

TIPS FOR THE LEVEL 2 HEALTH AND SAFETY PLAN (HASP)

This page presents tips for word processing the Level 2 HASP form. This page is not part of the HASP. The *boilerplate* text of the form should never be changed and is issued in read-only format. After you work on the form, save the revised document under a new name. **Save your work frequently.**

WARNING: Work slowly and carefully. Print this page out now so you have the following instructions while you work on the form. Delete this page when you are finished working on the HASP form.

- ✓ Redlined text contains instructions or sample text only. Redlined text should be deleted throughout the document after information is added.
- ✓ Simply double-click or right-click on any box and then select the “checked” option to enter an X. The boxes are set up to center the text both horizontally and vertically.
- ✓ Most of this document is set up in table format. A table row may be preset to a specific size, and not all inputted text within the row will be displayed. When not all text is displayed, place the cursor in the row in question.

Additional Comments:

- ✓ This HASP may be completed electronically or by hand, as necessary to ensure that a complete HASP is available to support the project.
- ✓ All blanks should be filled in with appropriate information or marked as not applicable (NA)
- ✓ Mark all applicable items with an X in the box in sections that contain lists and boxes to check.
- ✓ The HASP must be reviewed and approved before any work can begin on site. After the initial project work, data and subsequent decisions related to health and safety may be recorded in the field log book.
- ✓ A revision or amendment is required when changes that were not within contingency plans are made or a new task is added to Tetra Tech’s scope of work.
- ✓ An approved copy of the HASP must be kept on jobsites at all times Tetra Tech personnel are present.
- ✓ The HASP located on the jobsite must contain signatures from each person entering the jobsite signifying review and acceptance of the plan.
- ✓ Personnel who prepare an HASP must be familiar with the requirements stated in the *START Health and Safety Plan Approval Procedures* document, dated September 19, 2001.

Attachments to the HASP

- ✓ Daily Tailgate Safety Meeting form (to be completed at the beginning of each day and stored with the HASP onsite)
- ✓ OSHA VPP Info sheet for review on jobsites
- ✓ HASP Amendment Form (to be completed when new tasks are added to Tetra Tech’s scope of work, an existing HASP changes substantially, or new hazards are encountered on the jobsite)
- ✓ Form AF-1 (Field Audit Checklist to be completed once per week onsite and submitted to H&S Director)
- ✓ Activity Hazard Analysis (AHA) template

Site Name: CSX Acrylonitrile Spill (NRC#1121598)	Site Contact: Kevin Eichinger	Telephone: 678-897-3759
Location: Mile post 00C290.62, Knoxville, Blount Co., TN	Client Contact: Kevin Eichinger	Telephone: 678-897-3759
EPA ID No. TBD	Prepared By: Chris Draper	Date Prepared: 7/2/2015
Project No. TBD	Dates of Activities: 7/2/2015	Emergency Response <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Objectives: <ul style="list-style-type: none"> ◆ Document site conditions, using photographs, logbook notes, GPS coordinates, etc. ◆ Conduct air monitoring ◆ Collect soil, sediment and surface water samples, as directed ◆ Assist EPA with investigation as needed 	Site Type: <i>Check as many as applicable.</i> <table style="width: 100%;"> <tr> <td><input checked="" type="checkbox"/> Active</td> <td><input type="checkbox"/> Landfill</td> <td><input type="checkbox"/> Inner-City</td> </tr> <tr> <td><input type="checkbox"/> Inactive</td> <td><input checked="" type="checkbox"/> Railroad</td> <td><input type="checkbox"/> Rural</td> </tr> <tr> <td><input type="checkbox"/> Secured</td> <td><input type="checkbox"/> Residential</td> <td><input type="checkbox"/> Remote</td> </tr> <tr> <td><input checked="" type="checkbox"/> Unsecured</td> <td><input checked="" type="checkbox"/> Industrial</td> <td><input checked="" type="checkbox"/> Creek/River Areas</td> </tr> </table>	<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Landfill	<input type="checkbox"/> Inner-City	<input type="checkbox"/> Inactive	<input checked="" type="checkbox"/> Railroad	<input type="checkbox"/> Rural	<input type="checkbox"/> Secured	<input type="checkbox"/> Residential	<input type="checkbox"/> Remote	<input checked="" type="checkbox"/> Unsecured	<input checked="" type="checkbox"/> Industrial	<input checked="" type="checkbox"/> Creek/River Areas
<input checked="" type="checkbox"/> Active	<input type="checkbox"/> Landfill	<input type="checkbox"/> Inner-City											
<input type="checkbox"/> Inactive	<input checked="" type="checkbox"/> Railroad	<input type="checkbox"/> Rural											
<input type="checkbox"/> Secured	<input type="checkbox"/> Residential	<input type="checkbox"/> Remote											
<input checked="" type="checkbox"/> Unsecured	<input checked="" type="checkbox"/> Industrial	<input checked="" type="checkbox"/> Creek/River Areas											

Project Scope of Work and Site Background

THE CALLER IS REPORTING A POTENTIAL RELEASE OF ACRYLONITRILE, STABILIZED DUE TO A TANK CAR FIRE. THE CALLER STATED THAT THE TANK CAR IS DERAILED DUE TO UNKNOWN CAUSES. THE CALLER STATED AT 0054 EDT, THERE WAS A ONE MILE EVACUATION CONDUCTED BY THE FIRE DEPT. (HEAD COUNT UNKNOWN). LOCAL RESIDENTS WERE EVACUATED TO A NEARBY GAS STATION. THE IMPACT IS POTENTIALLY THE ATMOSPHERE, NO REPORTS OF ANY SPILLS AT THIS TIME. CALLER STATED THAT THE TOP OF THE TANK IS BREACHED (OPENED). AMOUNT OF PRODUCT IN THE TANK CAR IS UNKNOWN.

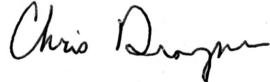
IMMAC Modeling Assumptions: Modeling Assumptions: Because the significance of the fire is unknown, IMMAC modeled it as a leaking tank car without fire to be conservative. IMMAC used Itrans, large rail car 111A100W1, 33,000 gallons, 90% full. Total mass expelled is 83,414 kg

Assuming, Acrylonitrile is the only hazardous component involved, START tasked to complete sampling, documentation, air monitoring, etc. at site directed by R4 EPA

Health and Safety Approver Comments: Avoid low-lying areas and places where vapors could accumulate and NEVER without air monitoring. Evacuate the area immediately at 10% LEL and upgrade to Level C at 2 ppm VOCs in the breathing zone. NOMEX FRC and high-visibility vests should be worn at all times. Tetra Tech personnel are NOT authorized to enter sewers, storm drains or other confined spaces. If entry appears imminent, contact H&S.

Review Creek Sediment Sampling AHA. While on or near (within 15') the water, Type II or better Personal Flootation Devices are required and a safety watch person shall be posted on the bank with a safety line to assist with rescue and/or extraction of personnel wading in the river. Chest waders should be used for all wading. Decontamination should be thorough. Ensure that all equipment, reusable PPE, waders, boots, etc. and the exterior of all sample bottles and glassware are decontaminated prior to leaving the site. Avoid contact with dead fish and animals to the extent practicable and NEVER without PPE (i.e. gloves, safety glasses).

Notify your Safety Manager if you are splashed by, submerged in, or ingest any contaminated water. Maintain a supply of water for eyewash, hand washing, and personal hydration. Use insect repellent and sunscreen as necessary.

Health and Safety Plan Approver Signature: 

Date: **APPROVED**
By Chris Draper at 5:07 am, Jul 02, 2015

Note: A minimum of two persons with appropriate training and medical surveillance must be on site for any fieldwork subject to Level 2 HASP requirements.

Note: A detailed site sketch may be included on Page 10 of 12.

Initial Isolation and Protective Action Distances (for emergency response operations only): Follow local responder requirements

Establishment of Work Zones; including exclusion, contamination reduction, and support zones; is required for ALL HAZWOPER projects. For heavy equipment (i.e. drilling operations), exclusions zone will established around each equipment or drilling location based on site conditions and or noise levels (DCN 2-04, Hearing Conservation Program) at drilling operations (i.e. a circular exclusion zone based on noise levels >85 dbA from the drill rig or a minimum of 20 feet around the rig, whichever is greater). Work zones will be delineated using cones, barrier tape or similar visual indicators.

ALL investigation-derived waste shall be drummed and remain onsite pending characterization for subsequent disposal.

Spill control shall be conducted in accordance with the requirements of SWP 5-14, *Spill and Discharge Control Practices*, and SWP 05-47, *Spill Prevention and Clean Up*.

Wind Speed and Direction (Approach from upwind) Based on forecast for Knoxville, TN @06:00 07/2/2015		Temperature (°F)	Relative Humidity (%)	Probability of Precipitation (%)	Weather Forecast (such as partly cloudy, snow, etc.)
Speed (mph): 5	From Direction: SW	68	90	0%	Overcast

On-Site Supplies: ☒ First Aid Kit ☒ Fire Extinguisher ☐ Air Horn ☐ Oral Thermometer ☐ Noise Dosimeter

Known or Anticipated Site Hazards or Concerns: (Hazards covered by existing Safe Work Practices are listed on the next page)

<input checked="" type="checkbox"/> Work on active roadway	<input checked="" type="checkbox"/> Overhead utilities	<input type="checkbox"/> Energized electrical systems
<input type="checkbox"/> Onsite laboratory	<input type="checkbox"/> Surface or underground storage tanks	<input checked="" type="checkbox"/> Portable hand tool use
<input checked="" type="checkbox"/> Explosion or fire hazard	<input checked="" type="checkbox"/> General slips, trips, falls	<input type="checkbox"/> Portable electrical tool use
<input type="checkbox"/> Oxygen deficiency	<input checked="" type="checkbox"/> Uneven, muddy, rugged terrain	<input type="checkbox"/> Machine guarding
<input type="checkbox"/> Inorganic chemicals	<input type="checkbox"/> Industrial truck (forklift) use	<input checked="" type="checkbox"/> Portable fire extinguisher use
<input checked="" type="checkbox"/> Organic chemicals	<input type="checkbox"/> Lift (man lift, cherry picker) use	<input type="checkbox"/> Driving commercial vehicles
<input type="checkbox"/> Chemical warfare materiel	<input type="checkbox"/> Scaffold use	<input type="checkbox"/> Driving personal vehicles
<input type="checkbox"/> Compressed Gas Cylinders	<input type="checkbox"/> Wood or metal ladder use	<input type="checkbox"/> Scientific diving operations
<input type="checkbox"/> Asbestos	<input checked="" type="checkbox"/> Dangerous goods shipped by air	<input checked="" type="checkbox"/> Work over or near water
<input type="checkbox"/> Respirable particulates	<input type="checkbox"/> Elevated work (over 6' high)	<input type="checkbox"/> Ergonomics (California only)
<input type="checkbox"/> Respirable silica	<input type="checkbox"/> Construction work	<input type="checkbox"/> Infectious and/or pathogenic material
<input type="checkbox"/> Blasting and explosives	<input type="checkbox"/> Excavation or trenching	<input type="checkbox"/> ATV use
<input type="checkbox"/> Non-ionizing radiation (lasers, radiofrequencies, UV)	<input type="checkbox"/> Benching, shoring, bracing	<input type="checkbox"/> Methamphetamine lab
<input checked="" type="checkbox"/> High Noise	<input type="checkbox"/> Work in strip or shaft mines	<input checked="" type="checkbox"/> Contaminated (oil) waters
<input type="checkbox"/> Buried Utilities	<input type="checkbox"/> Grinding operations	<input type="checkbox"/> Boat operations

Explosion or Fire Potential: ☐ High ☐ Medium ☒ Low ☐ Unknown

Chemical Products Tetra Tech EM Inc. Will Use or Store On Site: (Attach a Material Safety Data Sheet [MSDS] for each item.)

- | | | | |
|---|---|--|---|
| <input checked="" type="checkbox"/> Alconox or Liquinox | <input type="checkbox"/> Calibration gas (Methane) | <input type="checkbox"/> Hydrogen gas | <input type="checkbox"/> Isopropyl alcohol |
| <input checked="" type="checkbox"/> Hydrochloric acid (HCl) | <input checked="" type="checkbox"/> Calibration gas (Isobutylene) | <input type="checkbox"/> Household bleach (NaOCl) | <input checked="" type="checkbox"/> HazCat Kit |
| <input type="checkbox"/> Nitric acid (HNO ₃) | <input type="checkbox"/> Calibration gas (Pentane) | <input type="checkbox"/> Sulfuric acid (H ₂ SO ₄) | <input type="checkbox"/> Mark I Kits (<i>number?</i>) _____ |
| <input type="checkbox"/> Sodium hydroxide (NaOH) | <input checked="" type="checkbox"/> Calibration gas (4-gas mixture) | <input type="checkbox"/> Hexane | <input checked="" type="checkbox"/> Eyewash solution (potable H ₂ O) |

WARNING: Eyewash solution shall be readily available on ALL projects where corrosives (acids or bases) are used, including sample preservatives

Applicable Safe Work Practices (SWP) Attach to HASP: *Check as many as apply*

- ☐ DCN 4-03 Demolition and Decontamination
- ☒ DCN 4-04 Traffic Zone Safety Program
- ☐ DCN 4-09 Haulage and Earth Moving
- ☒ SWP DCN 5-01 General Safe Work Practices
- ☒ SWP DCN 5-02 General Safe Work Practices HAZWOPER
- ☐ SWP DCN 5-03 Safe Work Practices for Office Employees
- ☐ SWP DCN 5-04 Safe Drilling Practices
- ☐ SWP DCN 5-05 Safe Direct Push (GeoProbe) Practices
- ☒ SWP DCN 5-06 Working Over or Near Water
- ☐ SWP DCN 5-07 Use of Heavy Equipment
- ☒ SWP DCN 5-08 Special Site Hazards (Firearms, Remote Sites, Mines, aircraft, etc.)
- ☐ SWP DCN 5-09 Safe Electrical Work Practices
- ☐ SWP DCN 5-10 Fall Protection Practices
- ☐ SWP DCN 5-11 Portable Ladder Safety
- ☐ SWP DCN 5-12 Drum and Container Handling Practices
- ☒ SWP DCN 5-13 Flammable Hazards and Ignition Sources
- ☒ SWP DCN 5-14 Spill and Discharge Control Practices
- ☒ SWP DCN 5-15 Heat Stress
- ☐ SWP DCN 5-16 Cold Stress
- ☒ SWP DCN 5-17 Biohazards
- ☒ SWP DCN 5-19 Safe Lifting Procedures
- ☐ SWP DCN 5-22 Hydrographic Data Collection
- ☐ SWP DCN 5-23 Permit-Required Confined Space Entry Practices
- ☒ SWP DCN 5-26 Prevention of Sun Exposure
- ☒ SWP DCN 5-27 Respirator Cleaning Practices
- ☒ SWP DCN 5-28 Safe Use Practices for Use of Respirators
- ☒ SWP DCN 5-29 Respirator Qualitative Fit Testing Procedures
- ☒ SWP DCN 5-47 Spill Prevention and Clean Up
- ☒ SWP DCN 5-48 Electrical Safety Ground Fault Protection
- ☒ SWP DCN 5-51 Hand Tools

Tasks Performed At Job Site that are NOT Covered by SWPs

NOTE: Many completed AHA's can be found on the Health & Safety intranet site

Attach Activity Hazard Analysis (AHA) for each non-covered task

- ☒ Storm Water Drain Sampling (Non-Entry)
- ☒ Creek Sediment Sampling
- ☒ Site Documentation & Observation of Excavation Operations Near Heavy Equipment
- ☒ Soil Sampling
- ☒ Project Documentation and Air Monitoring
- ☒ River Surface Water Sampling
- ☒ Surface Water Quality Measurement

Tetra Tech Employee Training and Medical Requirements:
Basic Training and Medical

- ☒ Initial 40 Hour Training
- ☐ 8-Hour Supervisor Training (one-time)
- ☒ Current 8-Hour Refresher Training
- ☒ Current Medical Clearance (including respirator use)
- ☒ Current First Aid Training (minimum 1 Tetra Tech employee on site)
- ☒ Current CPR Training (minimum 1 Tetra Tech employee on site)
- ☒ Current Respirator Fit-Test

Other Specific Training and Medical Surveillance Requirements

- ☐ Confined Space Training
- ☒ Level A Training
- ☐ Radiation Training
- ☐ OSHA 10-hour Construction Safety
- ☐ Blood Lead Level and ZPP Pre and Post-Project
- ☐ Urinary Arsenic Level Pre and Post-Project
- ☐ Other: Tetanus shot within the past 5 years
- ☒ Other Protect any body areas with broken skin that could come in contact with river water; consult occupational physician if exposed

Materials Present or Suspected at Site	Highest Observed Concentration (specify units and sample medium)	Exposure Limit (specify ppm or mg/m ³)	IDLH Level (specify ppm or mg/m ³)	Primary Hazards of the Material (explosive, flammable, corrosive, toxic, volatile, radioactive, biohazard, oxidizer, or other)	Symptoms and Effects of Acute Exposure	Photoionization Potential (eV)
Acrylonitrile	Unknown	PEL = TWA 2 ppm C 10 ppm [15-minute] REL = Ca TWA 1 ppm C 10 ppm [15-minute] TLV = TWA 2 ppm [Skin] Hazard <input checked="" type="checkbox"/>	Ca (85 ppm)	Toxic; flammable Colorless to pale-yellow liquid with an unpleasant odor. [Note: Odor can only be detected above the PEL.]	irritation eyes, skin; asphyxia; headache; sneezing; nausea, vomiting; lassitude (weakness, exhaustion), dizziness; skin vesiculation; scaling dermatitis; [potential occupational carcinogen]	10.91
Ammonia	Unknown	PEL = TWA 50 ppm (35 mg/m ³) REL = TWA 25 ppm (18 mg/m ³) ST 35 ppm (27 mg/m ³) TLV = 25 ppm [Skin] Hazard <input type="checkbox"/>	300 ppm	Toxic; corrosive Colorless gas with a pungent, suffocating odor	irritation eyes, nose, throat; dyspnea (breathing difficulty), wheezing, chest pain; pulmonary edema; pink frothy sputum; skin burns, vesiculation; liquid: frostbite	10.18
Hydrogen cyanide	Unknown	PEL = TWA 10 ppm (11 mg/m ³) REL = ST 4.7 ppm (5 mg/m ³) TLV = C 4.7 ppm [Skin] Hazard <input checked="" type="checkbox"/>	50 ppm	Toxic; flammable Colorless or pale-blue liquid or gas (above 78°F) with a bitter, almond-like odor. [Note: Often used as a 96% solution in water.]	asphyxia; lassitude (weakness, exhaustion), headache, confusion; nausea, vomiting; increased rate and depth of respiration or respiration slow and gasping; thyroid, blood changes	13.6
Specify Information Sources: NIOSH Pocket Guide to Hazardous Chemicals, September 2005						

Note: In the Exposure Limit column, include Ceiling (C) and Short-Term Exposure Limits (STEL) if they are available. Also, use the following short forms and abbreviations to complete the table above.

A = Air
 CARC = Carcinogenic
 eV = Electron volt
 U = Unknown

IDLH = Immediately dangerous to life or health
 mg/m³ = Milligram per cubic meter
 NA = Not available
 NE = None established

PEL = Permissible exposure limit
 ppm = Part per million
 REL = Recommended exposure limit
 S = Soil

TLV = Threshold limit value

Note: If no contingency level of protection is selected, all employees covered under this plan must evacuate the immediate site area if air contaminant levels require upgrading PPE. This information is available on the chemical hazards page of this HASP.

Field Activities Covered Under this HASP:

Task Description	Level of Protection ¹						Date of Activities		
	Primary			Contingency					
1. Document site conditions, using photographs, logbook notes, GPS coordinates, etc. REASSESS PPE IF AIR MONITORING INDICATES HAZARDOUS ATMOSPHERES	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D	7/2/15 to TBD
2. Collect soil, sediment and surface water samples, as directed REASSESS PPE IF AIR MONITORING INDICATES HAZARDOUS ATMOSPHERES	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D	<input type="checkbox"/> A	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D	7/2/15 to TBD
3. Assist EPA with investigation as needed REASSESS PPE IF AIR MONITORING INDICATES HAZARDOUS ATMOSPHERES	<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input checked="" type="checkbox"/> D	<input type="checkbox"/> A	<input type="checkbox"/> B	<input checked="" type="checkbox"/> C	<input type="checkbox"/> D	7/2/15 to TBD

Site Personnel and Responsibilities (include subcontractors):

Employee Name and Office Code / Location	Task(s)	Responsibilities
Bryan Vasser	1, 2, 3	<ul style="list-style-type: none"> Project Manager: Manages the overall project, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with client as necessary. Additionally, For projects lasting longer than one consecutive week on-site, the PM is responsible for conducting one field audit using Form AF-1.
Bryan Vasser	1, 2, 3	<ul style="list-style-type: none"> Field Team Leader: Directs field activities, makes site safety coordinator (SSC) aware of pertinent project developments and plans, and maintains communications with the Project Manager and the client as necessary
Bryan Vasser	1, 2, 3	<ul style="list-style-type: none"> Site Safety Coordinator (SSC): Ensures that appropriate personal protective equipment (PPE) is available, enforces proper use of PPE by on-site personnel and subcontractors; suspends investigative work if personnel are or may be exposed to an immediate health hazard; implements and enforces the HASP; identifies and controls site hazards when possible; communicates site hazards to all personnel; and reports any deviations observed from anticipated conditions described in the health and safety plan to the health and safety representative.
Leslie Shaver	1, 2, 3	<ul style="list-style-type: none"> Alternate Site Safety Coordinator (if any)
Leslie Shaver	1, 2, 3	<ul style="list-style-type: none"> Field Personnel: Completes tasks as directed by the project manager, field team leader, and SSC, and follows the HASP and all SWPs and guidelines established in the Tetra Tech, Inc., Health and Safety Manual.
N/A	N/A	<ul style="list-style-type: none"> Tetra Tech-hired subcontractor personnel on site (a subcontract SSC MUST be identified by name): Completes tasks as outlined in the project scope of work in accordance with the contract. Participates in all Tetra Tech on-site safety meetings and follows all procedures and guidelines established in this HASP, as well as the company health and safety plan and program.

Note:

1. See next page for details on levels of protection

NOTE: Contingency level of protection section should be completed only if the upgraded level of protection is immediately available at the job site. If no contingency level of protection is denoted, all employees covered under this HASP must evacuate the immediate site area if air contaminant levels would require an upgrade of PPE.

Protective Equipment: (Indicate type or material as necessary for each task.)

Tas k	Primary Level of Protection (A,B,C,D)	PPE Component Description (Primary)	Contingency Level of Protection (A, B, C, D)	PPE Component Description (Contingency)
1	D	Respirator type: none Cartridge type (if applicable): CPC material: none Glove material(s): leather outer (Nitrile as needed) Boot material: steel-toe boots, waders Other: safety glasses, hardhat, high-visibility vests, personal floatation device within 15 feet of deep or swiftly-moving water	D	Respirator type: none Cartridge type (if applicable): CPC material: none Glove material(s): leather outer (Nitrile as needed) Boot material: steel-toe boots, waders Other: safety glasses, hardhat, high-visibility vests, personal floatation device within 15 feet of deep or swiftly-moving water
2	D	Respirator type: none Cartridge type (if applicable): CPC material: none Glove material(s): leather outer (Nitrile as needed) Boot material: steel-toe boots, waders Other: safety glasses, hardhat, high-visibility vests, personal floatation device within 15 feet of deep or swiftly-moving water	C	Respirator type: SCOTT full-face APR Cartridge type (if applicable): OGV/AG CPC material: Tyvek SL or similar Glove material(s): Nitrile inner and chemical appropriate outer Boot material: Butyl Rubber over leather steel-toe Other: Type 2 life preserver, hardhat, high-visibility vests, personal floatation device within 15 feet of deep or swiftly-moving water
3	D	Respirator type: none Cartridge type (if applicable): CPC material: none Glove material(s): leather outer (Nitrile as needed) Boot material: steel-toe boots, waders Other: safety glasses, hardhat, high-visibility vests, personal floatation device within 15 feet of deep or swiftly-moving water	C	Respirator type: SCOTT full-face APR Cartridge type (if applicable): OGV/AG CPC material: Tyvek SL or similar Glove material(s): Nitrile inner and chemical appropriate outer Boot material: Butyl Rubber over leather steel-toe Other: Type 2 life preserver, hardhat, high-visibility vests, personal floatation device within 15 feet of deep or swiftly-moving water

Respirator Notes:

Respirator cartridges may only be used for a maximum time period of 8 hours or one work shift, whichever is less, and must be discarded at that time. For job sites with organic vapors, respirator cartridges may be used as described in this note as long as the concentration is less than 200 parts per million (ppm), the boiling point is greater than 70 °Celsius, and the relative humidity is less than 85 percent. If any of these levels are exceeded, a site-specific respirator cartridge change-out schedule must be developed and included in the HASP using Tetra Tech Form RP-2 (Respiratory Hazard Assessment Form)

Notes:

All levels of protection must include eye, head, and foot protection.

CPC = Chemical protective clothing

Thermoluminescent Dosimeter (TLD) Badges must be worn during all field activities on sites with radiation hazards. TLDs must be worn under CPC.

Monitoring Equipment: All monitoring equipment on site must be calibrated before and after each use and results recorded in the site logbook				
Instrument (Check all required)	Task	Instrument Reading	Action Guideline	Comments
<input checked="" type="checkbox"/> Combustible gas indicator model: MultiRAE	<input checked="" type="checkbox"/> 1	0 to 10% LEL	Monitor; evacuate if confined space	
	<input checked="" type="checkbox"/> 2	10 to 25% LEL	Potential explosion hazard; notify SSC	
	<input checked="" type="checkbox"/> 3			
	<input type="checkbox"/> 4	>25% LEL	Explosion hazard; interrupt task; evacuate site; notify SSC	
	<input type="checkbox"/> 5			
<input checked="" type="checkbox"/> Oxygen meter model: MultiRAE	<input checked="" type="checkbox"/> 1	>23.5% Oxygen	Potential fire hazard; evacuate site	
	<input checked="" type="checkbox"/> 2	23.5 to 19.5% Oxygen	Oxygen level normal	
	<input checked="" type="checkbox"/> 3	<19.5% Oxygen	Oxygen deficiency; interrupt task; evacuate site; notify SSC	
	<input type="checkbox"/> 4			
	<input type="checkbox"/> 5			
<input checked="" type="checkbox"/> Photoionization detector model: <input checked="" type="checkbox"/> 11.7 eV <input type="checkbox"/> 10.6 eV <input type="checkbox"/> 10.2 eV <input type="checkbox"/> 9.8 eV <input type="checkbox"/> Other (specify): _____	<input checked="" type="checkbox"/> 1	Any response above background to 2 ppm above background > 40	Level C Level B	This action level is based on acrylonitrile with 11.7 lamp
	<input checked="" type="checkbox"/> 2			
	<input checked="" type="checkbox"/> 3			
	<input type="checkbox"/> 4			
	<input type="checkbox"/> 5			
<input checked="" type="checkbox"/> Other (specify): Ammonia monitor	<input checked="" type="checkbox"/> 1	> 12.5 ppm	Level C; notify OSC	If available
	<input checked="" type="checkbox"/> 2	>150 ppm	Level B	
	<input checked="" type="checkbox"/> 3			
	<input type="checkbox"/> 4			
	<input type="checkbox"/> 5			
<input checked="" type="checkbox"/> Other (specify): HCN monitor	<input checked="" type="checkbox"/> 1	Specify: >2 ppm	Specify: Level B Evacuate; notify OSC	If available
	<input checked="" type="checkbox"/> 2			
	<input checked="" type="checkbox"/> 3			
	<input type="checkbox"/> 4			
	<input type="checkbox"/> 5			

Notes:

eV= electron volt

LEL=Lower explosive limit

mrem=Millirem

PEL=Permissible exposure limit

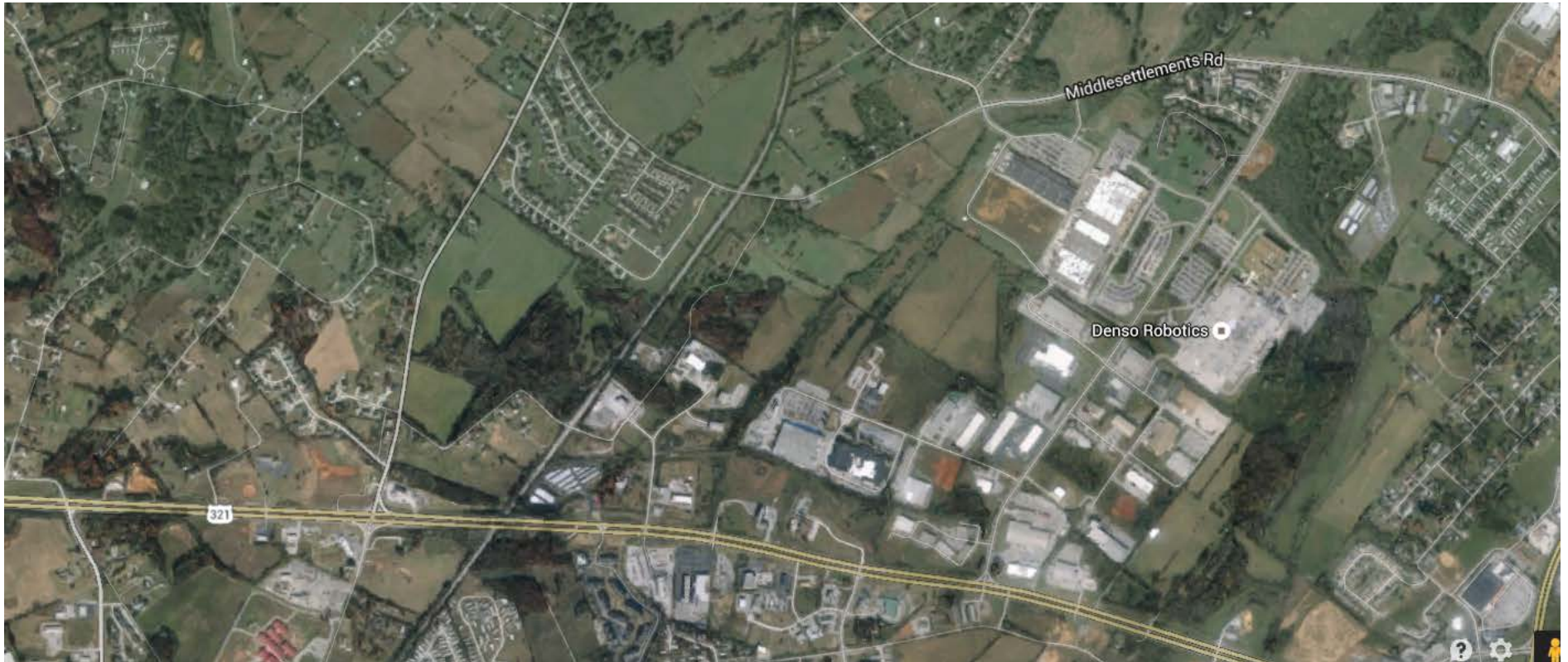
ppm=Part per million

a. Level C may be acceptable for certain tasks in some situations. If you are uncertain whether Level C is appropriate, consult the Regional Safety Officer. Additionally, when working with unknown respiratory hazards, Level C cartridge must provide protection for organic vapors, acid gases, ammonia, amines, formaldehyde, hydrogen fluoride, and particulate aerosols.

Note: This page must be posted on site.

Decontamination Procedures		Emergency Response Planning
<p>The site safety coordinator oversees implementation of project decontamination procedures and is responsible for ensuring they are effective.</p>		<p>During the pre-work briefing and daily tailgate safety meetings, all on-site employees will be trained in the provisions of emergency response planning, site communication systems, and site evacuation routes.</p>
<p>Personnel Decontamination</p> <p>Level D Decon - <input type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry</p> <p>Level C Decon - <input type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry</p> <p>Level B Decon – Contact RSO if Level B operations are required.</p> <p>Level A Decon – A Level 3 HASP is required. Notify your RSO.</p> <p>Equipment Decontamination</p> <p>All tools, equipment, and machinery from the Exclusion Zone (hot) or Contamination Reduction Zone (warm) are decontaminated in the CRZ before they are removed to the Support Zone (cold). Equipment decontamination procedures are designed to minimize the potential for hazardous skin or inhalation exposure, cross-contamination, and chemical incompatibilities.</p> <p>Decontamination should be thorough. Ensure that all equipment, reusable PPE, waders, boots, etc. and the exterior of all bottleware are decontaminated prior to leaving the site.</p> <p>Respirator Decontamination</p> <p>Respirators are decontaminated in compliance with SWP 6-27 and should be included with this HASP.</p> <p>Waste Handling for Decontamination</p> <p>Procedures for decontamination waste disposal meet all applicable local, state, and federal regulations.</p>	<p>Decontamination Equipment</p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Washtubs <input type="checkbox"/> Buckets <input type="checkbox"/> Scrub brushes <input type="checkbox"/> Pressurized sprayer <input type="checkbox"/> Detergent [Alconox] <input type="checkbox"/> Solvent [Type] <input type="checkbox"/> Household bleach solution Concentration/Dilution: _____ <input type="checkbox"/> Deionized water <input type="checkbox"/> Disposable sanitizer wipes <input type="checkbox"/> Facemask sanitizer powder <input type="checkbox"/> Wire brush <input checked="" type="checkbox"/> Spray bottle <input type="checkbox"/> Tubs / pools <input type="checkbox"/> Banner/barrier tape <input checked="" type="checkbox"/> Plastic sheeting <input type="checkbox"/> Tarps and poles <input checked="" type="checkbox"/> Trash bags <input type="checkbox"/> Trash cans <input type="checkbox"/> Duct tape <input checked="" type="checkbox"/> Paper towels <input type="checkbox"/> Folding chairs <input checked="" type="checkbox"/> Other </div> <div style="width: 50%; padding-left: 10px;"> <p>In the event of an emergency that necessitates evacuation of a work task area or the site, the following procedures will take place.</p> <ul style="list-style-type: none"> • The Tetra Tech SSC will contact all nearby personnel using the on-site communications to advise the personnel of the emergency. • The personnel will proceed along site roads to a safe distance upwind from the hazard source. • The personnel will remain in that area until the SSC or an authorized individual provides further instructions. <p>In the event of a severe spill or a leak, site personnel will follow the procedures listed below.</p> <ul style="list-style-type: none"> • Evacuate the affected area and relocate personnel to an upwind location. • Inform the Tetra Tech SSC, a Tetra Tech office, and a site representative immediately. • Locate the source of the spill or leak, and stop the flow if it is safe to do so. • Begin containment and recovery of spilled or leaked materials. • Notify appropriate local, state, and federal agencies. <p>In the event of severe weather, site personnel will follow the procedures listed below.</p> <ul style="list-style-type: none"> • Site work shall not be conducted during severe weather, including high winds and lightning. • In the event of severe weather, stop work, lower any equipment (drill rigs) and evacuate the affected area. • Severe weather may cause heat or cold stress. Refer to SWPs 15 and 16 for information on both. <p>All work-related incidents must be reported. According to TtEMI's reporting procedures, for non-emergency incidents you should:</p> <ul style="list-style-type: none"> • Notify WorkCare and Incident Intervention at (800) 455-6155 • Notify your Project Manager or Regional Safety Officer (RSO) via phone. • Complete a "Tetra Tech Incident Report" (Form IR) within 24 hours and send it to your RSO. If an injury or illness has occurred, the Form IR-A and the WorkCare HIPAA form must be completed at the same time the Form IR is completed. • Notify your RSO if you are splashed by, submerged in, or ingest any river water </div> </div>	

Site Map (May be drawn after crews arrive onsite or inserted using aerial photographs, site figures, etc.):



via W Lamar Alexander Pkwy **10 min**
 9 min without traffic · [Show traffic](#) 4.4 miles

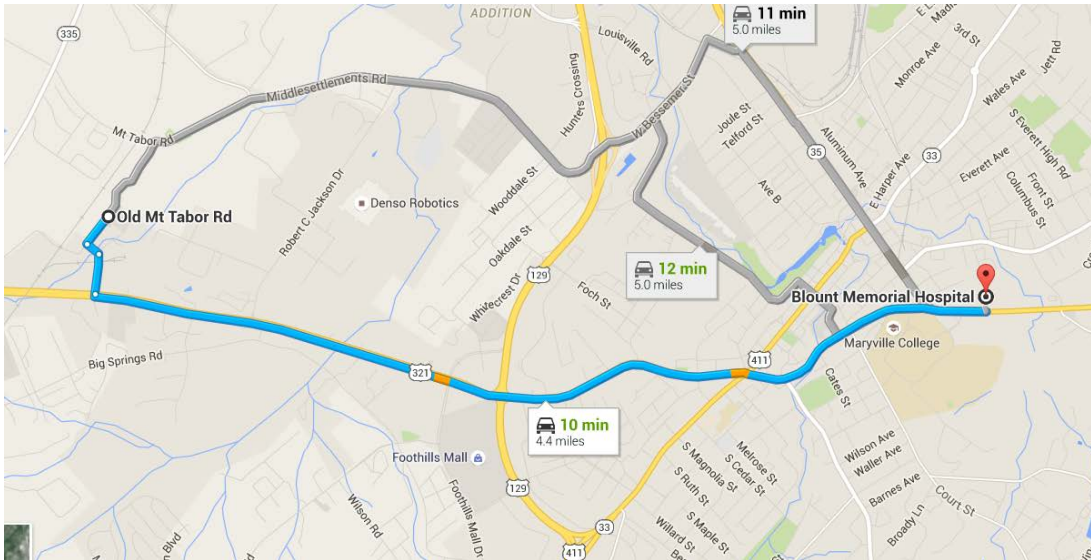
Old Mt Tabor Rd

Maryville, TN 37801

- ↑ Head southwest on Old Mt Tabor Rd
0.1 mi
- ↶ Turn left toward Clydesdale St
341 ft
- ↷ Turn right onto Clydesdale St
0.2 mi
- ↶ Turn left at the 1st cross street onto W Lamar Alexander Pkwy
Destination will be on the left
4.0 mi

Blount Memorial Hospital

907 East Lamar Alexander Parkway, Maryville, TN 37804



Note: A dry-run should be conducted to establish a physical location associated with the map included in the HASP. Verbal verification from the hospital emergency room should also be obtained to ensure that the hospital will accept chemically contaminated patients.

APPROVAL AND SIGN-OFF FORM

Project No.: TBD

I have read, understood, and agree with the information set forth in this Health and Safety Plan and will follow the direction of the Site Safety Coordinator (SSC) as well as procedures and guidelines established in the Tetra Tech, Inc., Health and Safety Manual. I understand the training and medical requirements for conducting field work and have met these requirements.

Name	Company / Agency / Organization	Signature	Date
Leslie Shaver	TtEMI		

I have read, understood, and agree with the information set forth in this Health and Safety Plan and comply with and will enforce this HASP, as well as procedures and guidelines established in the Tetra Tech, Inc., Health and Safety Manual.

Name	Project-Specific Position	Signature	Date
Bryan Vasser	Project Manager		
Bryan Vasser	Site Safety Coordinator		
	Subcontractor SSC		

Tetra Tech has prepared this plan solely for the purpose of the health and safety protection of Tetra Tech employees. Subcontractors, visitors, and others at the site, while required to read and follow the provisions outlined in this plan at a minimum, should refer to their safety program for specific information related to their health and safety protection.

Note: Use Additional sheets as necessary to ensure that all personnel sign and affirm this document.

VOLUNTARY PROTECTION PROGRAM



Management Leadership

Lead by example. Good managers recognize the benefits of a strong safety program and ensure that their personnel and subcontractors have the right tools, equipment, and attitude to work safely.

Some areas where effective management leadership for safety can be demonstrated include:

- Provide visible safety leadership - start meetings with a safety topic, integrate safety into planning, scheduling, and budgeting processes, take personal action to resolve safety issues.
- Become involved in incident reporting, investigation, corrective action - share lessons learned.
- Include subcontractors in your safety program and oversee their work.

Employee Involvement

Get involved! Take personal action and work directly with your supervisor daily to identify, control, or eliminate potential safety hazards.

Other ways to become involved in the safety program and improve work conditions include:

- Initiate hazard reports to identify hazards, suggest improvements, and recognize safe behaviors
- Participate in safety meetings and worksite safety inspections (daily, weekly, monthly, and quarterly)
- Participate in incident reports, investigations, corrective actions, and Lessons Learned

Worksite Analysis

The process of identifying and evaluating potential hazards is a critical element in achieving zero incidents and creating low risk and hazard-free work areas.

Worksite analysis methods used to identify and evaluate potential hazards include:

- Safety inspections (daily, weekly, monthly, and quarterly)
- Develop or review safe work procedures, AHA's, and the HASP
- Monitoring for air quality, heat stress, noise, ergonomics and other job hazards

Hazard Prevention and Control

Eliminating hazards from your job, preventing new hazards, and controlling known hazards are fundamental parts of the projects safety program.

Important points include:

- Control hazards by:
 - Installing and maintaining **Engineering Controls**
 - Following **Administrative/Work Practice Controls** (HASP, AHAs, and safe work practices)
 - Specifying and wearing **Personal Protective Equipment** where needed
- Perform integrated safety reviews for new or modified work tasks
- Consult with qualified medical and safety professionals as needed

Safety and Health Training

Effective safety training is an important element in incident prevention. Remember, if you are unfamiliar with the work or feel that you don't have the necessary training, speak up and notify your team leader or project manager.

Safety training methods that may be used at the project include:

- New employee orientation, including HASP and task-specific training
- Project meetings, daily briefings, and/or task briefings
- Lessons learned and monthly safety communications

Emergency Contacts

Work Care - For issues requiring an Occupational Health Physician; assistance is available 24 hours per day, 7 days per week.

InfoTrac — For issues related to incidents involving the transportation of hazardous chemicals; this hotline provides accident assistance 24 hours per day, 7 days per week

U.S. Coast Guard National Response Center — For issues related to spill containment, cleanup, and damage assessment; this hotline will direct spill information to the appropriate state or region

Limitations:

The Level-Two HASP is not appropriate in some cases:

- **Projects involving unexploded ordnance (UXO), radiation sources as the primary hazard, or known chemical/biological weapons site must employ the Level 3 HASP**
- **Projects of duration longer than 1 month must employ the Level 3 HASP**
- **Projects with more than five tasks must employ the Level 3 HASP**

Decontamination:

Decontamination Solutions for Chemical and Biological Warfare Agents^a: PPE and equipment can be decontaminated using 0.5 percent bleach (1 gallon laundry bleach to 9 gallons water) for biological agents (15 minutes of contact time for anthrax spores; 3 minutes for others) followed by water rinse for chemical and biological agents. In the absence of bleach, dry powders such as soap detergents, earth, and flour can be used. The powders should be applied and then wiped off using wet tissue paper. Finally, water and water/soap solutions can be used to physically remove or dilute chemical and biological agents. Do not use bleach solution on bare skin; use soap and water instead. Protect decontamination workers from exposure to bleach.

Decontamination for Radiological and Other Chemicals: Primary decontamination should use Alconox and water unless otherwise specified in chemical specific information resources. The effectiveness of radiation decontamination should be checked using a radiation survey instrument. Decontamination procedures should be repeated until the radiation meter reads less than 100 counts per minute over a 100-square-centimeter area when the probe is held 1 centimeter from the surface and moving slower than 2.5 centimeters per second.

Decontamination Corridor: The decontamination setup can be adjusted to meet the needs of the situation. The decontamination procedures can be altered to meet the needs of the specific situation when compound- and site-specific information is available.

Decontamination Waste: All disposable equipment, clothing, and decontamination solutions will be double-bagged or containerized in an acceptable manner and disposed of with investigation-derived waste.

Decontamination Personnel: Decontamination personnel should dress in the same level of PPE or one level below the entry team PPE level.

All investigation-derived waste should be left on site with the permission of the property owner and the EPA on-scene coordinator. In some instances, another contractor will dispose of decontamination waste and investigation-derived waste. DO NOT place waste in regular trash. DO NOT dispose of waste until proper procedures are established.

Notes:

^a Source: Jane's Information Group. 2002. *Jane's Chem-Bio Handbook*. Page 39.



TETRA TECH, INC.
DAILY TAILGATE SAFETY MEETING FORM

Date: _____ Time: _____ Project No.: _____

Client: _____ Site Location: _____

Site Activities Planned for Today: _____

Weather Conditions: _____

Safety Topics Discussed	
Protective clothing and equipment:	
Chemical and physical hazards:	
Emergency procedures:	
Equipment hazards:	
Other:	
Attendees	
Printed Name	Signature

Meeting Conducted by:

Name

Signature



TETRA TECH EM INC.
HEALTH AND SAFETY PLAN AMENDMENT

Site Name: _____

Amendment Date: _____

Purpose or Reason for Amendment: _____

Required Additional Safe Work Practices or Activity Hazard Analyses: _____

Required Changes in PPE: _____

Action Level Changes: _____

AMENDMENT APPROVAL

RSO or Designee	_____ Name	_____ Signature	_____ Date
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Site Safety Coordinator	_____ Name	_____ Signature	_____ Date
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Date presented during daily site safety meeting: _____



TETRA TECH, INC.
FIELD AUDIT CHECKLIST

Project Name: _____ Project No.: _____

Field Location: _____ Completed by: _____

Project Manager: _____ Site Safety Coordinator: _____

General Items		In Compliance?		
Health and Safety Plan Requirements		Yes	No	NA
1	Approved health and safety plan (HASP) on site or available			
2	Names of on-site personnel recorded in field logbook or daily log			
3	HASP compliance agreement form signed by all on-site personnel			
4	Material Safety Data Sheets on site or available			
5	Designated site safety coordinator physically present on jobsite			
6	Daily tailgate safety meetings conducted and documented on Form HST-2			
7	Documentation available proving compliance with HASP requirements for medical examinations, fit testing, and training (including subcontractors)			
8	HASP onsite matches scope of work being conducted			
9	Emergency evacuation plan in place and hospital located			
10	Exclusion, decontamination, and support zones delineated and enforced			
11	HASP attachments present onsite (VPP sheet, audit checklist, AHA, etc.)			
12	Illness and injury prevention program reports completed (California only)			
Emergency Planning				
13	Emergency telephone numbers posted			
14	Emergency route to hospital posted			
15	Local emergency providers notified of site activities			
16	Adequate safety equipment inventory available			
17	First aid provider and supplies available			
18	Eyewash solution available when corrosive chemicals are present			
Air Monitoring				
19	Monitoring equipment specified in HASP available and in working order			
20	Monitoring equipment calibrated and calibration records available			
21	Personnel know how to operate monitoring equipment and equipment manuals available on site			
22	Environmental and personnel monitoring performed as specified in HASP			

Safety Items		In Compliance?		
Personal Protection		Yes	No	NA
23	Splash suit, if required			

24	Chemical protective clothing, if required			
25	Safety glasses or goggles (always required)			
26	Gloves, if required			
27	Overboots, if required			
28	Hard hat (always required)			
29	High visibility vest, if required			
30	Hearing protection, if required			
31	Full-face respirator, if required			
Instrumentation				
32	Combustible gas meter and calibration notes			
33	Oxygen meter and calibration notes			
34	Organic vapor analyzer and calibration notes			
Supplies				
35	Decontamination equipment and supplies			
35	Fire extinguishers			
37	Spill cleanup supplies			
Corrective Action Taken During Audit:				

Note: NA = Not applicable

Auditor's Signature

Site Safety Coordinator's Signature

Date



ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

Task Description

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Below, go step by step through the whole process. For each step, identify the potential hazards and describe the "actions" taken to control the hazard (i.e. PPE, lock-out tagout, training, keeping unauthorized parties out of the area, etc.), Example below.

Hazards		Actions
<u>Task Steps</u>	<u>Potential Hazards</u>	<u>Critical Safety Procedures and Controls</u>
<u>Equipment to be Used</u>	<u>Inspection Requirements</u>	<u>Training Requirements</u>



ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

Site Documentation & Observation of Excavation Operations Near Heavy Equipment

Task Description

This Activity Hazard Analysis (AHA) applies to observation and documentation of site activities involving operation of heavy equipment, including back-filling and site restoration activities. It has been developed and approved by the Tetra Tech (Tt) Health and Safety Representative and is applicable to ALL Tt and contractor personnel involved in this activity. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required safety equipment, inspections, and training.

Hazards		Actions
Task Steps Observe Near Heavy Equipment	<ul style="list-style-type: none"> • Exposure to chemicals of concern • Open excavations • Slips, trips, and falls • Heat stress • Biological hazards • Excessive noise • Heavy lifting • Sun Exposure • Heavy equipment 	Critical Safety Procedures and Controls <ul style="list-style-type: none"> • Follow appropriate safe work practices for field work (SWP 5-1) and HAZWOPER (SWP 5-2); • Wear prescribed PPE; Inspect, don and use PPE specified in the HASP, including hardhats, safety glasses, steel-toed boots, Class 2 safety vests and hearing protection • Sample dust to ensure that PPE levels and dust control measures are adequate; • Limit access to work area; • AT NO TIME are Tetra Tech personnel authorized to enter open excavations; • Follow DCN 4-05, Trenching and Excavation Safety; • Keep site areas clean and free of debris; • Follow SWP 5-15 for heat stress; • Keep out or limit time in grassy and wooded areas; use insect repellent as necessary; • Follow Hearing Conservation Program (DCN 2-4); wear hearing protection in areas >85 dB; use rule of thumb and wear hearing protection whenever you have to raise your voice to be heard and understood from 2 feet away; • Follow Safe Lifting Practices (SWP 5-19); • Follow Prevention of Sun Exposure (SWP 5-26); wear hats and sunscreen as needed to limit sun exposure; • Follow Working Near Heavy Equipment (SWP 5-7); keep away from heavy equipment; be aware of the swing radius of equipment; and ensure eye contact is made with the operator before approaching machinery • Conduct air monitoring as necessary and adhere to action levels presented in the HASP • Delineate the area using caution tape, signage, etc. and prohibit unauthorized entry. • Visually inspect the area for slippery spots or debris and correct if found.

		<ul style="list-style-type: none"> • Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy • Use proper lifting techniques (lift with legs not back)
<u>Equipment to be Used</u> <ul style="list-style-type: none"> • Level D PPE, , including hardhats, safety glasses, steel-toed boots, Class 2 safety vests and hearing protection • First aid kit & eye wash 	<u>Inspection Requirements</u> <ul style="list-style-type: none"> • Inspect all PPE for proper operations, wear and defects • Ensure any air monitoring equipment is properly calibrated and functioning properly 	<u>Training Requirements</u> <ul style="list-style-type: none"> • See HASP; no extra training requirements.



ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

Soil Sampling

Task Description

This Activity Hazard Analysis (AHA) applies to collection of grab soil samples. It has been developed and approved by the Health & Safety Department. The AHA contains potential hazards posed by each major step in this task, lists appropriate controls, and presents required safety equipment, inspections, and training.

Hazards		Actions
<u>Task Steps</u>	<u>Potential Hazards</u>	<u>Critical Safety Procedures and Controls</u>
Set up equipment at sampling location	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	<ul style="list-style-type: none"> Visually inspect the area for slippery spots or debris and correct if found Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy Use proper lifting techniques (lift with legs not back)
Dig to appropriate depth with appropriate tools NOTE: Employees may NOT enter open excavations to retrieve soil samples. Samples MUST be collected from excavator buckets or by other remote means.	SLIP/TRIP/FALL BACK STRAIN/SPRAIN HAND INJURY HEAVY EQUIPMENT HIGH NOISE	<ul style="list-style-type: none"> Wear steel-toed, non-skid boots in accordance with Tetra Tech EMI policy Use proper digging techniques. Use care if resistance is encountered. Do not strain or overexert to advance the shovel. Consider a different sampling location is possible. If using a hand-auger. Use care if resistance is encountered. Do not strain to turn and advance the auger. Consider a different sampling location is possible. Wear gloves when digging or hand-auguring Wear high-visibility vests at all times Maintain contact with operator and ensure that the operator is aware of your position at all times Use appropriate hearing protective devices near heavy equipment

Extract Soil	EMPLOYEE EXPOSURE	<ul style="list-style-type: none"> • Wear safety glasses and nitrile gloves • Emergency eyewash is required when sampling corrosive materials or using corrosive preservatives • Plastic sheeting can be used to kneel upon while collecting samples
Fill sample bottles with sample material, load coolers and IDW (if appropriate) into vehicle	LACERATION	<ul style="list-style-type: none"> • Handle all glass containers carefully • Have a first aid kit on-site available for small cuts • Dispose of all broken shards immediately
Store sample containers in coolers and load onto vehicles	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	<ul style="list-style-type: none"> • Ensure all debris has been removed from the path of travel • Use proper lifting techniques, including obtaining help with heavy coolers
<u>Equipment to be Used</u> <ul style="list-style-type: none"> • Level D PPE (steel-toed boots, safety glasses, nitrile gloves) • Class 2 safety vest if in areas of vehicle traffic or heavy equipment operation • First Aid Kit • Eyewash • Disposable scoop • Hand Auger • Shovel • Appropriate bottle ware and preservative 	<u>Inspection Requirements</u> <ul style="list-style-type: none"> • Inspect area prior to sampling • Conduct utility locating and marking as required prior to intrusive activities 	<u>Training Requirements</u> <ul style="list-style-type: none"> • Safe Lifting Procedures • Personal Protective Equipment • Hazardous Waste Operations and Emergency Response (40-hour and current 8-hour update) • CPR/First Aid (one employee on-site must have current CPR/First Aid training) • As required in accordance with policy and/or sampling and analysis plan

**ACTIVITY HAZARD ANALYSIS (AHA)**

Tetra Tech EM Inc.

AreaRAE & Viper Linc Battery Change Out**Task Description**

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Battery change out of deployed AreaRAEs is occurring as needed in the field. Field personnel have vehicle access to each of the AreaRAE locations foot traffic for this task is very minimal. APRs are carried with personnel throughout this change out task in the event they are needed to don for emergency escape purposes. Tools required to conduct battery change out include a phillipshead screwdriver.

Hazards		Actions
<u>Task Steps</u>	<u>Potential Hazards</u>	<u>Critical Safety Procedures and Controls</u>
Gather equipment and PPE needed	none	Ensure that APR is appropriate size, in working condition, and have appropriate cartridges in place and personal 5-gas monitor. Also ensure all other ppe required is utilized (i.e. gloves, steel toed boots, etc.). Ensure that phillipshead screwdriver is in good working condition.
Vehicle deployment to each AreaRAE location	Airborne chemical exposure (butadiene, HF, Styrene, NaOH, and MIBK. Fire, Explosion	Maintain contact with air monitoring control base to ensure zones to be entered are not indicating hazardous atmosphere. Monitor reading on 5-gas detector. Only authorized personnel allowed for entry into area. Keep emergency rescue APR in hand.
Battery Change out	Airborne chemical exposure (butadiene, HF, Styrene, NaOH, and MIBK. Fire, Explosion	Maintain contact with air monitoring control base to ensure zones to be entered are not indicating hazardous atmosphere. Monitor reading on 5-gas detector. Only authorized personnel allowed for entry into area. Keep emergency rescue APR in hand.
<u>Equipment to be Used</u>	<u>Inspection Requirements</u>	<u>Training Requirements</u>
Phillipshead Screwdriver APRs	Visual inspect of phillipshead screwdriver, visual inspection of APR, ensure proper cartridges in place, and qualitative fit test.	Compliant Qualitative Respirator Fit Test Appropriate AreaRAE equipment training



ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

Creek Sediment Sampling

Task Description

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Tetra Tech EMI Health and Safety Department. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Hazards		Actions
<u>Task Steps</u> Identify weather and water conditions prior to conducting water operations	<u>Potential Hazards</u> IMPROPER PPE	<u>Critical Safety Procedures and Controls</u> <ul style="list-style-type: none"> Determine type of personal protective equipment (PPE) necessary to conduct water operations. For water and air temperatures greater than 45 degrees Fahrenheit (°F), Tetra Tech personnel must wear weather appropriate Level D PPE and Type III personal flotation device (PFD). For water and air temperatures less than 45 °F, Tetra Tech personnel must wear an anti-exposure suit and Type III PFD or a combination anti-exposure suit with built-in PFD. For water and air temperatures split between 45 °F, Tetra Tech site manager will evaluate weather and water conditions to determine the appropriate PPE for sampling operations.
Ensure personnel have received the proper health and safety training prior to conducting sampling activities	IMPROPER TRAINING	<ul style="list-style-type: none"> Ensure all personnel involved in sampling operations have been briefed on the Cold Weather Water Operations AHA and this AHA. Ensure all personnel involved in sampling operations have reviewed the Tetra Tech Site Specific Health and Safety Plan and applicable Safe Work Practices.
Coordinate water operations and meeting location with appropriate personnel	LACK OF COORDINATION AND COMMUNICATION IMPROPER PPE	<ul style="list-style-type: none"> Ensure sampling team is comprised of a minimum of two personnel. Define roles of sampling team members prior to collecting samples. Inspect all PPE prior to use to ensure it is not damaged.
Launch area	LACK OF OR IMPROPER USE OF PPE	<ul style="list-style-type: none"> Tetra Tech personnel must wear a Type III PFD when working within 15 feet of a body of water. Ensure vessel has proper safety equipment for employee rescue operations (i.e. throw rope, ring buoy, first aid kit, etc.). Ensure Tetra Tech personnel have "boat bag" with

	SLIPS, TRIPS, AND FALLS	<p>appropriate safety equipment on board during sampling operations.</p> <ul style="list-style-type: none"> • Survey launch area prior to entering. Avoid uneven and slick surfaces if possible. Use the “buddy system” to enter the vessel and to load equipment.
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Conducting sampling operations	<p>LACK OF OR IMPROPER USE OF PPE</p> <p>SLIPS, TRIPS, AND FALLS</p> <p>LACK OF COORDINATION AND COMMUNICATION</p> <p>FALLING INTO WATER WHILE COLLECTING SAMPLES</p>	<ul style="list-style-type: none"> • Tetra Tech site manager will determine the appropriate PPE for conducting surface water sampling operations. Tetra Tech personnel must wear a Type III PFD when working within 15 feet of a body of water. • Ensure appropriate safety gear (i.e. throw rope, ring buoy, first aid kit, etc.) is easily accessible for employee rescue operations. Ensure Tetra Tech personnel have “boat bag” with appropriate safety equipment on board during sampling operations. • Ensure all personnel are properly seated while boat is in motion to each sampling location. Ensure all personnel maintain at least three points of contact with the boat when approaching dangerous situations (i.e. holding on to side of boat with at least one hand while properly seated). • Ensure personnel have positioned themselves in a manner that allow for stable footing and easy movement while collecting samples. • Ensure personnel collecting samples communicate with each team member prior to making any movements not involved with sample collection. • Turn to float on your back and keep feet elevated. Extend retrieval device to the person in the water. Pull person toward and into boat. Monitor person for shock/hypothermia. If person displays symptoms of hypothermia, contact 911 or take to the nearest medical facility for treatment. Proceed to the nearest dock/rally point. Immediately place person in a heated vehicle and changed into dry clothes. Conduct first aid, transport to medic or awaiting ambulance. • Report incident to Tetra Tech Site Safety Coordinator and TVA safety department immediately.
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**ACTIVITY HAZARD ANALYSIS (AHA)**

Tetra Tech EM Inc.

Storm Water Drain Sampling (Non-Entry)**Task Description**

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Hazards		Actions
<u>Task Steps</u>	<u>Potential Hazards</u>	<u>Critical Safety Procedures and Controls</u>
Drive to site	Slippery roads	Cautious driving Wear seatbelts
Properly mark active roadway around manhole	Slips, trips, falls, active roadway	Wear proper PPE, be aware of moving vehicles
Remove manhole cover and perform air monitoring	SLIP/TRIP/FALL BACK STRAIN/SPRAIN	<ul style="list-style-type: none">Do not lean directly over manhole.Visually inspect surrounding area for slippery spots or debris and correct if foundUse proper lifting techniques while removing the manhole cover (lift with legs not back)
Lower sampling device into water	SLIP/TRIP/FALL LACERATION	<ul style="list-style-type: none">Area needs to be clean of obstructions and possible trip hazardsLowering the sampler should be done in a location close to the body to avoid over-reaching or fallingWear work gloves or heavy rubber gloves while lowering the sampling device
Fill sample bottles with sample material, load coolers and IDW (if appropriate) into vehicle	LACERATION	<ul style="list-style-type: none">Handle all glass containers carefullyHave a first aid kit on-site available for small cutsDispose of all broken shards immediately

<p><u>Equipment to be Used</u></p> <ul style="list-style-type: none"> • Level D PPE (steel-toed boots, safety glasses, nitrile gloves) • Scrub brushes • Sample retriever • Sample containers • Detergent • First Aid Kit • PID 	<p><u>Inspection Requirements</u></p> <p>Calibrate air monitor</p>	<p><u>Training Requirements</u></p> <ul style="list-style-type: none"> • Safe Lifting Procedures • Personal Protective Equipment • Hazardous Waste Operations and Emergency Response (40-hour and current 8-hour update) • CPR/First Aid (one employee on-site must have current CPR/First Aid training)
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ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

Surface Water Quality Measurement

Task Description

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Tetra Tech EMI Health and Safety Department. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Hazards		Actions
<u>Task Steps</u> Identify weather and water conditions prior to conducting water operations	<u>Potential Hazards</u> LACK OF COMMUNICATION IMPROPER PPE	<u>Critical Safety Procedures and Controls</u> <ul style="list-style-type: none"> • Verify weather and water conditions. • Determine type of personal protective equipment (PPE) necessary to conduct water operations. • For water and air temperatures greater than 45 degrees Fahrenheit (°F), Tetra Tech personnel must wear weather appropriate Level D PPE and Type II (minimum) PFD. • For water and air temperatures less than 45 °F, Tetra Tech personnel must wear an anti-exposure suit and Type III PFD or a combination anti-exposure suit with built-in PFD. • For water and air temperatures split between 45 °F, Tetra Tech site manager will evaluate weather and water conditions to determine the appropriate PPE for sampling operations.
Ensure personnel have received the proper health and safety training prior to conducting sampling activities	IMPROPER TRAINING	<ul style="list-style-type: none"> • Ensure all personnel involved review the HASP, this AHA, and SWP 5-06, <i>Working Over or Near Water</i>, as well as familiarity with equipment, instruments and PPE to be used.. • Ensure all personnel involved in have been briefed on the Cold Weather Water Operations when water is < 45F. • Ensure all personnel involved in sampling operations have reviewed the applicable sections of the Site Wide Safety and Health Plan and any client-specific requirements when applicable.
Coordinate and select water quality measurement location, depths and parameters with client	LACK OF COORDINATION AND COMMUNICATION	<ul style="list-style-type: none"> • Coordinate with appropriate client personnel for availability to conduct water operations and to determine appropriate locations, depths, and parameters. • Supply personnel emergency contact phone numbers for Tetra Tech personnel involved in

	IMPROPER PPE	<p>operations and establish a procedure for checking-in with the PM and/or client at completion.</p> <ul style="list-style-type: none"> • Ensure water quality measurement team is comprised of a minimum of two persons. • Define roles of sampling team members prior to collecting samples. • Ensure working radios and/or cell phones are available and that the phone number and location of emergency services (hospital) are available to the field team. • Inspect all PPE prior to use to ensure it is not damaged.
Mobilize to water quality measurement location (includes provisions for boat ops)	<p>LACK OF OR IMPROPER USE OF PPE</p> <p>SLIPS, TRIPS, AND FALLS</p>	<ul style="list-style-type: none"> • Tetra Tech personnel must wear a Type III PFD when working within 15 feet of a body of water and follow SWP 5-06. • Speak with boat pilot to ensure vessel has property safety equipment for employee rescue operations (i.e. throw rope, ring buoy, first aid kit, etc.). Ensure Tetra Tech personnel have appropriate safety equipment on board during sampling operations. • Survey launch and/or sampling area prior to launching and boarding vessel. Avoid steep, uneven and slick surfaces if possible. Use the “buddy system” to enter the vessel and to load equipment.
Conducting water quality measurement	<p>LACK OF OR IMPROPER USE OF PPE EXPOSURE TO SITE CONTAMINANTS</p> <p>SLIPS, TRIPS, AND FALLS</p> <p>BIOLOGICAL HAZARDS</p> <p>LACK OF COORDINATION AND COMMUNICATION</p>	<ul style="list-style-type: none"> • Tetra Tech site manager will determine the appropriate PPE for conducting water quality measurement operations. Tetra Tech personnel must wear a Type II PFD when working within 15 feet of a body of water that is >3’ deep or that is swiftly moving. • Ensure appropriate safety gear (i.e. throw rope, ring buoy, first aid kit, etc.) is easily accessible for employee rescue operations. Ensure Tetra Tech personnel have appropriate safety equipment on board during operations. • Ensure all personnel are properly seated while boat is in motion to each sampling location. Ensure all personnel maintain at least three points of contact with the boat when approaching dangerous situations (i.e. holding on to side of boat with at least one hand while properly seated when approaching dredge lines, wakes, etc.). • Ensure personnel have positioned themselves in a manner that allow for stable footing and easy movement while collecting water quality monitoring results. • Be alert for snakes and other wildlife, as well as of signs of fish kills, dead or stressed vegetation and other signs of possible contamination. • Ensure personnel collecting samples or conducting water quality monitoring communicate with each team member prior to making any movements not involved with sample collection or monitoring.

	<p>DREDGES AND HEAVY EQUIPMENT ON BARGES</p> <p>CROSSING OVER DREDGE LINES</p> <p>FALLING INTO WATER</p>	<ul style="list-style-type: none"> • Maintain a distance of at least 40 yards from dredges, heavy equipment on barges, discharge lines, and anchor lines, if possible • Inform boat pilot of visible or submerged dredge lines in the path of the boat. Ensure all personnel are properly seated and sampling equipment is secure. Ensure boat pilot crosses over dredge lines at a low rate of speed to reduce shock of the contact. Ensure all personnel maintain at least three points of contact with the boat when approaching dangerous situations (i.e. holding on to side of boat with at least one hand while properly seated when approaching dredge lines, wakes, etc.). • Turn to float on your back and keep feet elevated. Extend retrieval device to the person in the water. Pull person toward and into boat or shore. Monitor person for shock/hypothermia. If person displays symptoms of hypothermia, contact 911 or take to the nearest medical facility for treatment. Proceed to the nearest dock/rally point. Immediately place person in a heated vehicle and changed into dry clothes. Conduct first aid, transport to medic or awaiting ambulance. • Report incident to Tetra Tech Site Safety Coordinator and client immediately.
Complete water quality measurement operations	<p>SLIPS, TRIPS, AND FALLS</p> <p>DAMAGED PPE</p>	<ul style="list-style-type: none"> • Upon reaching shore, ensure vessel is not running or moving. Avoid steep, uneven and slick surfaces if possible. Use “buddy system” to exit the vessel and to unload equipment. • Inspect all equipment and PPE upon return to site office.
<p><u>Equipment to be Used</u></p> <ul style="list-style-type: none"> • Water Quality Monitor • Trimble GeoExplorer or similar GPS • Hard hat • High visibility safety vest • Steel-toed boots • Safety glasses with side shields • Type II PFD • Nitrile or cold water, chemical-resistant gloves • Anti-exposure suit depending on weather conditions 	<p><u>Inspection Requirements</u></p> <ul style="list-style-type: none"> • Conduct calibration and battery check before use • Ensure battery is charged • Inspect all PPE, PFDs, and exposure suits prior to use • Ensure all required safety equipment is properly functioning and readily available 	<p><u>Training Requirements</u></p> <ul style="list-style-type: none"> • 40-hour HAZWOPER • Site Specific Orientation • General Safe Work Practices HAZWOPER • SWP 5-06, Working Over or Near Water • Working Near Heavy Equipment (if applicable) • Cold/Heat Stress • Cold Weather Water Operations AHA (< 45F) •



ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

River Surface Water Sampling

Task Description

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Tetra Tech EMI Health and Safety Department. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Hazards		Actions
<u>Task Steps</u> Identify weather and water conditions prior to conducting water operations	<u>Potential Hazards</u> LACK OF COMMUNICATION IMPROPER PPE	<u>Critical Safety Procedures and Controls</u> <ul style="list-style-type: none"> • Speak with appropriate personnel concerning weather and water conditions. Site manager to check real time water temperatures. • Determine type of personal protective equipment (PPE) necessary to conduct water operations. • For water and air temperatures greater than 45 degrees Fahrenheit (°F), Tetra Tech personnel must wear weather appropriate Level D PPE and Type III PFD. • For water and air temperatures less than 45 °F, Tetra Tech personnel must wear an anti-exposure suit and Type III PFD or a combination anti-exposure suit with built-in PFD. • For water and air temperatures split between 45 °F, Tetra Tech site manager will evaluate weather and water conditions to determine the appropriate PPE for sampling operations.
Ensure personnel have received the proper health and safety training prior to conducting sampling activities	IMPROPER TRAINING	<ul style="list-style-type: none"> • Ensure all personnel involved in sampling operations have been trained by US Coast Guard personnel on the proper usage of the anti-exposure suit, if required. • Ensure all personnel involved in sampling operations have been briefed on the Cold Weather Water Operations AHA and this AHA. • Ensure all personnel involved in sampling operations have reviewed the Tetra Tech Site Specific Health and Safety Plan and applicable Safe Work Practices. • Ensure all personnel involved in sampling operations have reviewed the applicable sections of the Site Wide Safety and Health Plan.
Coordinate water operations and	LACK OF COORDINATION	<ul style="list-style-type: none"> • Coordinate with appropriate personnel for availability to conduct water operations and to

meeting location with appropriate personnel	<p>AND COMMUNICATION</p> <p>IMPROPER PPE</p>	<p>determine a meeting location. Ensure personnel are authorized to pilot vessel used for water operations.</p> <ul style="list-style-type: none"> • Supply personnel emergency contact phone numbers for Tetra Tech personnel involved in surface water sampling operations. • Ensure sampling team is comprised of a minimum of two personnel. • Define roles of sampling team members prior to collecting samples. • Inspect all PPE prior to use to ensure it is not damaged.
Meet personnel at launch area	<p>LACK OF OR IMPROPER USE OF PPE</p> <p>SLIPS, TRIPS, AND FALLS</p>	<ul style="list-style-type: none"> • Tetra Tech personnel must wear a Type III PFD when working within 15 feet of a body of water. • Speak with boat pilot to ensure vessel has property safety equipment for employee rescue operations (i.e. throw rope, ring buoy, first aid kit, etc.). Ensure Tetra Tech personnel have "boat bag" with appropriate safety equipment on board during sampling operations. • Survey launch area prior to entering. Avoid uneven and slick surfaces if possible. Use the "buddy system" to enter the vessel and to load equipment.
Conducting sampling operations	<p>LACK OF OR IMPROPER USE OF PPE</p> <p>SLIPS, TRIPS, AND FALLS</p> <p>LACK OF COORDINATION AND COMMUNICATION</p> <p>DREDGES AND HEAVY EQUIPMENT ON BARGES</p>	<ul style="list-style-type: none"> • Tetra Tech site manager will determine the appropriate PPE for conducting surface water sampling operations. Tetra Tech personnel must wear a Type III PFD when working within 15 feet of a body of water. • Ensure appropriate safety gear (i.e. throw rope, ring buoy, first aid kit, etc.) is easily accessible for employee rescue operations. Ensure Tetra Tech personnel have "boat bag" with appropriate safety equipment on board during sampling operations. • Ensure all personnel are properly seated while boat is in motion to each sampling location. Ensure all personnel maintain at least three points of contact with the boat when approaching dangerous situations (i.e. holding on to side of boat with at least one hand while properly seated when approaching dredge lines, wakes, etc.). • Ensure personnel have positioned themselves in a manner that allow for stable footing and easy movement while collecting samples and water quality monitoring results. • Ensure personnel collecting samples or conducting water quality monitoring communicate with each team member prior to making any movements not involved with sample collection or monitoring. • Maintain a distance of at least 40 yards from dredges, heavy equipment on barges, discharge lines, and anchor lines, if possible

	<p>CROSSING OVER DREDGE LINES</p> <p>FALLING INTO WATER WHILE COLLECTING SAMPLES</p>	<ul style="list-style-type: none"> • Inform boat pilot of visible or submerged dredge lines in the path of the boat. Ensure all personnel are properly seated and sampling equipment is secure. Ensure boat pilot crosses over dredge lines at a low rate of speed to reduce shock of the contact. Ensure all personnel maintain at least three points of contact with the boat when approaching dangerous situations (i.e. holding on to side of boat with at least one hand while properly seated when approaching dredge lines, wakes, etc.). • Turn to float on your back and keep feet elevated. Extend retrieval device to the person in the water. Pull person toward and into boat. Monitor person for shock/hypothermia. If person displays symptoms of hypothermia, contact 911 or take to the nearest medical facility for treatment. Proceed to the nearest dock/rally point. Immediately place person in a heated vehicle and changed into dry clothes. Conduct first aid, transport to medic or awaiting ambulance. • Report incident to Tetra Tech Site Safety Coordinator and safety department immediately.
Complete water operations	<p>SLIPS, TRIPS, AND FALLS</p> <p>DAMAGED PPE</p>	<ul style="list-style-type: none"> • Upon reaching shore, ensure vessel is not running or moving. Avoid uneven and slick surfaces if possible. Use "buddy system" to exit the vessel and to unload equipment. • Inspect all equipment and PPE upon return to site office.
<p><u>Equipment to be Used</u></p> <ul style="list-style-type: none"> • Water Quality Monitor • Trimble GeoExplorer • Hard hat • High visibility safety vest • Steel-toed boots • Safety glasses with side shields • Type III PFD • Anti-exposure suit depending on weather conditions 	<p><u>Inspection Requirements</u></p> <ul style="list-style-type: none"> • Conduct calibration and battery check before use • Ensure battery is charged • Inspect all PPE, PFDs, and exposure suits prior to use • Ensure boat bag has all required safety equipment 	<p><u>Training Requirements</u></p> <ul style="list-style-type: none"> • 40-hour HAZWOPER • Kingston Ash Recovery Site Specific Orientation • Ammonia Training • General Safe Work Practices HAZWOPER • Working Over or Near Water • Working Near Heavy Equipment • Cold/Heat Stress • Cold Weather Water Operations AHA • River Surface Water AHA • Site Wide Safety and Health Plan.



ACTIVITY HAZARD ANALYSIS (AHA)

Tetra Tech EM Inc.

Project Documentation and Air Monitoring

Task Description

This Activity Hazard Analysis (AHA) applies to the task listed above. It has been developed and approved by the Director of Health and Safety for Tetra Tech EMI. The AHA contains potential hazards posed by each major step in this task, lists procedures to control hazards, and presents required equipment (including safety equipment), inspections, and training. The hazard controls listed below are specific to this task.

Hazards		Actions
Task Steps	Potential Hazards	Critical Safety Procedures and Controls
Conduct visual walk-around of facility to document site activities	Chemical hazards (VOCs, ammonia, acid gas, hydrogen cyanide, hydrogen sulfide, carbon monoxide, LEL, etc.)	<ul style="list-style-type: none"> • AVOID entering the exclusion zone unless directed or it is absolutely necessary to perform required duties. • Maintain contact with air monitoring control base to ensure zones to be entered are not indicating hazardous atmosphere. • If data at the time of the maintenance indicates that neither Level B nor C PPE is warranted, APRs equipped with GME P100 organic vapor/acid gas cartridges SHALL be carried with personnel throughout maintenance activity in the event they are needed to don for emergency escape purposes. • Ensure that APR is appropriate size, in working condition and has appropriate cartridges in place. • Ensure that the entry team has a fully-calibrated and properly functioning MultiRAE or similar 5-gas monitor for use during the entry. • Ensure all other PPE required is utilized (i.e. gloves, steel toed boots, etc.). • Use a wagon, dolly, or similar conveyance to aid with heavy lifting if possible.
	Heavy lifting	<ul style="list-style-type: none"> • Otherwise, use a team lift. • Ensure clear path of travel, good grasp on object, perform "test lift" to gauge ability to safely make the lift.
	Slips/trips/falls	<ul style="list-style-type: none"> • Lift with legs, obtain help to lift large, bulky, or heavy items. • Clear debris, limbs, boards, bricks, etc. from the path of travel. • Practice good housekeeping to keep the ground around the Drill/DPT site clear of obstructions, equipment and other tripping hazards.
	Minor cuts, or abrasions	<ul style="list-style-type: none"> • Wear appropriate foot protection to prevent slips and trips. Use caution when working on uneven and wet ground surfaces. • When handling equipment and tools wear cut-resistant gloves when handling items

	<p>Insect bites</p> <p>Inclement weather</p> <p>High noise</p> <p>Struck By Equipment/Vehicle</p>	<p>with sharp or rough edges.</p> <ul style="list-style-type: none"> • Shake out boots before donning. • Use insect repellants (products containing DEET should be applied to exposed skin, products containing Permethrin should be applied to clothing only. Follow manufacturer's recommendations for application). • Tape up pants leg to work boot joints with duct tape. Wear light-colored clothing to better see and remove any insects. Perform close body inspections at least daily upon leaving the site. • The FOL and/or the SSC will temporarily suspend outside activities in the event of electrical storms or high winds. • It is preferred that supported systems such as lightning detection devices or emergency weather broadcasts are employed. • However, when this is not possible field personnel should use the 30/30 Rule: "If there is less than 30 seconds between thunder and lightning go inside and stay inside for at least 30 minutes after the last thunder." • Personnel are to wear hearing protection if noise levels are such that they must raise their voice in order to communicate with someone who is within arm's reach (approx. 2') of them. • SSC responsible for determining and designating when hearing protection is required. • Hearing protection is to consist of either ear muffs or ear plugs that have an NRR of at least 25 dB. • Communicate with equipment operator and crew; ensure the operator is aware of your position at all times; stay out of the equipment swing radius • Wear safety vest, hard hat, and steel-toed boots along with HASP specified PPE. • Be aware of surroundings when entering operation area.
<p><u>Equipment to be Used</u></p> <ul style="list-style-type: none"> • Radios • Phillipshead Screwdriver, wrenches and other hand tools as necessary • PPE and respirator protection based on current monitoring readings • APRs equipped with GME P100 organic vapor/acid gas cartridges • Wagon, dolly or similar if 	<p><u>Inspection Requirements</u></p> <ul style="list-style-type: none"> • Hand tools • PPE • Respiratory equipment • Calibrate monitors • Extension cords • Marine batteries 	<p><u>Training Requirements</u></p> <ul style="list-style-type: none"> • 40-Hour HAZWOPER • Current 8-Hour Refresher • Hazard Communication • Hearing Conservation • Respiratory Protection • PPE • Current Medical Surveillance, including respiratory questionnaire • Qualitative Respirator Fit Test (quantitative preferred)

possible <ul style="list-style-type: none"> • Calibration gases and regulators • Outdoor rated GFCI extension cords • Hearing protection • Hardhat • Steel-toed boots (with covers is appropriate) • High-visibility Safety Vest • Cut-resistant gloves • Duct tape • Logbook • Instrument calibration records • Insect spray/sunscreen 		
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