listed in previous information provided.

Section 6 Attached Documents: Provide the appropriate information for each document/file attached or uploaded.

Injured Data Person

Complete Pages 5 and 6 for each injured person At the upper right hand corner of page 5 and 6 differentiate between each person by using a numerical value (e.g. Person #1, Person #, Person #3, etc.)
Section 1 Injured Data: Fill in all applicable information, Check/bold appropriate responses.

Section 2 General Information:
Check/bold appropriate responses

Section 3 Injury/Illness Fatality Information: Check/bold appropriate responses
Part of Body Affected: Enter the most appropriate primary and when applicable, secondary, etc. body part(s) affected (e.g. arm: wrist: abdomen: single eye; jaw: both elbows: second finger: great toe: collar bone: kidney, etc.).

Nature of Injury/Illness: Describes the manner in which the injury or illness was inflicted or produced. It attempts to answer the broad question of "how" work injuries and illnesses occurred. (e.g. Fall, Struck By, Caught By, Repetitive Motion, Rubbed or Abraded By, etc.)

Event or Exposure: Describes what was produced by the injury or illness was produced or inflicted. (e.g. Infectious Parasitic Diseases, Traumatic Injuries and Disorders, Open Wounds, Burns, Intracranial Injuries, etc.)

Source of Injury Illness: Identifies the object, substance, bodily motion, or exposure, which directly produced or inflicted the previously identified injury or illness. (e.g. Acids, Chemical Products, Furniture and Fixtures, Machinery, Structures and Surfaces, Tools Instruments and Equipment, etc.)

General Location Description: Describes where the injury occurred (e.g. Industrial Facilities, Operational Industrial Building Plant , Roadway, etc.)

Injury Activity Code: Describes what the injured person was doing when the injury occurred. (e.g. Operating Type of Equipment, Construction Activity Being Performed, Industrial Operation Being Conducted, etc.)

Section 4 License:
Are Appropriate License and Certification/Medical Current: Did the injured employee have the appropriate license/certification or medical evaluations completed to conduct the work/task being performed.

Describe/Explain: Describe the required (licensing/certification/medical evaluation) for job/task being performed, date when license was issued, and expiration date. (e.g. "Powdered Actuated Tools, Hilti DX-350, License issued 11/29/2011, expires 3-years from issue date." "Respirator Semi Annual Medical Evaluation, conducted 12/30/2011, expires on 12/30/2013", etc.)

Attach Image of License or Certification: Self-Explanatory

Section 5 Training:
Was all the contract-required training provided to the employee: Self-Explanatory

Explain: If no, to the previous questions explain why the employee was not trained.

Section 6 Attached Documents:
Self-Explanatory use this for photos, drawings, diagrams, or other relevant documents.

Property Damage

Section 1 Involved Person Data: Fill in all applicable information, Check/bold appropriate responses.

Section 2 Attached Documents:
Self-Explanatory use this for photos, drawings, diagrams, or other relevant documents.

Section 3 Property Damaged:
Check/bold appropriate responses. Other Headings Self-Explanatory.

Section 4 License:
Are Appropriate License and Certification/Medical Current: Did the equipment operator have the appropriate license/certification or medical evaluations completed to conduct the work/task being performed.

Describe/Explain: Describe the required (licensing/certification/medical evaluation) for job/task being performed, date when license was issued, and expiration date. (e.g. "State Issued Driver, License issued 11/29/2011, expires on MM/DD/YYY)" "Scissor Lift, JLG Model 260MRT conducted 12/30/2011, does not expire.")

Attach Image of License or Certification: Self-Explanatory

Section 5 Training:
Was all the contract-required training provided to the employee: Self-Explanatory

◯ Initial Report
◯ Follow-up Report
◯ Final Report
Date _____/_____/_____

Contractor Incident Report System (CIRS)

1. Contract Information	Incident Information
Prime Contractor:	**Cage Code:**
Contract Number:	**Installation of Incident:**
Task Order #:	**Contracting Activity/ROICC Office:**

Contractor Contact Information	
Name (Last, First):	**Phone #:**
Email Address:	**Date Notified:**

2. Incident Type (Please Check/Bold All That Apply)

☐ Assault/Violent Act	☐ Extreme Environmental Exposure	☐ Man over the side (No water entry)
☐ Diving	☐ Falls, slip, trip, or bodily exertion	☐ Man Overboard - Water Entry
☐ Electrical Shock/Burns	☐ Fires - All Types	☐ Material Handling Equipment
☐ Equipment Installation/Repair	☐ Hazardous Material (any type)	☐ Ordnance-Related (Explosive)
☐ Explosion, Non-Ordnance	☐ **Industrial (Select Additional Below)**	☐ Vehicle (Government or Private)

Industrial Incident Additional Information (Please Check/Bold All That Apply)

☐ Confined Space	☐ Hand and Power Tools	☐ Work Platforms and Scaffolding
☐ Demolition/Renovation	☐ Rigging	☐ Underground Construction, Shafts, and Caissons
☐ Trenching/Entrapment	☐ Cranes and Hoisting Equipment	☐ Concrete, Masonry, Steel Erection and Residential Construction
☐ Traffic Control	☐ Floating Plant and Marine Activities	☐ Tree Maintenance and Removal
☐ Welding and Cutting	☐ Pressurized Equipment and System	☐ Airfield and Aircraft Operations
☐ Control of Hazardous Energy	☐ Fall Protection	

3. General Information	Incident Information
Date of Accident:	**Time of Accident:**

Describe the accident in detail in your words: *(Use the back of page if you need additional space)*

Exact Location of Accident:

Were Hazardous Material(s) Involved ☐ Yes ☐ No

If Yes, Explain What Hazardous Materials Were Involved and Why:

Who Provided Clean-up? ☐ Onsite ☐ Base ☐ Public

Activity of the injured person at the time of incident:

Personal Protective Equipment: (Check/Bold Response)

☐ Available and used ☐ Available and not used ☐ Not Required

☐ Not related to Mishap ☐ Wrong PPE for job

List PPE Used:

4. Fully Explain What Allowed or Caused the Incident: Incident Information

Direct Cause:

Indirect Cause:

Additional Action Taken: (Please Include a Begin Date and Est. End Date in Description)

Additional Action Taken: (Please Include a Begin Date and Est. End Date in Description) *(Use the back of page if you need additional space)*

5. Contributing Factors:

Was Visibility Restricted? ☐ Yes ☐ No	**Distance Visibility was restricted:**

Unit of Measure (Check/Bold): ☐ Feet ☐ Yards ☐ Meters ☐ Miles ☐ Nautical Miles

Visibility Restricted By: (Check/Bold all that apply)

☐ Fog ☐ Smoke ☐ Rain ☐ Sleet ☐ Snow

☐ Mist ☐ Dust ☐ Sandstorm ☐ Unknown Object ☐ Other:

Lighting Conditions at Site of Mishap: (Please Check)	**Was Noise Level a Factor:** (Please Check)	**Was Carbon Monoxide (CO) a Factor:**(Please Check)
☐ Adequate ☐ Inadequate ☐ Unknown	☐ Yes ☐ No ☐ Unknown	☐ Yes ☐ No **If Yes CO Alarm Manufacturer:**

5. Contributing Factors: Continued

Incident Information

Other Contributing Factors:

6. Attached Documents

Attached Documents/Files Name/Description:	Date Added:	Uploaded By:

1. Injured Data (if applicable) Person

Age:	Gender: (Check/Bold) ☐ Male ☐ Female	Prime Contractor Company Name:	Subcontractor Company Name:

2. General Information

Drug or Alcohol Involved: (Check/Bold all that apply)

☐ None ☐ Unknown ☐ Alcohol ☐ Drugs ☐ Alcohol and Drugs

Who Provided First Aid? ☐ Onsite ☐ Base ☐ Public

Was Ergonomics a Factor: (Check/Bold) ☐ Yes ☐ No

Type of Ergonomic Injury: (Check/Bold All That Apply)

☐ Lifting ☐ Positioning ☐ Bending ☐ Equipment Placement Office

☐ Equipment Placement Industrial ☐ Repetitive Motion ☐ Impact Strain

3. Injury Illness/Fatality Information

Severity of Injury/Illness: (Check/Bold)

☐ Fatality ☐ Lost Workday Case Involving Days Away From Work

☐ Temporary Disability ☐ Recordable Workday Case Involving Restricted Duty

☐ Permanent Total Disability ☐ Other Recordable Case ☐ Recordable First Aid Case

☐ Permanent Partial Disability ☐ Non-Recordable Case ☐ No Injury

Where There Days Lost: (Check/Bold) ☐ Yes ☐ No	Where There Days Hospitalized: (Check/Bold) ☐ Yes ☐ No	Where There Days Restricted Duty: (Check/Bold) ☐ Yes ☐ No

Part of Body Affected:

Nature of Injury or Illness:

Event or Exposure:

Source of Injury or Illness:

General Location Description:

Injury Activity Code:

4. License (if applicable) Person

Are Appropriate License and Certification/Medical Current: (Check/Bold) ☐ Yes ☐ No

Describe or Explain:

Attach Image of License or Certification Name/Description:	Date Added:	Uploaded By:

5. Training

Was all the contract-required training provided to the employee: (Check/Bold) ☐ Yes ☐ No

Explain:

6. Attached Documents

Attached Documents Name/Description:	Date Added:	Uploaded By:

1. Involved Person Data			(if applicable) Property Damage
Age:	Gender: ☐ Male ☐ Female	Contractor:	Contractor:

2. Attached Documents

Attached Documents Name/Description:	Date Added:	Uploaded By:

3. Property Damaged

Was Anyone Injured: ☐ Yes ☐ No

Was A Government Motor Vehicle Involved: ☐ Yes ☐ No

Property Type	Property ID #	Detailed Description	Property Owned By	Estimated Cost USD	Lost Use Days

4. License (if applicable) Property Damage

Are Appropriate License and Certification/Medical Current: (Check/Bold) ☐ Yes ☐ No

Describe or Explain:

Attach Image of License or Certification Name/Description:	Date Added:	Uploaded By:

5. Training

Was all the contract-required training provided to the employee? (Check/Bold) ☐ Yes ☐ No

Explain:

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APPENDIX E

MEDICAL DATA SHEET

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Medical Data Sheet

This Medical Data Sheet must be completed by on-site personnel and kept in the command post during the conduct of site operations. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project _____

Name _____ Home Telephone____

Address _____

Age _____ Height _____ Weight _____

Person to notify in the event of an emergency: Name: _____

Phone: _____

Drug or other Allergies:_____

Particular Sensitivities:_____

Do You Wear Contacts? _____

What medications are you presently using?_____

_____

Name, Address, and Phone Number of personal physician: _____

_____

_____

Note: Health Insurance Portability and Accountability Act (HIPAA) Requirements

HIPAA regulates the disclosure of Protected Health Information (PHI) by the entity collecting that information. PHI is any information about health status (such as that you may report on this Medical Data Sheet), provision of health care, or other information. HIPAA also requires TTEC to ensure the confidentiality of PHI. This Act can affect the ability of the Medical Data Sheet to contain and convey information you would want a Doctor to know if you were incapacitated. So before you complete the Medical Data Sheet understand that this form will not be maintained in a secure location. It will be maintained in a file box or binder accessible to other members of the field crew so that they can accompany an injured party to the hospital.

DO NOT include information that you do not wish others to know, only information that may be pertinent in an emergency situation or treatment.

_____ _____ _____

Name (Print clearly) Signature Date

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APPENDIX F

MATERIAL SAFETY DATA SHEETS

(will be added at Mobilization)

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APPENDIX G

MEC AWARENESS TRAINING

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UNEXPLODED ORDNANCE

MCB ESO
DSN 751-6280/6281
COMM (910)451-6280/6281

SAFETY ALERT

SAFETY ALERT SAFETY ALERT SAFETY ALERT

* DO NOT TAKE UXO FROM THE RANGE *

UXO is defined as an Explosives that have been primed, fuzed, armed, or otherwise prepared for use and when fired, dropped, launched, etc… remains unexploded.

IF YOU ENCOUNTER UNEXPLODED ORDNACE (UXO):

RECOGNIZE you may have encountered ammunition and explosives (A&E)

RETREAT from the A&E

REPORT what you saw and where you saw it to local law enforcement (call 911), PMO (910-451-2557) or Blackburn (910-451-3064/4449)

UNITED STATES MARINE CORPS
SCIENTIA AD JUSTITIAM
CLASS V(W) GROUND AMMUNITION

SAFETY ALERT

References:
MCB Camp Lejeune BO 3570.1C

Unexploded Ordnance

Unexploded Ordnance

UXO are ammunition items that were fired, thrown, or launched from their platforms but failed to function. They are ALWAYS considered "**Exceptionally Dangerous**".

The 3 R's

1. **RECOGNIZE** the item as an UXO.
2. **RETREAT** the same way you entered
3. **REPORT** the location to your supervisor, Range Control.

Just getting too close to an UXO may cause it to explode or begin to function.

EOD personnel are the ONLY technicians authorized to handle UXOs.

RETREAT AND MARK THE UXO

- PLACE THE FLAG/MARKER IN THE VICINITY OF THE DISCOVERED UXO
- USE ANYTHING EASILY VISIBLE
- DO NOT STAKE ANYTHING IN THE GROUND. JUST BECAUSE YOU CAN'T SEE ANOTHER UXO, IT DOESN'T MEAN THAT IT'S NOT UNDERGROUND.
- RETREAT/LEAVE THE AREA AND DO NOT RETURN UNTIL EOD ARRIVES

REPORT THE UXO

- REPORT THE UXO TO BLACKBURN OR PMO
- ATTEMPT TO GIVE AS MUCH INFORMATION ABOUT THE UXO THAT YOU CAN RECALL
- GIVE APPROXIMATE DIAMETER, LENGTH, POC INFO, AND DIRECTIONS (8 DIGIT GRID IF POSSIBLE)

GENERAL SAFETY GUIDELINES

- NEVER TRANSMIT A RADIO/CELL PHONE NEAR A UXO
- NEVER ATTEMPT TO MOVE OR DISTURB A UXO
- AVOID THE AREA WHERE A UXO IS LOCATED

NEVER TRANSMIT
NEAR UXO

- MAKE ALL RADIO TRANSMISSIONS AT LEAST 25 FEET AWAY
- RADIOS SEND OUT ELECTRICAL CURRENTS (ELECTROMAGNETIC RADIATION (EMR)) WHICH COULD INITIATE SOME UXO'S

NEVER ATTEMPT TO MOVE OR DISTURB A UXO

- THE ORDNANCE ITEM MAY FUNCTION AS DESIGNED IF DISTURBED.
- **<u>REMEMBER</u>, YOU HAVE NO IDEA WHY IT DIDN'T DETONATE. YOU DON'T WANT TO BE THE ONE WHO FINDS OUT WHY!!**

AVOID THE AREA WHERE A UXO IS LOCATED

- DISTURBING THE GROUND NEAR THE UXO MAY MOVE THE UXO
- THERE MIGHT BE MORE UXO IN THE AREA
- MAKE SURE THE UXO AREA IS CLEARLY MARKED SO OTHER PERSONNEL WILL STAY AWAY FROM IT
- EVACUATE ALL NONESSENTIAL PERSONNEL

PRACTICE ORDNANCE

- JUST BECAUSE IT IS BLUE DOESN'T MEAN THAT THERE ARE NO HAZARDS.
- MANY OF THESE HAVE A SPOTTING CHARGE IN ORDER TO PROVIDE THE ABILITY TO SEE WHERE THEY IMPACT
- THESE SPOTTING CHARGES CAN SEVERELY INJURE PERSONNEL

CIVIL WAR ORDNANCE

- THERE ARE NUMEROUS AMOUNTS OF UNEXPLODED CIVIL WAR ORDNANCE THAT ARE STILL ROUTINELY DISCOVERED IN THIS AREA
- EVEN THOUGH THEY MAY SEEM HARMLESS, THEIR DECAYING PROCESS HAS MADE THEM VERY UNSTABLE


DEPARTMENT OF THE NAVY
UNITED STATES MARINE CORPS

EMERGENCY CONTACT INFORMATION

- BLACKBURN (RANGE CONTROL)
  (910) 451-3064
- PROVOST MARSHALL OFFICE (PMO)
  (910) 451-3004/5
  ALT: 911
- MCB EOD
  (910) 449-0558/2104

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