Health and Safety Plan

Walter Coke
Residential Sampling

Birmingham, Alabama

Contract No. 97-90
Contract Task Order No. 09-02

Submitted to:

Walter Coke, Inc.

Prepared by:

CH2MHILL

Birmingham, Alabama

June 30, 2011

Prepared By:

Brian L. Parsley CSP

Responsible Health and Safety Manager | Date

Approved By:

Project Manager | Date

Client Acceptance:

Responsible Authority | Date

CH2M HILL HEALTH AND SAFETY PLAN

This Health and Safety Plan (HSP) will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Enterprise-wide Core Standards (CS) and Standard Operating Procedures (SOPs), as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Safety Coordinator (SC) is to be familiar with the CSs and SOPs and the contents of these instructions. CH2M HILL's personnel and subcontractors must be trained on this plan and sign Attachment 1.

Project Information and Background

PROJECT NO: 392539

CLIENT: Walter Coke, Inc.

PROJECT/SITE NAME: Walter Coke, Birmingham, AL – neighboring communities of Harriman Park, Fairmont, and Collegeville

SITE ADDRESS: Walter Coke – 3500 35th Avenue North, Birmingham, AL 35207

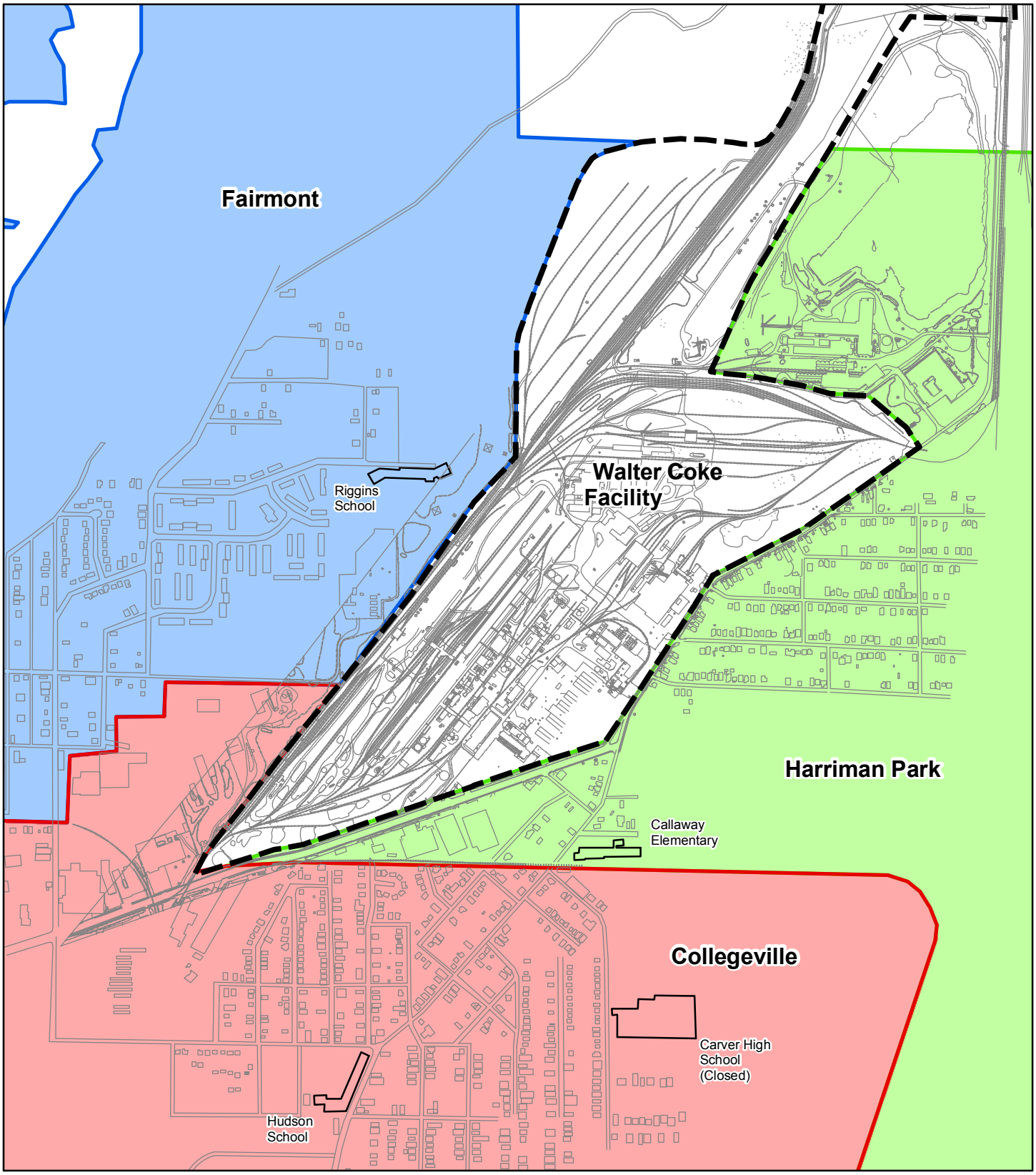
CH2M HILL PROJECT MANAGER: Kelly Moody

CH2M HILL OFFICE: MGM

DATE HEALTH AND SAFETY PLAN PREPARED: June 30, 2011

DATE(S) OF SITE WORK: July 11, 2011 – December 31, 2013

SITE BACKGROUND AND SETTING: Walter Coke is a coke and slag wool manufacturer, located in Jefferson County, Alabama. The neighborhoods around the Walter Coke facility developed around the local coke manufacturing industries.



Legend

- Walter Coke Facility Boundary

Neighborhood

- Collegeville
- Harriman Park
- Fairmont

N

0 500 1,000 2,000 Feet

FIGURE 1-1
Walter Coke Facility and Surrounding Neighborhoods
Residential Removal Action
Walter Coke Inc.
Birmingham, Alabama

CH2MHILL

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Emergency Contacts

Serious Incident Reporting:
720-286-4911

Injury Management/Return-to-Work
(For US and Puerto Rico employees only)
1-866-893-2514

Medical Emergency
Facility Medical Response #: 911
Local Ambulance #: 911

CH2M HILL IMRTW Medical Consultant
WorkCare
Peter P. Greaney, MD
300 S. Harbor Boulevard, Suite 600
Anaheim, CA 92805
1-714-456-2114 1-800--455-6155
(After hours call 1-866-893-2514 for response by oncall physician)

Fire/Spill Emergency Facility Fire Response #: 911
Local Fire Dept #: 911

Local Occupational Physician
Carraway Occupational Health
3001 27th St N, Birmingham, AL
205-502-5801

Security & Police Facility Security #:
Local Police #: 205-254-2860

Responsible Health and Safety Manager (RHSM)
Name: Michael Goldman
Phone: 404-790-4769

Utilities Emergency
Water: 911 or 205-244-4000
Gas: 911 or 205-326-8200
Electric: 911 or 866-553-5409

Responsible Environmental Manager (REM)
Name:
Phone:

Emergency Response Coordinator (ERC)
Name:
Phone:

Human Resources Representative
Name: Lisa Covey/SAC
Phone: 916-286-0253

Project Manager
Name: Kelly Moody
Phone: 334-215-9038

Media Inquiries Corporate Strategic Communications
Name: John Corsi
Phone: 720-286-2087

Federal Express Dangerous Goods Shipping
Phone: 800-238-5355

CH2M HILL Emergency Number for Shipping Dangerous Goods
Phone: 800-255-3924

Worker's Compensation:
Complete IRF to initiate process. For immediate assistance contact Regional HR Dept. or for an after hours emergency contact Jennifer Rindahl: 303/918/8130

Automobile Accidents:
Rental: Linda Anderson/COR 720-286-2401
CH2M HILL owned or fleet vehicle: Linda George/DEN 720-286-2057

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

Facility Alarms: N/A

Evacuation Assembly Area(s):

Facility/Site Evacuation Route(s): N/A

Hospital Name/Address: St. Vincent's Hospital
810 St. Vincent Drive, Birmingham, AL 35205

Hospital Phone #: 205- 939-7000

Directions to Local Hospital

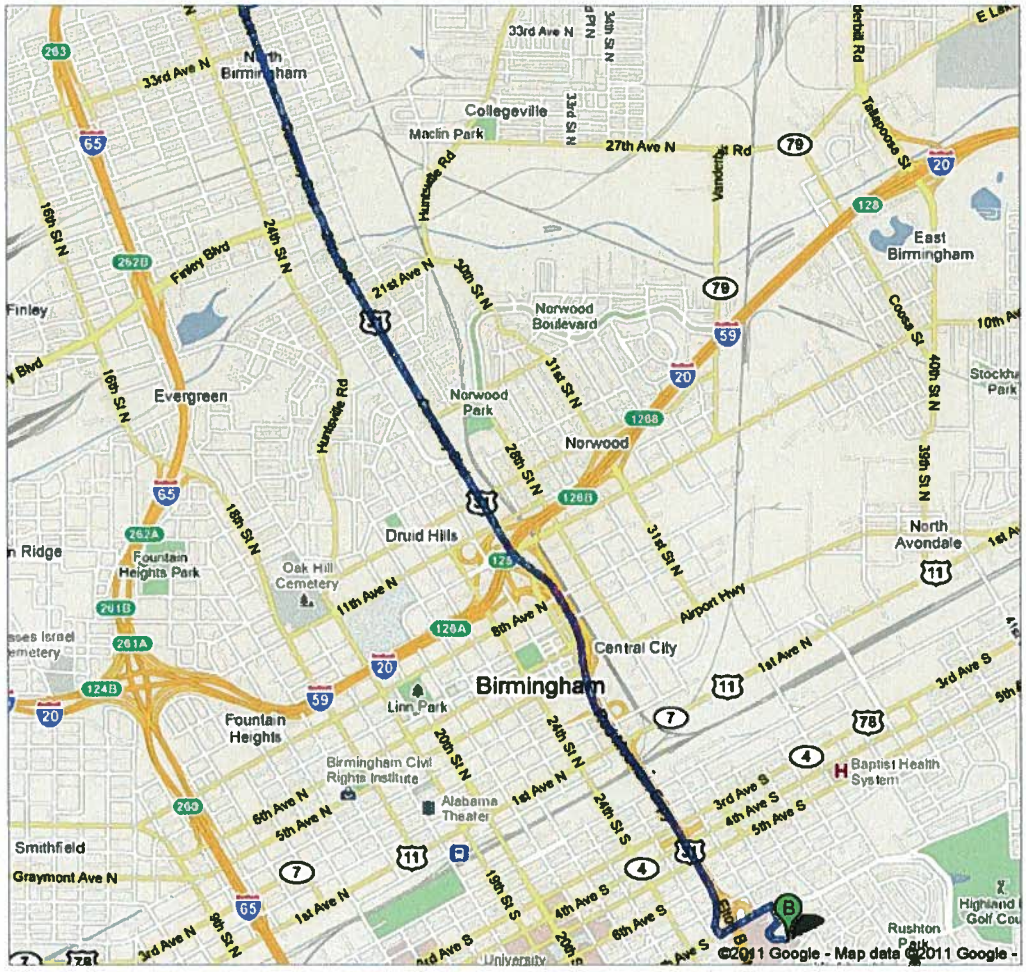
Local Hospital

From: 3500 35th Ave N
Birmingham, AL 35207

Head **west** on **35th Ave N** toward **34th Pl N**

Turn **left** at **US-31 S/26th St N/Carraway Blvd**, Continue to follow US-31 S
Continue onto **US-280 E**
Take the exit toward **8th Ave S/University Blvd**
Turn **left** at **8th Ave S/University Blvd**
Take the 1st **right** onto **St Vincents Dr**
Turn **right** to stay on **St Vincents Dr**
Arrive at Destination

Destination: 810 St. Vincent Drive, Birmingham, AL 35205 - (205) 939-7000



1.0 Tasks to be Performed under this Plan

1.1 Description of Tasks

Refer to project documents (i.e., Work Plan) for detailed task information. A health and safety risk analysis (Table 1) has been performed for each task and is incorporated in this plan through task-specific hazard controls and requirements for monitoring and protection. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin. Refer to Section 7.2 for procedures related to "clean" tasks that do not involve hazardous waste operations and emergency response (Hazwoper).

1.1.1 Hazwoper-Regulated Tasks

- Surface soil sampling
- Excavation

1.1.2 Non-Hazwoper-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hazwoper-trained personnel. **Prior approval from the Responsible Health and Safety Manager (RHSM) is required before these tasks are conducted on regulated hazardous waste sites.**

TASKS	CONTROLS
N/A	

1.2 Change Management

PROJECT HS&E Change Management Form

*This evaluation form should be reviewed on a **continuous** basis to determine if the current site health and safety plan adequately addresses ongoing project work, and should be completed whenever new tasks are contemplated or changed conditions are encountered.*

Project Task:	**Surface Soil Sampling and Excavation**	Project/Task Manager: **Kelly Moody**	
Project Number:	**392539**	Project Name: **Walter Coke - Residential Soil Sampling and Excavation**	

	Evaluation Checklist	Yes	No
1.	Have the CH2MHILLstaff listed in the original HASP changed?		
2.	Has a new subcontractor been added to the project?		
3.	Is any chemical or product to be used that is not listed in Attachment 2 of the plan?		
4.	Have additional tasks been added which were not originally addressed in Section 1.1 of the plan?		
5.	Have new contaminants or higher than anticipated levels of original contaminants been encountered?		
6.	Have other safety, equipment, activity or environmental hazards been encountered that are not addressed in Section 2.1 of the plan?		

If the answer is "YES" to Questions 1-3, an HSP revision is NOT needed. Please take the following actions:

- Confirm that staff's medical and training status is current – check training records at: http://www.int.ch2m.com/hands (or contact your regional SPA), and confirm subcontractor qualifications.
- Confirm with the project KA that subcontractor safety performance has been reviewed and is acceptable
- Confirm with H&S that subcontractor safety procedures have been reviewed and are acceptable.

If the answer is "YES" to Questions 4-6, an HSP revision MAY BE NEEDED.

Table 1 Hazard Analysis

(Refer to Section 2.0 for Hazard Controls)

POTENTIALHAZARDS	Project Activities									
	Surface Soil Sampling	Excavation								
Abrasive Blasting										
Aerial Lifts										
Arsenic	X	X								
Asbestos Hazard										
Benzene										
Biological Hazards	X	X								
Cadmium										
Chainsaws										
Chemical Hazard-Dermal/Inhalation	X	X								
Confined Space Entry										
Electrical Safety		X								
Excavations		X								
Field Vehicles	X	X								
Fire Prevention		X								
Flight Line Hazards										
Forklifts										
Formaldehyde										
Hand & Power Tools	X	X								
Haul Truck Operations		X								
Heat Stress/Cold Stress	X	X								
Heavy Equipment		X								
Manual Lifting	X	X								
Methylene Chloride										
Noise		X								
PCBs/Light Ballasts										
Powder-Actuated Tools										
Pressure Washing		X								
Pressurized Lines/Equipment										
Rigging										
Scaffolding										
Slips/Trips/Falls	X	X								
Stairways and Ladders	X									
Steel erection										
Vacuum Truck/Pumping Operations										
Vehicle Traffic	X	X								
Vinyl Chloride										
Visible Lighting										
Welding and Cutting										
Wild Animals	X	X								
Work Alone	X									
Work Over Water										

2.0 Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CH2M HILL employees and subcontractors who do not understand any of these provisions should contact the RHSM for clarification.

The health and safety hazards posed by field activities have been identified for each project activity and are provided in the Hazard Analysis Table (Table 1). Hazard control measures for project-specific and general H&S hazards are provided in 2.1 and 2.2 of this section.

In addition to the controls specified in this section, Project-Activity Self-Assessment Checklists are contained in Attachment 4. These checklists are to be used to assess the adequacy of CH2M HILL and subcontractor site-specific safety requirements. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Self-assessment checklists should be completed early in the project, when tasks or conditions change, or when otherwise specified by the RHSM. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records.

Applicable project activity self-assessment checklists (see Attachment 4) shall be completed weekly by a CH2M HILL representative during the course of the project depending on the work performed at the time.

2.1 Project-Specific Hazards

2.1.1 Arsenic

(Reference CH2M HILL, SOP HSE-501, *Arsenic*) *project note: arsenic is included because it is governed by stand-alone regulation [29 CFR 1910.1018 Inorganic Arsenic]; PAHs are not. Neither are present at concentrations considered high enough to cause significant exposure.

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met.
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.
- Avoid skin and eye contact with liquid and particulate arsenic or arsenic trichloride.
- Arsenic is considered a “Confirmed Human Carcinogen.”
- Arsenic particulates (inorganic metal dust) are odorless. Vapor and gaseous odor varies depending upon specific organic arsenic compound.
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person.

2.1.2 Electrical

(Reference CH2M HILL SOP HSE-206, *Electrical Safety*)

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.

- CH2M HILL has selected Ground Fault Circuit Interrupters (GFCIs) as the standard method for protecting employees from the hazards associated with electric shock.
  - GFCIs shall be used on all 120-volt, single phase 15 and 20-amphere receptacle outlets which are not part of the permanent wiring of the building or structure.
- An assured equipment grounding conductor program may be required under the following scenarios:
  - GFCIs cannot be utilized
  - Client requires such a program to be implemented
  - Business group decides to implement program in addition to GFCI protection
- Extension cords must be equipped with third-wire grounding. Cords passing through work areas must be covered, elevated or protected from damage. Cords should not be routed through doorways unless protected from pinching. Cords should not be fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

2.1.3 Excavations

(Reference CH2M HILL SOP HSE&Q-307, *Excavation & Trenching Safety*)

- All underground installations (i.e., utilities, fuel lines) shall be located and protected from damage prior to opening an excavation.
- The excavation, adjacent areas, and protective systems must be inspected daily, as needed throughout the work shifts, and after every rainstorm or other hazard-increasing event. If a potentially hazardous condition is identified, exposed workers shall be removed from the hazard and all work in the area shall be stopped until necessary precautions have been implemented.
- Excavated material shall be placed at least 2 feet. (0.6 meter) from the edge of excavation or greater distance as necessary to prevent excessive loading (and potential collapse) of the excavation face(s).
- Sloping, benching, shoring, shielding, or other protective systems are required to protect personnel from cave-ins except when the excavation is made entirely in stable rock or is less than 5 feet deep and there is no indication of possible cave-in, as determined by the excavation competent person. Protective systems for excavations deeper than 20 feet must be designed or approved by a registered professional engineer.
- Trenches greater than 4 feet deep shall be provided with a ladder, stairway, or ramp positioned so that the maximum lateral travel distance is no more than 25 feet.
- Do not enter the excavations unless completely necessary, and only after the excavation competent person has completed their daily inspection and has authorized entry.

2.1.4 Field Vehicles

- Field vehicles may be personal vehicles, rental vehicles, fleet vehicles or project vehicles.
- Emergency kits are available in all South East Region (SER) offices for personal and rental vehicles. Fleet vehicles are equipped with emergency supplies. It is a project responsibility to equip all project vehicles with emergency equipment.
- Maintain both a First Aid kit and Fire Extinguisher in the field vehicle at all times.
- Utilize a rotary beacon on vehicle if working adjacent to active roadway.
- Car rental must meet the following requirements:
  - Dual air bags
  - Antilock brakes
  - Be midsize or larger.
  - Mirror adjustments
  - Seat adjustments
  - Cruise control features, if offered.
  - Pre-program radio stations.
- Familiarize yourself with rental vehicle features
- Always wear seatbelt while operating vehicle.
- Adjust headrest to proper position.
- Tie down loose items if utilizing a van.
- Pull off the road, put the car in park and turn on flashers before talking on a mobile phone.
- Close car doors slowly and carefully. Fingers can get pinched in doors or the truck.
- Park vehicle in a location where it can be accessed easily in the event of an emergency. If not possible, carry a phone.

2.1.5 Fire Prevention

- Fire extinguishers shall be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet.
- Extinguishers must:
  - be maintained in a fully charged and operable condition,
  - be visually inspected each month, and
  - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire resistant, covered container until removed from the site.

- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

2.1.6 Hand and Power Tools

(Reference CH2M HILL, SOP HSE-210, *Hand and Power Tools*)

- Tools shall be inspected prior to use and damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturer's instructions and design limitations;
- Maintain all hand and power tools in a safe condition.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into GFCI protected outlets; and
- Portable power tools will be Underwriters Laboratories (UL) listed and have a three-wire grounded plug or be double insulated.
- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.).
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut, or unprotected hands.
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

2.1.7 Haul Truck Operations

- All haul trucks must follow the designated Haul Route established for the project.
- Haul truck operators should ensure all persons are clear before moving their equipment. Before moving, operators should sound horn or alarm.
- All haul truck equipment should be equipped with an operational backing alarm.
- Any equipment with restricted visibility should be equipped with devices that eliminate blind spots. Haul truck drivers should also be provided with spotters when there are blind spots associated with loading or unloading operations.
- Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.

- Haul roads should be well lit, sufficiently wide to allow for passage of trucks, and adequately marked with right-of-way signs indicating haul directions.
- Haul trucks shall be loaded evenly for proper weight distribution and on stable competent ground.
- Do not walk in front of or in back of haul trucks.
- Haul truck operators shall not be allowed to raise the dump bodies of their hauling vehicles underneath or within 10 ft of overhead utilities.

2.1.8 Heavy Equipment

(Reference CH2M HILL SOP HSE&Q-306, *Earth Moving Equipment*)

- Only those authorized personnel who have been qualified by training or previous experience may operate heavy equipment.
- Heavy equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts, and operating controls. All defects will be corrected before the equipment is placed in service.
- Heavy equipment must be on stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Seat belts shall be used by all personnel operating heavy equipment.
- Heavy equipment shall not be used to lift personnel. Loads must not be lifted over the heads of ground personnel.
- Equipment must have a reverse signal alarm that is distinguishable from surrounding noise or must use a signal person when the equipment is operating in reverse.
- The parking brake will be set whenever equipment is parked; wheels must be chocked when parked in inclines.
- When heavy equipment is not in operating, the blade/bucket must be blocked or grounded and the master clutch must be disengaged.
- When heavy equipment is unattended, power must be shut off, brakes set, blades/buckets landed, and shift lever in neutral.

2.1.9 Manual Lifting

(Reference CH2M HILL SOP HSE-112, *Manual Lifting*)

- Back injuries are the leading cause of disabling work and most back injuries are the result of improper lifting techniques or overexertion. Office or field tasks and activities involving manual lifting are to be identified and a program implemented to assist employees to mitigate the risks associated with manual lifting.
- When possible, the task should be modified to minimize manual lifting hazards.
- Effectiveness of manual handling control measures will be evaluated during assessments (HSE-114, Office & Warehouse Safety Program, or HSE-109, Audits).
- Manual handling incidents are reviewed as part of the HSE Program reviews, and the results influence program development, training, and education efforts.
- Lifting of loads weighing more than 40 pounds (18 kilograms) should be evaluated by the SC using the Lifting Evaluation Form contained in SOP HSE-112.

- Using mechanical lifting devices is the preferred means of lifting heavy objects such as forklifts; cranes, hoists, and rigging; hand trucks; and trolleys.
- Personnel shall seek assistance when performing manual lifting tasks that appear beyond their physical capabilities.
- Physical differences make it difficult to set up safe lifting limits, unless extensive individual testing is performed. In general, the following steps must be practiced when planning and performing manual lifts: Assess the situation before you lift; ensure good lifting and body positioning practices; ensure good carrying and setting down practices.
- All employees must receive training for the correct procedures to lift safely using the computer-based health and safety training or project-specific training.

2.1.10 Noise

(Reference CH2M HILL SOP HSE&Q-108, *Hearing Conservation Program*)

- Notify the SSC of high-noise-level areas.
- Wear hearing protection when required.
- Complete noise training and audiometric testing (as required).
- Hearing protection is required in work environmental exceeding 85 dB.
- Hearing protection shall be worn when operating heavy equipment, drilling equipment, and when working in close proximity to high-noise sources.

2.1.11 Pressure Washing Operations

- Only trained, authorized personnel may operate the high-pressure washer.
- Follow manufacturer's safety and operating instructions.
- Inspect pressure washer before use and confirm deadman switch is fully operational
- The wand must always be pointed at the work area.
- The trigger should never be tied down
- Never point the wand at yourself or another worker.
- The wand must be at least 42 inches from the trigger to the tip.
- The operator must maintain good footing.
- Non-operators must remain a safe distance from the operator.
- No unauthorized attachment may be made to the unit.
- Do not modify the wand.
- All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.

2.1.12 Slips/Trips/Falls

- Walk or climb only on equipment and/or surfaces designed for personnel access.
- Execute good housekeeping measures in your designated work areas. Periodically consolidate, stow, or remove and dispose of accumulated debris in your work area and keep work area clear.
- Observe and avoid areas of unprotected holes, ramps, and ground penetrations or protrusions (stumps, roots, holes, curbs, etc). If these conditions cannot be corrected, mark these hazards with high visibility paint or traffic cones.

- Whenever possible, work from areas with flat, stable surfaces and do not enter steep-sided ditches or excavations.
- Wear sturdy hard-toe boots that provide sufficient ankle support.

2.1.13 Stairways and Ladders

(Reference CH2M HILL SOP HSE-214, *Stairways and Ladders*)

- Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials
- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder
- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders $\geq$ 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

2.1.14 Traffic Control

(Reference CH2M HILL SOP HSE-216, *Traffic Control*)

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.

- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a "buddy system" should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor's traffic control plan.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.

  Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

2.1.15 Utilities - Underground

- The survey contractor shall determine the most appropriate geophysical technique or combinations of techniques to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present and specific site conditions.
- The survey contractor shall employ the same geophysical techniques used on the project to identify the buried utilities, to survey the proposed path of subsurface construction work to confirm no buried utilities are present.
- Identify customer specific permit and/or procedural requirements for excavation and drilling activities. For military installations contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.
- Contact utility companies or the state/regional utility protection service at least two (2) working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation.
- Schedule the independent survey.
- Obtain utility clearances for subsurface work on both public and private property.
- Clearances are to be in writing, signed by the party conducting the clearance.

- Underground utility locations must be physically verified by hand digging using wood or fiberglass handled tools when any adjacent subsurface construction activity (e.g. mechanical drilling, excavating) work is expected to come within 5 feet of the marked underground system. If subsurface construction activity is within 5 feet and parallel to a marked existing utility, the utility location must be exposed and verified by hand digging every 100 feet.
- Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company or utility protection service to inform them that the markings have been destroyed.
- Conduct a site briefing for employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation.
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon during drilling or change in color, texture or density during excavation that could indicate the ground has been previously disturbed).

2.1.16 Utilities – Overhead

- No work is to be conducted within 50 feet of overhead power lines without first contacting the utility company to determine the voltage of the system. No aspect of any piece of equipment is to be operated within 50 feet of overhead power lines without first making this determination.
- Operations adjacent to overhead power lines are PROHIBITED unless one of the following conditions is satisfied:
  - Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
  - The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine the minimum safe operating distance; get this determination in writing with the utility representative's signature.
  - The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked to ensure that no part, including cables, can come within the minimum clearances shown in the table.

MINIMUM DISTANCES FROM POWERLINES

Powerlines Nominal System Kv	Minimum Required Distance, Feet
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

(These distances have been determined to eliminate the potential for arcing based on the line voltage.)

- All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the Project Manager/Construction Manager prior to the start of work.

2.1.17 Visible Lighting

- While work is in progress outside construction areas shall have at least 33 lux (lx).
- Construction work conducted inside buildings should be provided with at least 55 lux light.
- The means of egress shall be illuminated with emergency and non-emergency lighting to provide a minimum 11 lx measured at the floor. Egress illumination shall be arranged so that the failure of any single lighting unit, including the burning out of an electric bulb will not leave any area in total darkness.

2.1.18 Working Alone

(Reference CH2M HILL Core Standard, *Working Alone*)

Personnel can only be tasked to work alone by the Project Manager who has assessed potential hazards and appropriate control measures, with assistance from the Responsible Health and Safety Manager (RHSM).

"Lone workers" with an automated person down system or an accountability system are permitted, depending on the hazards present.

Accountability Systems

- The employee shall at all times be equipped with a working voice communication device such as a cellular phone or two-way radio to check-in to their project contact (s) at pre-determined times.
- An Activity Hazard Analysis (AHA) shall be developed for the tasks allowing work alone and shall address check in frequency and contact names and phone numbers.
- Check-in or contact times must be based on the risk associated with the task, or the timeframe expected to complete the task, but at a minimum of at least two times during an 8 hour work shift.

Work tasks will cease if communication is lost during work day. Work may resume when communication is re-established. See Attachment 8 for Working Alone Standard to be used.

2.2 General Hazards

2.2.1 General Practices and Housekeeping

- Site work should be performed during daylight hours whenever possible.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.

- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.
- Review the safety requirements of each job you are assigned to with your supervisor. You are not expected to perform a job that may result in injury or illness to yourself or to others.
- Familiarize yourself with, understand, and follow jobsite emergency procedures.
- Do not fight or horseplay while conducting the firm's business.
- Do not use or possess firearms or other weapons while conducting the firm's business.
- Report unsafe conditions or unsafe acts to your supervisor immediately.
- Report occupational illnesses, injuries, and vehicle accidents.
- Do not remove or make ineffective safeguards or safety devices attached to any piece of equipment.
- Report unsafe equipment, defective or frayed electrical cords, and unguarded machinery to your supervisor.
- Shut down and lock out machinery and equipment before cleaning, adjustment, or repair. Do not lubricate or repair moving parts of machinery while the parts are in motion.
- Do not run in the workplace.
- When ascending or descending stairways, use the handrail and take one step at a time.
- Do not apply compressed air to any person or clothing.
- Do not wear steel taps or shoes with metal exposed to the sole at any CH2M HILL project location.
- Do not wear finger rings, loose clothing, wristwatches, and other loose accessories when within arm's reach of moving machinery.
- Remove waste and debris from the workplace and dispose of in accordance with federal, state, and local regulations.
- Note the correct way to lift heavy objects (secure footing, firm grip, straight back, lift with legs), and get help if needed. Use mechanical lifting devices whenever possible.
- Check the work area to determine what problems or hazards may exist.

2.2.2 Personal Hygiene

- Keep hands away from nose, mouth, and eyes.
- Keep areas of broken skin (chapped, burned, etc.) covered.
- Wash hands with hot water and soap frequently prior to eating and smoking.

2.2.3 Drugs and Alcohol

The following situations pertaining to drugs and alcohol are prohibited:

- Use or possession of intoxicating beverages while performing CH2M HILL work
- Abuse of prescription or nonprescription drugs
- Regulations. Use or possession of illegal drugs or drugs obtained illegally
- Sale, purchase, or transfer of illegal or illegally obtained drugs

- Arrival at work under the influence of legal or illegal drugs or alcohol

2.2.4 Driving

- Always be aware of surroundings while operating a vehicle. Avoid intellectual stress & worries, talking on a cellular phone, eating, drinking, smoking, reading a map, adjusting controls or looking at a passenger while driving.
- Use prudent speed limits, assure that backup warning devices are working, be aware of blind spots or other hazards associated with low visibility, etc. Use a spotter if necessary.
- Do no drive while drowsy. Drowsiness can occur at any time, but is most likely after 18 hours or more without sleep.

2.2.5 Hazard Communication

(Reference CH2M HILL SOP HSE-107, *Hazard Communication)*

The Hazard Communication Coordinator is to perform the following:

- Complete an inventory of chemicals brought on site by CH2M HILL using Attachment 2.
- Confirm that an inventory of chemicals brought on site by CH2M HILL subcontractors is available.
- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CH2M HILL employees potentially are exposed. MSDSs can be found in Attachment 6.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using Attachment 3.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

2.2.6 Ultraviolet (UV) Radiation (sun exposure)

Health effects regarding UV radiation are confined to the skin and eyes. Overexposure can result in many skin conditions, including erythema (redness or sunburn), photoallergy (skin rash), phototoxicity (extreme sunburn acquired during short exposures to UV radiation while on certain medications), premature skin aging, and numerous types of skin cancer.

Acute overexposure of UV radiation to the eyes may lead to photokeratitis (inflammation of the cornea), also known as snow blindness. Symptoms include redness of the eyes and a gritty feeling, which progresses to pain and an inability to tolerate any kind of light. This condition can also occur when working in or around water and other UV radiation reflectors. In addition, long-term exposure to sunlight is thought to cause cataracts or clouding of the lens of the eye.

Limit Exposure Time

- Rotate staff so the same personnel are not exposed all of the time.
- Limit exposure time when UV radiation is at peak levels (approximately 2 hours before and after the sun is at its highest point in the sky).
- Avoid exposure to the sun, or take extra precautions when the UV index rating is high.

Provide Shade

- Take lunch and breaks in shaded areas.
- Create shade or shelter through the use of umbrellas, tents, and canopies.
- Fabrics such as canvas, sailcloth, awning material and synthetic shade cloth create good UV radiation protection.
- Check the UV protection of the materials before buying them. Seek protection levels of 95 percent or greater, and check the protection levels for different colors.

Clothing

- Reduce UV radiation damage by wearing proper clothing; for example, long sleeved shirts with collars, and long pants. The fabric should be closely woven and should not let light through.
- Head protection should be worn to protect the face, ears, and neck. Wide-brimmed hats with a neck flap or "Foreign Legion" style caps offer added protection.
- Wear UV-protective sunglasses or safety glasses. These should fit closely to the face. Wrap-around style glasses provide the best protection.

Sunscreen

- Apply sunscreen generously to all exposed skin surfaces at least 20 minutes before exposure, allowing time for it to adhere to the skin.
- Re-apply sunscreen at least every 2 hours, and more frequently when sweating or performing activities where sunscreen may be wiped off.
- Choose a sunscreen with a high sun protection factor (SPF). Most dermatologists advocate SPF 30 or higher for significant sun exposure.
- Waterproof sunscreens should be selected for use in or near water, and by those who perspire sufficiently to wash off non-waterproof products.
- Check for expiration dates, because most sunscreens are only good for about 3 years. Store in a cool place out of the sun.
- Remember—no sunscreen provides 100% protection against UV radiation. Other precautions must be taken to avoid overexposure.

2.2.7 Heat Stress

(Reference CH2M HILL SOP HSE-211, *Heat and Cold Stress)*

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink up to 4 cups every hour, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.
- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.

- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should report it to their supervisor immediately to avoid progression of heat-related illness.

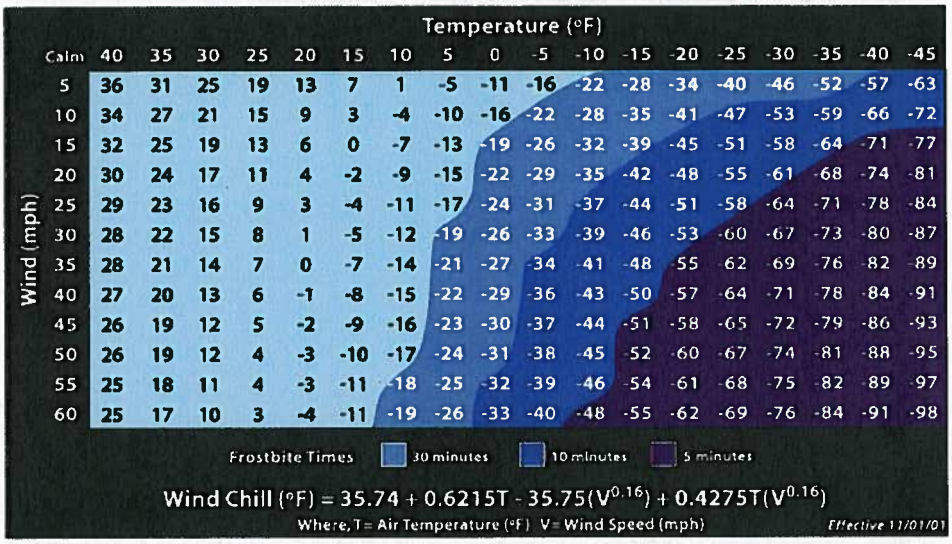
SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool– but not cold–water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

Wind Chill Chart



Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T = Air Temperature (°F) V = Wind Speed (mph)

Effective 11/01/01

2.3 Biological Hazards and Controls

2.3.1 Snakes

- Snakes typically are found in underbrush and tall grassy areas.
- If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area.
- If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately.
- **DO NOT** apply ice, cut the wound, or apply a tourniquet.
- Try to identify the type of snake: note color, size, patterns, and markings.

2.3.2 Poison Ivy and Poison Sumac

- Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas.
- Become familiar with the identity of these plants.
- Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing.
- If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

2.3.3 Ticks

- Every year employees are exposed to tick bites at work and at home putting them at risk of illness. Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch (6.4 mm) in size.

- Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray only outside of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

- Where site conditions warrant (vegetation above knee height, tick endemic area) or when tasks warrant (e.g., having to sit/kneel in vegetation) that diminish the effectiveness of the other controls mentioned above, bug-out suits (check with your local/regional warehouse)/Tyvek shall be used. Bug-out suits are more breathable than Tyvek.

- Avoid habitats where possible; reduce the abundance through habitat disruption or application of acracide. If these controls aren't feasible, contact your local/regional warehouse for preventative equipment such as repellants, protective clothing and tick removal kits.

- Use the buddy system and perform tick inspections prior to entering the field vehicle. If ticks were not planned to be encountered and are observed, do not continue field work until these controls can be implemented.

- See Tick Fact Sheet (Attachment 7) for further precautions and controls to implement when ticks are present. If bitten by a tick, follow the removal procedures found in the tick fact sheet, and call the occupational nurse at 1-866-893-2514.

- Be aware of the symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bullseye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both RMSF and Lyme disease, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, again contact the occupational nurse at 1-866-893-2514.

- Be sure to complete an Incident Report (either use the HITS system on the VO) if you do come in contact with a tick. For more detailed information go to HSSE website or contact the RHSM.

2.3.4 Bees and Other Stinging Insects

- Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic.

- Watch for and avoid nests. Keep exposed skin to a minimum.

- Carry a kit if you have had allergic reactions in the past, and inform your supervisor and/or buddy.

- If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

2.3.5 Bloodborne Pathogens

(Reference CH2M HILL SOP HSE-202, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material (PIM).

- Employees trained in first-aid/CPR or those exposed to PIM must complete CH2M HILL's 1-hour bloodborne computer-based training module annually.

- Hepatitis B vaccine (HBV) is offered to employees who may be exposed to PIM when they complete training and within 10 working days of assignment. (Note: Employees whose exposure stems only from rendering first aid as a collateral duty receives the vaccine after exposure.)

- Employees who decline the HBV vaccine must sign the declination form (contact regional Safety Program Assistant [SPA]) indicating they declined the vaccination. Anyone who declines the vaccination and chooses to receive the vaccination at a later time may still receive the vaccination by contacting the SPA.
- Hepatitis B and tetanus vaccinations can be requested by completing the medical portion of the enrollment form, located under Tools & Forms at the HS&E web page, or by contacting the regional SPA.

Work Controls

- Observe universal precautions to prevent contact with blood or other PIMs. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be potentially infectious materials.
- Consider all sharps encountered at industrial, medical, dental, or biological waste facilities or sampling locations to be contaminated and PIMs.
- Always wash your hands and face with soap and running water after contacting PIMs. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. These must be provided for employees who have been exposed to PIMs. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. Do not consume food or beverages until after thoroughly washing your hands and face.
- Decontaminate all potentially contaminated equipment and environmental surfaces with chlorine bleach as soon as possible. Clean and decontaminate on a regular basis (and immediately upon visible contamination) all bins, pails, cans, and other receptacles intended for reuse that have the potential for becoming contaminated.
- Use one part chlorine bleach (5.25 percent sodium hypochlorite solution) diluted with 10 parts water for decontaminating equipment or surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area.
- Place regulated waste in containers that are closable; are constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping; are labeled with a Biological warning label or color-coded; and are tightly closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

Employees who participate in waste characterization studies, sort or sample refuse, or contact medical, dental, or biological wastestreams should follow these procedures:

- If exposure is anticipated, this group of employees should wear safety goggles or glasses, puncture-resistant utility gloves with inner latex glove liners, Tyvek coveralls or cotton coveralls with a rubber apron, and puncture-resistant shoes or boots.
- If splash potential is present, employees should wear a full-face shield.
- If a respiratory hazard is present, a full-face respirator with HEPA filters should be worn.

Post Exposure

CH2M HILL will provide exposed employees with a confidential medical examination should an exposure to PIM occur. This examination includes the following procedures:

- Documenting the exposure
- Testing the exposed employee's and the source individual's blood (with consent)
- Administering post-exposure prophylaxis

2.3.6 Feral Dogs

- Avoid all dogs – both leashed and stray.
- Do not disturb a dog while it is sleeping, eating, or caring for puppies.
- If a dog approaches to sniff you, stay still. An aggressive dog has a tight mouth, flattened ears and a direct stare. If you are threatened by a dog, remain calm, do not scream and avoid eye contact. If you say anything, speak calmly and firmly. Do not turn and run, try to stay still until the dog leaves, or back away slowly until the dog is out of sight or you have reached safety (e.g. vehicle).
- If attacked, retreat to vehicle or attempt to place something between you and the dog. If you fall or are knocked to the ground, curl into a ball with your hands over your head and neck and protect your face.
- If bitten, immediately scrub the bite site vigorously with soap and water. Report the incident to the local authorities. Seek medical attention as soon as possible.

2.3.7 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southwestern United States it is recommended that **preventative measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitos are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.
- Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3-15 days.

Contact the project RHSM with questions, and immediately report any suspicious symptoms to your supervisor/PM.

2.4 Radiological Hazards and Controls

Refer to CH2M HILL's Core Standard, Radiological Control and Radiological Controls Manual for additional requirements.

Hazards	Controls
None Known	None Required

2.5 Contaminants of Concern

Contaminants of Concern

Contaminant	Location and Maximum[a] Concentration (ppm)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Arsenic	SS: 40 ppm	0.01 mg/m^3	5 Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
PAHs (measured as BaP Toxic Equivalents)	SS: 16 ppm	0.2 mg/m^3	100 mg/m^3	Confirmed human carcinogen. Irritation to eyes, nose, skin and upper respiratory system.	UK

Footnotes:

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water).

[b] Appropriate value of PEL, REL, or TLV listed.

[c] IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.

[d] PIP = photoionization potential; NA = Not applicable; UK = Unknown.

Potential Routes of Exposure

Dermal: Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 4.	**Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection, as specified in Section 4.	**Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

3.0 Project Organization and Personnel

3.1 CH2M HILL Employee Medical Surveillance and Training

(Reference CH2M HILL- SOPs HSE-113, Medical Surveillance, and HSE-110, Training)

The employees listed meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SC" have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SC with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL- SOP HSE-120, *Reproductive Health*, including obtaining a physician's statement of the employee's ability to perform hazardous activities before being assigned fieldwork.

Employee Name	Office	Responsibility	SC/FA-CPR
Stephanie Park	MGM		Level D SSC; FA-CPR
Adrian Teal	ATL	FTL	Level D SSC; FA-CPR
Ronny Fields	KNV	FTL	Level D SSC; FA-CPR
Tom Wiley	ATL		Level D SSC; FA-CPR
Eros Bilyeu	MGM		Level D SSC; FA-CPR
Katherine Blinn	ATL		Level D SSC; FA-CPR
Angela Barch	ATL		Level D SSC; FA-CPR
Derek Miller	KNV		Level D SSC; FA-CPR

3.2 Field Team Chain of Command and Communication Procedures

3.2.1 Client

Contact Name: Don Wiggins
Phone: 205-808-7972
Facility Contact Name: Don Wiggins
Phone: 205-808-7972

3.2.2 CH2M HILL

Program Manager:
Project Manager (PM): Moody, Kelly
Responsible Health and Safety Manager (RHSM): Brian L. Parsley CSP
Field Team Leader: Adrian Teal or Ronny Fields
Safety Coordinator (SC): Adrian Teal or Ronny Fields

The PM is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this SOP:

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors)
- Select safe and competent subcontractors by:
  - obtaining, reviewing and accepting or rejecting subcontractor pre-qualification questionnaires
  - ensuring that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award
  - including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations
- Maintain copies of subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The CH2M HILL RHSM is responsible for:

- Review and accept or reject subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA)
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations
- Support the oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with on-site 3rd parties per the site-specific safety plan

The SC is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this HSP is current and amended when project activities or conditions change.
- Verify CH2M HILL site personnel and subcontractor personnel read the HSP and sign Attachment 1, Employee Sign-Off Form prior to commencing field activities.
- Verify CH2M HILL site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 2.
- Verify compliance with the requirements of this HSP and applicable subcontractor health and safety plan(s)
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in Section 2.2.5
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in Section 8.

- Post OSHA job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established.
- Verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that project H&S forms and permits, found in Attachment 4 and 5, are being used as outlined in Section 2.
- Perform oversight and/or assessments of subcontractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists, found in Attachment 4, are being used as outlined in Section 2
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract/subcontract agreements and the applicable standard of reasonable care
- Coordinate with the RHSM regarding CH2M HILL and subcontractor operational performance, and 3rd party interfaces
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The training required for the SC is as follows:

- SC-Initial and SC-Construction
- OSHA 10-hour course for Construction
- First Aid and CPR
- Relevant Competent Person Courses (excavation, confined space, scaffold, fall protection, etc.)

The SC is responsible for contacting the Field Team Leader and Project Manager. In general, the Project Manager will contact the client. The RHSM should be contacted as appropriate.

4.0 Personal Protective Equipment (PPE)

(Reference CH2M HILL- SOP HSE-117, *Personal Protective Equipment*)

- PPE must be worn by employees when actual or potential hazards exist and engineering controls or administrative practices cannot adequately control those hazards.
- A PPE assessment has been conducted by the RHSM based on project tasks (see PPE specifications below). Verification and certification of assigned PPE by task is completed by the RHSM or designee.
- Employees must be trained to properly wear and maintain the PPE.
- In work areas where actual or potential hazards are present at any time, PPE must be worn by employees working or walking through the area.
- Areas requiring PPE should be posted or employees must be informed of the requirements in an equivalent manner.
- PPE must be inspected prior to use and after any occurrence to identify any deterioration or damage.
- PPE must be maintained in a clean and reliable condition.
- Damaged PPE shall not be used and must either be repaired or discarded.

- PPE shall not be modified, tampered with, or repaired beyond routine maintenance.

The table below outlines PPE to be used according to task based on project-specific hazard assessment. If a task other than the tasks described in this table needs to be performed, contact the RHSM so this table can be updated.

Project-Specific PPE Requirements[a]

Task	Level	Body	Head	Respirator [b]
General site entry	D	Work clothes; safety toed leather work boots and gloves	Safety glasses with side shields	None required
Surface soil sampling	Modified D	Work clothes or cotton coveralls **Boots:** Safety-toe, leather work boots **Gloves:** Inner surgical-style nitrile & outer chemical-resistant nitrile gloves. High visibility traffic vest.	Safety glasses with side shields	None required
Excavation	Modified D	Work clothes or cotton coveralls **Boots:** Safety-toe, leather work boots **Gloves:** Inner surgical-style nitrile & outer chemical-resistant nitrile gloves. High visibility traffic vest.	Safety glasses with side shields Ear protection[c]	None required

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[d]	Downgrade
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards.	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decrease the hazard. • Change in work task that will reduce contact with hazardous materials.

[a] Modifications are as indicated. CH2M HILL will provide PPE only to CH2M HILL employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.
[d] Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SSC qualified at that level is present.

PPE Certification

I certify that the PPE requirements listed in the table above for the associated tasks are based upon the project-specific hazard assessment I performed.

Michael Goldman CIH, CSP	July 11/11	July 11/11
Name	Date of Certification	Date(s) of Project Hazard Assessment

5.0 Air Monitoring/Sampling

(Reference CH2M HILL SOP HSE-207, Exposure Monitoring for Airborne Chemical Hazards)

5.1 Air Monitoring Specifications

Instrument	Tasks	Action Levels[a]	Action to be Taken when Action Level reached	Frequency [b]	Calibration

No air monitoring is required for the tasks covered by this plan.

[a] Action levels apply to sustained breathing-zone measurements above background.
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SC; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3", "at surface/SB-2", etc.).

5.2 Air Sampling

Sampling, in addition to real-time monitoring, may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

Method Description

No air sampling required for the tasks covered by this plan.

6.0 Decontamination

(Reference CH2M HILL SOP HSE-218, *Hazardous Waste Operations*)

The SC must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SC. The SC must ensure that procedures are established for disposing of materials generated on the site.

6.1 Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
• Wash with soap & water. • Dispose of contaminated PPE appropriately.	• Wash/rinse equipment • Contain solvent waste for offsite disposal	• Pressure wash • Steam clean • Contain rinse water for offsite disposal

6.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SC should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 6-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SC to accommodate task-specific requirements.

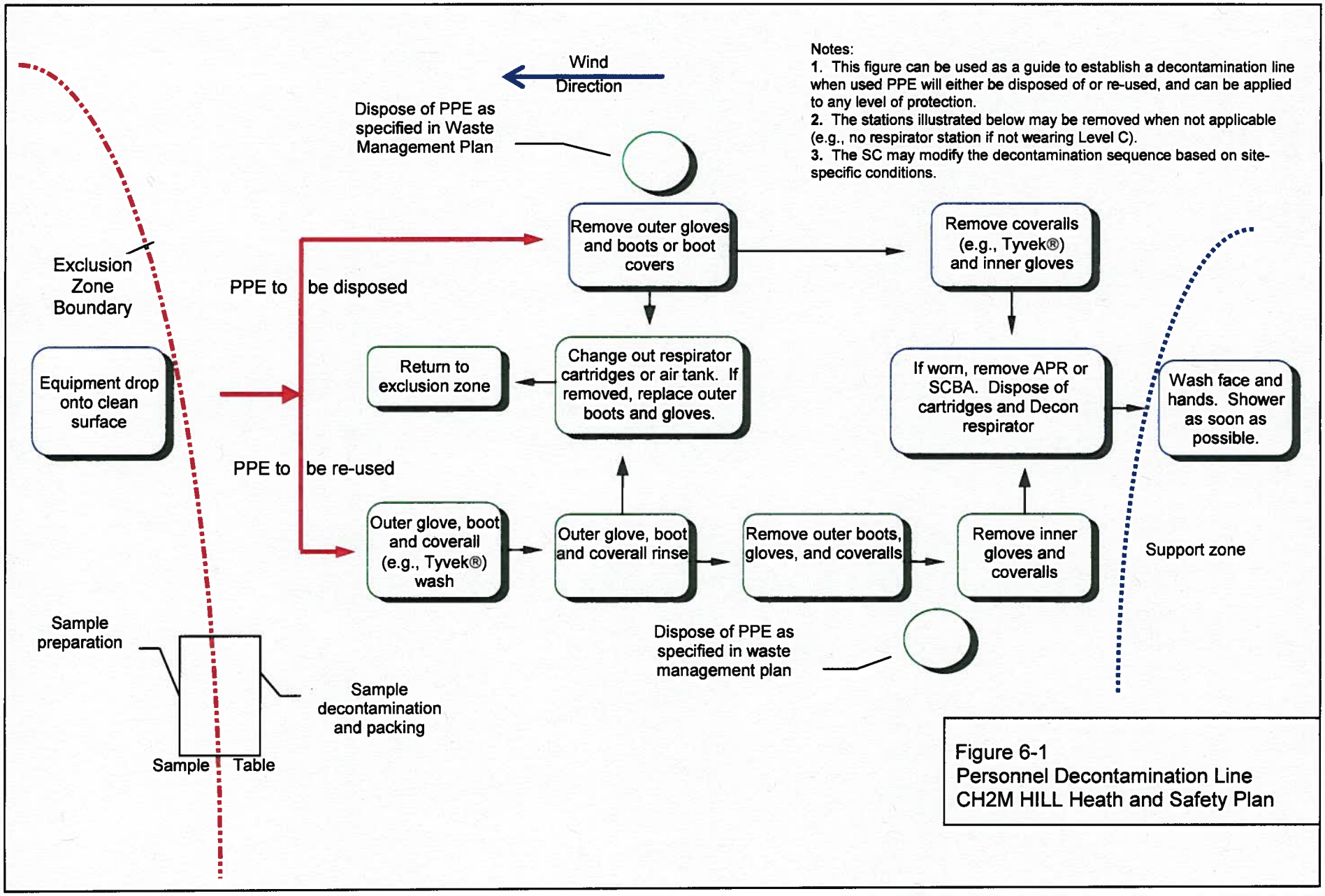


Figure 6-1
Personnel Decontamination Line
CH2M HILL Heath and Safety Plan

7.0 Site-Control Plan

7.1 Site-Control Procedures

(Reference CH2M HILL SOP HSE-218, *Hazardous Waste Operations)*

- The SC will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of Health and Safety Plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SC records attendance at safety briefings in a logbook and documents the topics discussed.
- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the "buddy system."
- The SC is to conduct periodic inspections of work practices to determine the effectiveness of this plan. Deficiencies are to be noted, reported to the HSM, and corrected.

7.2 Hazwoper Compliance Plan

(Reference CH2M HILL SOP HSE-218, Hazardous Waste Operations)

Certain parts of the project work are covered by state or federal Hazwoper standards and therefore require training and medical monitoring. Anticipated Hazwoper tasks (Section 1.1.1) might occur consecutively or concurrently with respect to non-Hazwoper tasks. This section outlines procedures to be followed when approved activities specified in Section 1.1.2 do not require 24- or 40-hour training. Non-Hazwoper-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- When exposure is possible, non-Hazwoper-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.

8.0 Emergency Response Plan

(Reference CH2M HILL SOP HSE-106, *Emergency Planning*)

8.1 Pre-Emergency Planning

- The Emergency Response Coordinator (ERC) performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CH2M HILL onsite parties, the facility, and local emergency-service providers as appropriate.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital. Drills should take place periodically but no less than once a year.
- Brief new workers on the emergency response plan.
- The ERC will evaluate emergency response actions and initiate appropriate follow-up actions.

8.2 Emergency Equipment and Supplies

The ERC should mark the locations of emergency equipment on the site map and post the map.

Emergency Equipment and Supplies	Location
First aid kit	Field Vehicle
Eye Wash	Field Vehicle
Potable water	Field Vehicle
Bloodborne-pathogen kit	Field Vehicle
Cell Phone	Field Vehicle

8.3 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Notify appropriate response personnel.
- Shut down CH2M HILL operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.
- Implement HSE-111, Incident Notification, Reporting and Investigation.
- Notify and submit reports to clients as required in contract.

Small fires or spills posing minimal safety or health hazards may be controlled with onsite spill kits or fire extinguishers without evacuating the site. When in doubt evacuate.

8.4 Emergency Medical Treatment

Emergency medical treatment is needed when there is a life-threatening injury (such as severe bleeding, loss of consciousness, breathing/heart has stopped). When in doubt if an injury is life-threatening or not, treat it as needing emergency medical treatment.

- Notify 911 or other appropriate emergency response authorities as listed in Emergency Contacts at the front of this HSP.
- The ERC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury, perform decontamination (if applicable) where feasible; lifesaving and first aid or medical treatment takes priority.
- Initiate first aid and CPR where feasible.
- Notify supervisor and if the injured person is a CH2M HILL employee. The supervisor will call the occupational nurse at 1-866-893-2514 and make other notifications as required by HSE SOP-111, *Incident Notification, Reporting and Investigation.*
- Make certain that the injured person is accompanied to the emergency room.
- Follow the Serious Incident Reporting process in HSE SOP-111, Incident Notification, Reporting and Investigation, and complete incident report forms in Attachment 5.
- Notify and submit reports to client as required in contract

8.5 Evacuation

- Evacuation routes, assembly areas, and severe weather shelters (and alternative routes and assembly areas) are to be specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the ERC or designee before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The ERC and a "buddy" will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The ERC will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The ERC will follow the incident reporting procedures in this plan.

8.6 Evacuation Signals

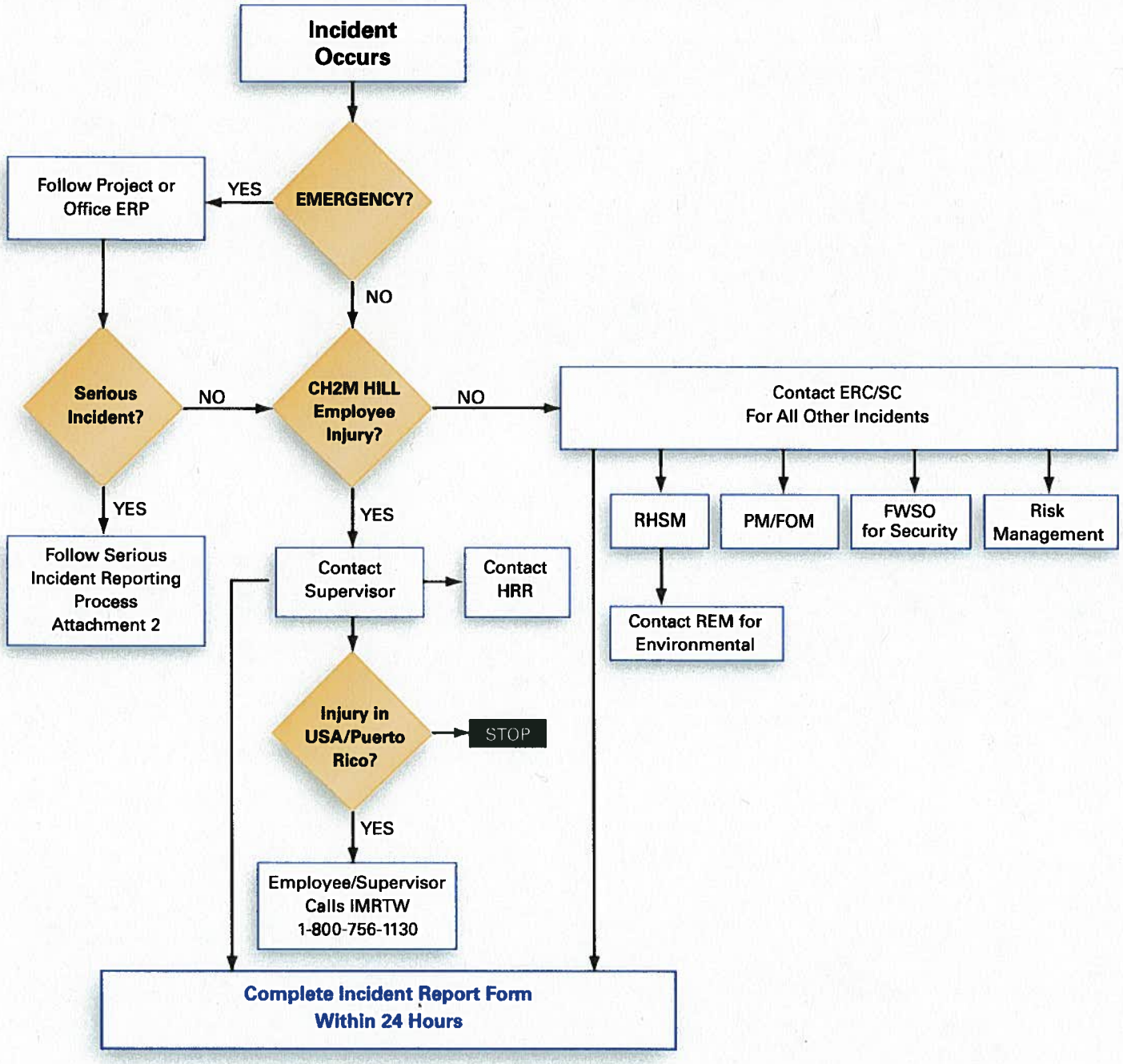
Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

8.7 Incident Notification and Reporting

(Reference CH2M HILL SOP HSE-111, Incident Notification, Reporting and Investigation)

- If you are injured at work, notify your supervisor immediately and contact the Injury Management/Return-to-Work toll free number (for US and Puerto Rico) 1-866-893-2514. All supervisors must contact their Human Resources Representative and complete the employee injury/illness in the Incident Report Form (IRF) in the HITS database within 24 hours of the incident
- Immediately notify the Project Manager (PM), Emergency Response Coordinator (ERC), and/or Responsible Health and Safety Manager (RHSM) for any project incident (fire, spill/release, injury/illness, near miss, property damage, or security-related)
- Report any **serious incidents** (life-threatening injury/illness, death, kidnap/missing person, terrorism, property damage greater than $500K, significant environmental release) **immediately** to your ERC, PM, or RHSM. The Serious Incident Reporting number is 720-286-4911.
- For serious incidents, the Corporate Legal Department will determine who completes the IRF.
- For CH2M HILL subcontractor incidents, immediately notify the ERC and HSM to complete and submit an IRF.
- The RHSM will inform the Responsible Environmental Manager (REM) of any environmental incidents.
- Evaluation and follow-up of the IRF will be completed by the type of incident by the RHSM, REM, or FWSO. The Business Group (BG) HSE Lead will review all BG incidents and modify as required.
- Incident Investigations must be initiated and completed as soon as possible but no later than 72 hours after the incident.
- See the following flowcharts for Immediate Incident Reporting and Serious Incident Reporting.

Flowchart 1
CH2M HILL Immediate Incident Notification



ERC = Emergency Response Coordinator (designated in Emergency Response Plan)
ERP = Emergency Response Plan
FOM = Facility Office Manager
FWSO = Firm Wide Security Operations
HRR = Human Resources Representative
IMRTW = Injury Management/Return-to-Work
PM = Project Manager
REM = Responsible Environmental Manager
RHSM = Responsible Health & Safety Manager
SC = Safety Coordinator

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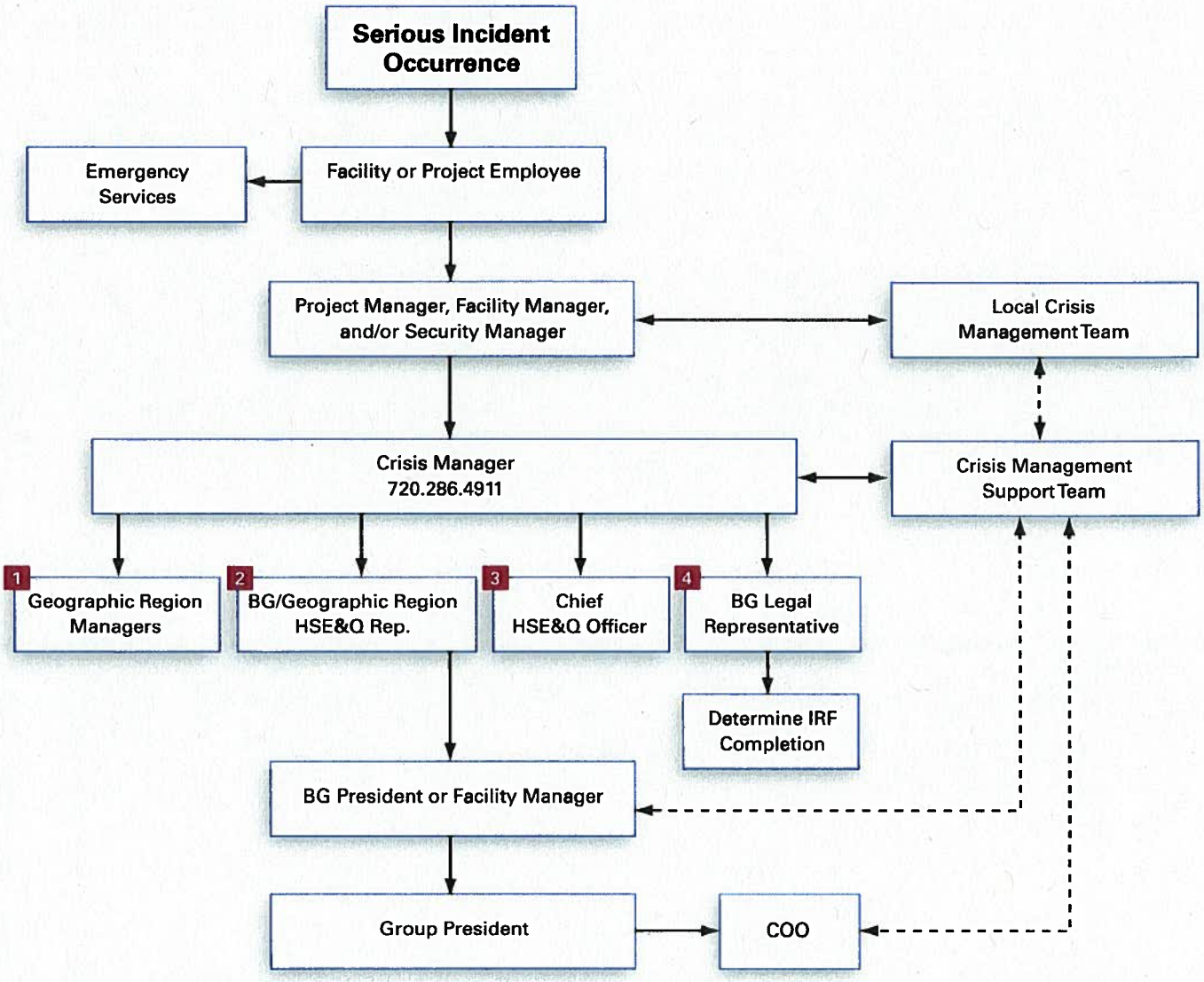
Flowchart 2

CH2M HILL Serious Incident Notification



LEGEND:

Direct line of communication

Indirect line of communication

DEFINITIONS:

Local Crisis Management Team: Team comprised of key facility, project and/or business group personnel. Team is assembled as necessary and as appropriate to effectively manage and respond to a crisis situation (serious incident) at/on scene.

Crisis Management Support Team: Team comprised of key corporate personnel. Team is assembled as necessary and as appropriate to effectively support, direct, and /or supplement a Local Crisis Management Team.

Crisis Manager: Corporate based Crisis Manager, contactable by pager 24/7.

HS052007002MKT

9.0 Behavior Based Loss Prevention System

(Reference CH2M HILL SOP HSE-103, Behavior Based Loss Prevention System)

A Behavior Based Loss Prevention System (BBLPS) is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The four basic Loss Prevention tools that will be used CH2M HILL projects to implement the BBLPS include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)

The SC or designated CH2M HILL representative onsite is responsible for implementing the BBLPS on the project site. The Project Manager remains accountable for its implementation. The SC or designee shall only oversee the subcontractor's implementation of their AHAs and PTSPs processes on the project.

9.1 Activity Hazard Analysis

An Activity Hazard Analysis (AHA) defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited prior, during and after the performance of work to further identify the hazards posed and control measures required.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 5. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

An AHA shall be prepared for all field activities performed by CH2M HILL and subcontractor activities during the course of the project. Hazard Controls (found in Sections 2.0 and its subsections of the HSP), the Hazard Analysis Table (Table 1), and applicable CH2M HILL CSs and SOPs should be used as a basis for preparing AHAs.

CH2M HILL subcontractors are required to provide AHAs specific to their scope of work on the project for acceptance by CH2M HILL. Each subcontractor shall submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-specific safety plan/accident prevention plan. Additions or changes in CH2M HILL or subcontractor field activities, equipment, tools or material to perform work or additional/different hazard encountered that require additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.

9.2 Pre-Task Safety Plans

Daily safety meetings are held with all project personnel in attendance to review the hazards posed and required H&S procedures/AHAs that apply for each day's project activities. The PTSPs serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews. At the start

of each day's activities, the crew supervisor completes the PTSP, provided in Attachment 5, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the AHA. The use of PTSPs better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of PTSPs is a common safety practice in the construction industry.

9.3 Loss Prevention Observations

Loss Prevention Observations (LPO's) shall be conducted by SC or designee for specific work tasks or operations comparing the actual work process against established safe work procedures identified in the project-specific HSP and AHAs. LPO's are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss. The SC or designee shall perform at least one LPO each week for tasks/operations addressed in the project-specific HSP or AHA. The SC or designee shall complete the LPO form in Attachment 5 for the task/operation being observed.

9.4 Loss/Near Loss Investigations

Loss/Near Loss Investigations shall be performed for CH2M HILL and subcontractor incidents involving:

- Person injuries/illnesses and near miss injuries
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The causes of Loss and Near Loss Incidents are similar, so by identifying and correcting the causes of Near Loss causes, future Loss incidents may be prevented. The following is the Loss/Near Loss Investigation Process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the questions: who, what, when, where and how.
- Draw conclusions, pitting facts together into a probable scenario.
- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a Lesson Learned to all project personnel.
- Filed follow-up on implemented corrective active action to confirm solution is appropriate.

The SC or designee shall perform an incident investigation, as soon as practical after incident occurrence during the day of the incident, for all Loss and Near Loss Incidents that occur on the project. Loss and Near Loss incident investigations shall be performed using the following incident investigation forms provided in Attachment 5:

- Incident Report Form (IRF)
- Root Cause Analysis Form

All Loss and Near Loss incident involving personal injury, property damage in excess of $1,000 or near loss incidents that could have resulted in serious consequences shall be investigated by completing the incident investigation forms and submitting them to the PM and RHSM within 24 hours of incident occurrence. A preliminary Incident Investigation and Root Cause Analysis shall be submitted to the

Project Manager and RHSM within 24 hours of incident occurs. The final Incident Investigation and Root Cause Analysis shall be submitted after completing a comprehensive investigation of the incident.

10.0 Approval

This site-specific HSP has been written for use by CH2M HILL only. CH2M HILL claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

Original Plan

Written/Approved By: Brian L. Parsley CSP **Date:July 10, 2009**

Revisions
Revisions Made By: Stephanie Park **Date: 01/27/11**

Revisions to Plan: Updated for 2010

Revisions Approved By: Michael Goldman **Date: 8/30/10**

Revisions
Revisions Made By: Tom Wiley **Date: 2/17/11**

Revisions to Plan: Plan revised to cover excavation and sampling of contaminated soils.

Revisions Approved By: Michael Goldman **Date: 2/18/11**

Revisions
Revisions Made By: Katherine Blinn **Date: 6/30/11**

Revisions to Plan: Plan revised to cover excavation of contaminated soils in residential areas.

Revisions Approved By: Michael Goldman **Date: July 11, 2011**

11.0 Attachments

Attachment 1: **Employee Signoff Form – Health and Safety Plan**
Attachment 2: **Chemical Inventory/Register Form**
Attachment 3: **Chemical-Specific Training Form**
Attachment 4: **Project Activity Self-Assessment Checklists/Permits**
Attachment 5: **Behavior Based Loss Prevention Forms**
Attachment 6: **Material Safety Data Sheets**
Attachment 7: **Tick Fact Sheet**
Attachment 8: **Working Alone Standard**

CH2M HILL Health and Safety Plan

Attachment 1

Health and Safety Plan Employee Sign-off Form

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name: **Project Number:**

EMPLOYEE NAME (Please print)	**EMPLOYEE SIGNATURE**	**COMPANY**	**DATE**

CH2M HILL Health and Safety Plan

Attachment 2

Chemical Inventory/Register Form

CH2MHILL

CHEMICAL INVENTORY/REGISTER FORM

Refer to Standard of Practice HSE-107 Attachment 1 for instructions on completing this form.

Location: _____

HCC: _____

☐ Office ☐ Warehouse ☐ Laboratory ☐ Project: _____

Project No.: _____

Regulated Product	Location	Container labeled (✓if yes)	MSDS available (✓if yes)
Sodium Hydroxide	Sample containers		

MSDS for the listed products will be maintained at: _____

CH2M HILL Health and Safety Plan

Attachment 3

Chemical-Specific Training Form

CH2MHILL

CHEMICAL-SPECIFIC TRAINING FORM

Refer to Standard Operating Procedure HSE-107 Attachment 1 for instructions on completing this form.

Location:	Project # :
HCC:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

CH2M HILL Health and Safety Plan

Attachment 4

Project Activity Self-Assessment Checklists/Permits/Forms

- **Hand and Power Tools**

CH2MHILL

HS&E Self-Assessment Checklist—HAND AND POWER TOOLS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: (1) CH2M HILL employees are exposed to hand and power tool hazards and/or (2) CH2M HILL provides oversight of subcontractor personnel who are exposed to hand and power tool hazards.

SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of hand and power tool use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

☐ Evaluate CH2M HILL employee exposure to hand and power tool hazards.
☐ Evaluate a CH2M HILL subcontractor's compliance with hand and power tool requirements.
Subcontractors Name: _____

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-210.

SECTION 1

	Yes	No	N/A	N/O
SAFE WORK PRACTICES (3.1)				
1. All tools operated according to manufacturer's instructions and design limitations.	☐	☐	☐	☐
2. All hand and power tools maintained in a safe condition and inspected and tested before use.	☐	☐	☐	☐
3. Defective tools are tagged and removed from service until repaired.	☐	☐	☐	☐
4. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
5. Power tools are not carried or lowered by their cord or hose.	☐	☐	☐	☐
6. Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.	☐	☐	☐	☐
7. Safety guards remain installed or are promptly replaced after repair.	☐	☐	☐	☐
8. Tools are stored properly.	☐	☐	☐	☐
9. Cordless tools and recharging units both conform to electrical standards and specifications.	☐	☐	☐	☐
10. Tools used in explosive environments are rated for such use.	☐	☐	☐	☐
11. Knife or blade hand tools are used with the proper precautions.	☐	☐	☐	☐
12. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors.	☐	☐	☐	☐

SECTION 2	Yes	No	N/A	N/O
GENERAL (3.2.1)				
13. PPE is selected and used according to tool-specific hazards anticipated.	☐	☐	☐	☐
14. Tools are tested daily to assure safety devices are operating properly.	☐	☐	☐	☐
15. Damaged tools are removed from service until repaired.	☐	☐	☐	☐
16. Power operated tools designed to accommodate guards have guards installed.	☐	☐	☐	☐
17. Rotating or moving parts on tools are properly guarded.	☐	☐	☐	☐
18. Machines designed for fixed locations are secured or anchored.	☐	☐	☐	☐
19. Floor and bench-mounted grinders are provided with properly positioned work rests.	☐	☐	☐	☐
20. Guards are provided at point of operation, nip points, rotating parts, etc.	☐	☐	☐	☐
21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid.	☐	☐	☐	☐
ELECTRIC-POWERED TOOLS (3.2.2)				
22. Electric tools are approved double insulated or grounded and used according to SOP HSE-206.	☐	☐	☐	☐
23. Electric cords are not used for hoisting or lowering tools.	☐	☐	☐	☐
24. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed.	☐	☐	☐	☐
25. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool.	☐	☐	☐	☐
26. Portable, power-driven circular saws are equipped with proper guards.	☐	☐	☐	☐
ABRASIVE WHEEL TOOLS (3.2.3)				
27. All employees using abrasive wheel tools are wearing eye protection.	☐	☐	☐	☐
28. All grinding machines are supplied with sufficient power to maintain spindle speed.	☐	☐	☐	☐
29. Abrasive wheels are closely inspected and ring-tested before use.	☐	☐	☐	☐
30. Grinding wheels are properly installed.	☐	☐	☐	☐
31. Cup-type wheels for external grinding are protected by the proper guard or flanges.	☐	☐	☐	☐
32. Portable abrasive wheels used for internal grinding are protected by safety flanges.	☐	☐	☐	☐
33. Safety flanges are used only with wheels designed to fit the flanges.	☐	☐	☐	☐
34. Safety guards on abrasive wheel tools are mounted properly and of sufficient strength.	☐	☐	☐	☐
PNEUMATIC-POWERED TOOLS (3.2.4)				
35. Tools are secured to hoses or whip by positive means to prevent disconnection.	☐	☐	☐	☐
36. Safety clips or retainers are installed to prevent attachments being expelled.	☐	☐	☐	☐
37. Safety devices are installed on automatic fastener feed tools as required.	☐	☐	☐	☐
38. Compressed air is not used for cleaning unless reduced to < 30 psi, with PPE, and guarded.	☐	☐	☐	☐
39. Manufacturer's safe operating pressure for hoses, pipes, valves, etc. are not exceeded.	☐	☐	☐	☐
40. Hoses are not used for hoisting or lowering tools.	☐	☐	☐	☐
41. All hoses >1/2-inch diameter have safety device at source to reduce pressure upon hose failure.	☐	☐	☐	☐
42. Airless spray guns have required safety devices installed.	☐	☐	☐	☐
43. Blast cleaning nozzles are equipped with operating valves, which are held open manually.	☐	☐	☐	☐
44. Supports are provided for mounting nozzles when not in use.	☐	☐	☐	☐
45. Air receiver drains, handholes, and manholes are easily accessible.	☐	☐	☐	☐
46. Air receivers are equipped with drainpipes and valves for removal of accumulated oil and water.	☐	☐	☐	☐
47. Air receivers are completely drained at required intervals.	☐	☐	☐	☐
48. Air receivers are equipped with indicating pressure gauges.	☐	☐	☐	☐
49. Safety, indicating, and controlling devices are installed as required.	☐	☐	☐	☐
50. Safety valves are tested frequently and at regular intervals to assure good operating condition.	☐	☐	☐	☐

HS&E Self-Assessment Checklist—HAND AND POWER TOOLS

SECTION 2 (continued)

	Yes	No	N/A	N/O
LIQUID FUEL-POWERED TOOLS (3.2.5)				
51. Liquid fuel-powered tools are stopped when refueling, servicing, or maintaining.	☐	☐	☐	☐
52. Liquid fuels are stored, handled, and transported in accordance with SOP HSE-403	☐	☐	☐	☐
53. Liquid fuel-powered tools are used in confined spaces in accordance with SOP HSE-203.	☐	☐	☐	☐
54. Safe operating pressures of hoses, valves, pipes, filters, and other fittings are not exceeded.	☐	☐	☐	☐
POWDER-ACTUATED TOOLS (3.2.6)				
55. Only trained employee operates powder-actuated tools.	☐	☐	☐	☐
56. Powder-actuated tools are not loaded until just prior to intended firing time.	☐	☐	☐	☐
57. Tools are not pointed at any employee at any time.	☐	☐	☐	☐
58. Hands are kept clear of open barrel end.	☐	☐	☐	☐
59. Loaded tools are not left unattended.	☐	☐	☐	☐
60. Fasteners are not driven into very hard or brittle materials.	☐	☐	☐	☐
61. Fasteners are not driven into easily penetrated materials unless suitable backing is provided.	☐	☐	☐	☐
62. Fasteners are not driven into spalled areas.	☐	☐	☐	☐
63. Powder-actuated tools are not used in an explosive or flammable atmosphere.	☐	☐	☐	☐
64. All tools are used with correct shields, guards, or attachments recommended by manufacturer.	☐	☐	☐	☐
JACKING TOOLS (3.2.7)				
65. Rated capacities are legibly marked on jacks and not exceeded.	☐	☐	☐	☐
66. Jacks have a positive stop to prevent over-travel.	☐	☐	☐	☐
67. The base of jacks are blocked or cribbed to provide a firm foundation, when required.	☐	☐	☐	☐
68. Wood blocks are place between the cap and load to prevent slippage, when required.	☐	☐	☐	☐
69. After load is raised, it is cribbed, blocked, or otherwise secured immediately.	☐	☐	☐	☐
70. Antifreeze is used when hydraulic jacks are exposed to freezing temperatures.	☐	☐	☐	☐
71. All jacks are properly lubricated.	☐	☐	☐	☐
72. Jacks are inspected as required.	☐	☐	☐	☐
73. Repair or replacement parts are examined for possible defects.	☐	☐	☐	☐
74. Jacks not working properly are removed from service and repaired or replaced.	☐	☐	☐	☐
HAND TOOLS (3.2.8)				
75. Wrenches are not used when jaws are sprung to the point of slippage.	☐	☐	☐	☐
76. Impact tools are kept free of mushroomed heads.	☐	☐	☐	☐
77. Wooden handles of tools are kept free of splinters or cracks and are tightly fitted in tool.	☐	☐	☐	☐

CH2MHILL

HS&E Self-Assessment Checklist—HAND AND POWER TOOLS

SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

Item #	Corrective Action Planned/Taken	Date Corrected

Auditor: ________________________________ Project Manager: ________________________________

CH2M HILL Health and Safety Plan

Attachment 5

Behavior Based Loss Prevention System Forms

Activity Hazard Analysis

Pre-Task Safety Plans

Loss Prevention Observation

Incident Report Form

Root Cause Analysis Form

Activity Hazard Analysis

Delete shaded instructional text when completing the form.
Reference the Job Hazard Analysis Guide for more complete instructions.

(Template Revision 7/2006)

Section 1: Task Identification	
Job/Activity/Task: Surface Soil Sampling – Hand Auger	Date: July 11, 2011
	Project Name: Walter Coke, Inc.
Brief Summary of the work: This AHA covers manual soil sampling.	Project Number: 392539
	Site Safety Coordinator: Adrian Teal
JHA Author/Team: Brian Parsley/DAY	Health & Safety Manager: Brian Parsley/DAY

Section 2: Hazard Analysis and Controls		
Work Activity Sequence	**Potential Health & Safety Hazards**	**Hazard Controls**
Task Preparation	General Site Risks	• No smoking onsite • No cell phone use when driving on Dow business • Daily tailgate meeting • Review the HASP general & project specific hazard sections. • AHA reviewed daily • Daily pre-use inspection of all equipment, PPE, and tools.
Mobilization/Demobilization	Vehicle Crash	• Check vehicle to ensure that turn signals, brake lights, headlights are working properly. Also check other safety components such as wiper fluid/blades, seat belts, & tires. • Drive defensively.

		• Maintain an overall view of the road conditions and traffic – be aware what is in front of you, to the sides and behind you. Check blind spots periodically. • Continually re-evaluate conditions and allow sufficient time to react. • Make sure other drivers are aware of your presence – do not linger in other's blind spots, make eye contact with pedestrians and other drivers, drive with your lights on. • Anticipate the actions of other drivers and leave yourself an out. • Allow aggressive drivers the opportunity to get around you, stay out of their way, stay out of their crash. • Maintain assured clear distance ahead. Do not use cellular telephones or other communication devices while operating a motor vehicle. Obey posted speed limits, adjust to changing road conditions such as rain/snow, and traffic conditions such as rush hour traffic and work zones. • Decide how you are going to leave the site when you first arrive when you park. • Park in marked parking areas/spaces when possible. Park off the street when possible. • Park close to your work area when possible. • Park in manner that allows for the safest access to sampling supplies in your vehicle. • Park in a manner that avoids the need to back-up the vehicle when leaving the site.
Walking to sampling site	Falls/slips Struck by vehicle	• Wear a highly visible traffic vest when working near roadways (w/in 15' of a 25 mph or > roadway). • Plan your path of travel to your work area.

	Biological hazards (see also HASP) Feral dogs	Walk the route to observe the terrain before you carry supplies to the site. • In areas with high groundcover that might obscure uneven terrain or ruts, walk the area first without carrying materials. Proceed slowly where slip/trip/fall hazards may not be visible/apparent. • Assess the work area for poison ivy/oak or other biological hazards. Set up ground cover tarp/sheeting if necessary to prevent contact with noxious/toxic plants if necessary. • Further assess your path of travel to the work area from your vehicle and relocate your vehicle if necessary. **Feral Dogs:** • Feral dogs usually do not have a fear of humans, and many will display highly aggressive behavior during encounters with people. • They often travel in packs and, like wolves, may have rendezvous sites and dens. Travel routes to and from these sites may be well defined and tempting for you to use as an access trail to a work area. • They are usually adept predators since their very existence demands the ability to feed themselves. • Because feral dogs are NOT a natural and desired part of the ecosystem, please report all encounters to the proper authorities regardless of where the encounter took place, be it urban or wilderness. • Packs or individuals will likely be dependent on landfills, livestock, wild game, or fruit crops for food. The availability of such resources will, in part, dictate their range as will the presence of effective cover and other large carnivores.

		Identifying: • Feral dogs come in all sizes and breeds. • They look like domestic dogs though they will probably be more haggard in appearance. • Note that coyote tracks and droppings will all be of the same general size whereas a pack of feral dogs will leave tracks and droppings of varied sizes. **Fighting Back:** • Do not run unless you're sure you can escape as this will trigger the dog's hunting instinct. • Though natural carnivores typically attack the throat, feral dogs are more indiscriminate in how and where they attack. That is, they will nip and bite anywhere. • Pepper spray will be a very effective deterrent and is proven against **bears**. (**Check local laws in your field area** first. It may not be legal to carry this.) **Treating an Attack:** • Expect to treat for widespread slashing and tearing as well as puncture wounds. Bleeding may be severe. Treat for shock and seek immediate medical attention. • Consider all bites and scratches to be infected. Tetanus, Rabies and tapeworms are among the numerous **pathogens** that can be transmitted to a victim.
Obtaining surface soil sample from the ground.	Injury from damaged hand tools. Back injury from twisting, over reaching, improper lifting or prying. Contact with contaminated soils. Slips/Falls. Exposure to airborne contaminants.	• Inspect soil plug sampler, hand trowel, shovel or other tools to be used to obtain soil sample. • Use proper body positioning when using tools. Seek a balanced body position where over reaching or stretching is not going to occur. Ensure solid footing when using shovels or other long handled tools. Get assistance if it is difficult to get the sample into or out of the soil. • Use a mechanical assist if the soil is very

		hard. • A tote/container with soil may be heavy; use care when lifting – get help, keep load close to body, lift with legs, and do not twist while moving. • Use proper PPE while obtaining samples. • Get help lifting coolers, containers and equipment if needed. • Be wary of traffic when working around the vehicle, particularly if proximate to a roadway or parking lot. • Maintain good housekeeping at work site. Properly store tools & materials to avoid clutter and trip hazards. • Practice dust suppression controls if visual dust present.

Package sample, prepare cooler, ship cooler.	Contact with contaminated soils
	
	Back injuries.
	
	Broken Glass
		• Handle soil with care – wear appropriate PPE
		• Use proper lifting procedure if removal of pump from pump from the recovery well.
		  • Feet shoulder width apart.
		  • Bend at knees not the back
		  • Position object close to the body
		  • Secure a firm grip
		  • Keep object close to body
		  • Lift with legs
		  • Avoid twisting at the waist.
		• Use leather gloves when handling or cleaning up broken glass.
		• Do not carry sample containers in a manner that risks breakage (loose bottles, dropping, etc.)
		• Inspect sample containers for breakage before opening. Discard cracked glassware.

Decontamination of equipment.		• Waste disposed of according to project's written Health and Safety Plan, and applicable legislation.

		• Dispose of excess soil and/or drill cuttings consistent with waste management plan. • Decontaminate all equipment and personnel immediately upon leaving areas which are potentially contaminated.

Section 3: Inspections, Equipment & Training Requirements		
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Photo Ionization Detector	Calibration of PID	Hazard Communication including review of Tetrachloropicolinic Acid MSDS
Hand Auger	Utility Locate prior to work.	40/8-Hour Hazardous Waste Training w/ current medical review
Slide Hammer		Site-specific indoct training
Sample equipment & containers		
Personal Protective Equipment (see HASP Amendment)		

Section 4: Record of Review/Communication		
Printed Name	**Signature**	**Date/Time Reviewed**
Safety Coordinator		
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

CH2MHILL **PRE-TASK SAFETY PLAN**

Project: _____ Location: _____ Date: _____

Supervisor: _____ Job Activity: _____

_____

Task Personnel:

_____

_____

List Tasks:

_____

_____

_____

_____

Tools/Equipment required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

_____

_____

_____

_____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	__Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	__ Pinch points	__ Poisonous plants/insects
__ Electrical	__ Cuts/abrasions	__Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__Heights/fall> 6'	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__Radiation	__ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__Welding/cutting	__ Demolition

Other Potential Hazards (Describe): _____

_____

_____

_____

CH2MHILL PRE-TASK SAFETY PLAN

Hazard Control Measures (Check all that apply):			
PPE __ Thermal/lined __ Eye __ Dermal/hand __ Hearing __ Respiratory __ Reflective vests __ Flotation device	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections	Fire Protection __ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/ Heavy equipment __ Backup alarms __ Hand/power tools __ Crane w/current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER __ First-aid kit __ Eye wash __ FA-CPR trained personnel __ Route to hospital	Heat/Cold Stress __ Work/rest regime __ Rest area __ Liquids available __ Monitoring __ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __Cranes and rigging	Training: __ Hazwaste __ Construction __ Competent person __ Task-specific (THA) __ Hazcom

FieldNotes:_____

_____

_____

_____

Loss Prevention Observation Form		
Project:	Observer:	Date:
Position/Title of worker observed:	Background Information/comments:	
Task/Observation Observed:		

- Identify and reinforce safe work practices/behaviors
- Identify and improve on at-risk practices/acts
- Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- Proactive PM/Site Manager support facilitates eliminating/reducing hazards (material/personnel resources)
- Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	**Consistent w/ H&S Program**	**Not Consistent w/ H&S Program**	**Observations/Comments**
Current & accurate Pre-Task Planning/Briefing (Project safety plan, AHA, PTSP, tailgate briefing, c., as needed)			**Positive Work Practices Observed:**
Personnel properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			**Questionable Activity/Condition Observed:**
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			**Actions/Comments:**
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			**Observed Worker's Corrective Actions/Comments:**
Other			

Incident Report Form

Type of Incident (Select at least one)

- ☐ Injury/Illness
- ☐ Property Damage
- ☐ Spill/Release
- ☐ Environmental/Permit Issue
- ☐ Near Miss
- ☐ Other

General Information (Complete for all incident types)

Preparer's Name: _____ Preparer's Employee Number: _____

Date of Report: _____ Date of Incident: _____ Time of Incident: _____ am/pm

Type of Activity (Provide activity being performed that resulted in the incident)

- ☐ Asbestos Work
- ☐ Confined Space Entry
- ☐ Construction Mgmt- Haz Waste
- ☐ Construction Mgmt - Non-Haz Waste
- ☐ Demolition
- ☐ Drilling-Haz Waste
- ☐ Drilling-Non Haz Waste
- ☐ Drum Handling
- ☐ Electrical Work
- ☐ Excavation Trench-Haz Waste
- ☐ Excavation Trench-Non Haz
- ☐ Facility Walk Through
- ☐ General Office Work
- ☐ Keyboard Work
- ☐ Laboratory
- ☐ Lead Abatement
- ☐ Motor Vehicle Operation
- ☐ Moving Heavy Object
- ☐ Other (Specify) _____
- ☐ Process Safety Management
- ☐ Tunneling
- ☐ Welding
- ☐ Wetlands Survey
- ☐ Working from Heights
- ☐ Working in Roadways
- ☐ WWTP Operation

Location of Incident (Select one)

- ☐ Company Premises (JVI Office: _____)
- ☐ Field (Project #: _____ Project/Site Name: _____ Client: _____)
- ☐ In Transit (Traveling from: _____ Traveling to: _____)
- ☐ At Home

Geographic Location of Incident (Select region where the incident occurred)

- ☐ Northeast
- ☐ Southeast
- ☐ Northwest
- ☐ Southwest
- ☐ Corporate
- ☐ Canadian
- ☐ Asia Pacific
- ☐ Europe Middle East
- ☐ Latin America

If a CH2MHILL subcontractor was involved in the incident, provide their company name and phone number: _____

Describe the Incident (Provide a brief description of the incident): _____

_____

_____

_____

_____

Injured Employee Data (Complete for Injury/Illness incidents only)

If CH2M HILL employee injured

Employee Name: _____ Employee Number: _____

If CH2M HILL Subcontractor employee injured

Employee Name: _____ Company: _____

Injury Type

- ☐ Allergic Reaction
- ☐ Amputation
- ☐ Asphyxia
- ☐ Bruise/Contusion/Abrasion
- ☐ Burn (Chemical)
- ☐ Burn/Scald (Heat)

- [ ] Cancer
- [ ] Carpal Tunnel
- [ ] Concussion
- [ ] Cut/Laceration
- [ ] Dermatitis
- [ ] Dislocation
- [ ] Electric Shock
- [ ] Foreign Body in eye
- [ ] Fracture
- [ ] Freezing/Frost Bite
- [ ] Headache
- [ ] Hearing Loss
- [ ] Heat Exhaustion
- [ ] Hernia
- [ ] Infection
- [ ] Irritation to eye
- [ ] Ligament Damage
- [ ] Multiple (Specify)

_____

- [ ] Muscle Spasms
- [ ] Other (Specify)

_____

- [ ] Poisoning (Systemic)
- [ ] Puncture
- [ ] Radiation Effects
- [ ] Strain/Sprain
- [ ] Tendonitis
- [ ] Wrist Pain

Part of Body Injured

- [ ] Abdomen
- [ ] Ankle(s)
- [ ] Arms (Multiple)
- [ ] Back
- [ ] Blood
- [ ] Body System
- [ ] Buttocks
- [ ] Chest/Ribs
- [ ] Ear(s)
- [ ] Elbow(s)
- [ ] Eye(s)
- [ ] Face
- [ ] Finger(s)
- [ ] Foot/Feet
- [ ] Hand(s)
- [ ] Head
- [ ] Hip(s)
- [ ] Kidney
- [ ] Knee(s)
- [ ] Leg(s)
- [ ] Liver
- [ ] Lower (arms)
- [ ] Lower (legs)
- [ ] Lung
- [ ] Mind
- [ ] Multiple (Specify)
- [ ] Neck
- [ ] Nervous System
- [ ] Nose
- [ ] Other (Specify)

_____

- [ ] Reproductive System
- [ ] Shoulder(s)
- [ ] Throat
- [ ] Toe(s)
- [ ] Upper Arm(s)
- [ ] Upper Leg(s)
- [ ] Wrist(s)

Nature of Injury

- [ ] Absorption
- [ ] Bite/Sting/Scratch
- [ ] Cardio-Vascular/Respiratory System Failure
- [ ] Caught In or Between
- [ ] Fall (From Elevation)
- [ ] Fall (Same Level)
- [ ] Ingestion
- [ ] Inhalation
- [ ] Lifting
- [ ] Mental Stress
- [ ] Motor Vehicle Accident
- [ ] Multiple (Specify)

_____

- [ ] Other (Specify)

_____

- [ ] Overexertion
- [ ] Repeated Motion/Pressure
- [ ] Rubbed/Abraded
- [ ] Shock
- [ ] Struck Against
- [ ] Struck By
- [ ] Work Place Violence

Initial Diagnosis/Treatment Date: _____

Type of Treatment

- [ ] Admission to hospital/medical facility
- [ ] Application of bandages
- [ ] Cold/Heat Compression/Multiple Treatment
- [ ] Cold/Heat Compression/One Treatment
- [ ] First Degree Burn Treatment
- [ ] Heat Therapy/Multiple treatment
- [ ] Multiple (Specify)

_____

- [ ] Heat Therapy/One Treatment
- [ ] Non-Prescriptive medicine
- [ ] None
- [ ] Observation
- [ ] Other (Specify)

_____

- [ ] Prescription- Multiple dose
- [ ] Prescription- Single dose
- [ ] Removal of foreign bodies
- [ ] Skin Removal
- [ ] Soaking therapy- Multiple Treatment
- [ ] Soaking Therapy- One Treatment
- [ ] Stitches/Sutures
- [ ] Tetanus
- [ ] Treatment for infection
- [ ] Treatment of 2nd /3rd degree burns
- [ ] Use of Antiseptics - multiple treatment
- [ ] Use of Antiseptics - single treatment
- [ ] Whirlpool bath therapy/multiple treatment
- [ ] Whirlpool bath therapy/single treatment
- [ ] X-rays negative
- [ ] X-rays positive/treatment of fracture

Number of days doctor required employee to be off work: _____
Number of days doctor restricted employee's work activity: _____
Equipment Malfunction: Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐
Describe how you may have prevented this injury:

_____

_____

_____

Physician Information

Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Hospital Information

Name: _____
Address: _____
City: _____
Zip Code: _____
Phone: _____

Property Damage (Complete for Property Damage incidents only)

Property Damaged: _____ Property Owner: _____
Damage Description: _____
Estimated Amount: $ _____

Spill or Release (Complete for Spill/Release incidents only)

Substance (attach MSDS): _____ Estimated Quantity: _____
Facility Name, Address, Phone No.:

_____

Did the spill/release move off the property where work was performed?:

_____

Spill/Release From: _____ Spill/Release To: _____

Environmental/Permit Issue (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue:

_____

Permit Type:

_____

Permitted Level or Criteria (e.g., discharge limit):

_____

Permit Name and Number (e.g., NPDES No. ST1234):

_____

Substance and Estimated Quantity:

_____

Duration of Permit Exceedance:

_____

Verbal Notification (Complete for all incident types)(Provide names, dates and times)

CH2M HILL Personnel Notified: _____
Client Notified: _____

Root Cause Investigation

This attachment is provided to assist in accessing, completing, and reviewing an incident investigation. It is important to remember the following when conducting an investigation:

Gather relevant facts, focusing on fact-finding, not fault-finding.
Draw conclusions, pitting facts together into a probable scenario.
Determine incident root cause(s), the basic causes why an unsafe act/condition existed.
Develop and implement solutions, matching all identified root causes with solutions.

Documentation
The following should be included in the Incident Report Form (IRF) to document the incident.

Description

Provide a description of the event and the sequence of events and actions that took place prior to the incident. Start with the incident event and work backwards in time through all of the preceding events that directly contributed to the incident. The information should identify why the event took place as well as who was involved, when and where the event took place, and what actions were taken.

Cause Analysis

Using the form and flowchart in this attachment the root cause of the incident will be determined. This form must be retained in the project and/or regional HS&E files.

Immediate Causes—List the substandard actions or conditions that directly affected the incident. The following are examples of immediate causes:

> ***Substandard Actions***: Operating equipment without authority; failure to warn; failure to secure; operating at improper speed; making safety device inoperable; using defective equipment; failing to use PPE; improper loading; improper lifting; improper position for task; under influence of alcohol or drugs; horseplay.
>
> ***Substandard Conditions:*** Exposure to hazardous materials; exposure to extreme temperatures; improper lighting; improper ventilation; congestion; exposure to fire and explosive hazard; defective tools, equipment or materials; exposure to extreme noise; poor ventilation; poor visibility; poor housekeeping.

Basic Causes—List the personal and job factors that caused the incident. The following are examples of basic causes:

> ***Personal Factors:*** Capability; knowledge; skill; stress; motivation.
>
> ***Job Factors:*** Abuse or misuse; engineering; maintenance; purchasing; supervision; tools and equipment; wear and tear; work standards.

Corrective Action Plan

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a time frame for completion. Be sure the corrective actions address the causes. For example, training may prevent recurrence of an incident caused by a lack of knowledge, but it may not help an incident caused by improper motivation.

The following are examples of management programs that may be used to control future incidents. These programs should be considered when determining specific corrective actions.

Management Programs: Accident/incident analysis; emergency preparedness; engineering controls; general promotion; group meetings; health control; hiring and placement; leadership and administration; management training; organizational rules; personal protective equipment; planned inspections; program audits; program controls; purchasing controls; task analysis and procedures; task observation.

Loss/Near-Loss Investigation Report Form

Employer Information

Company Name: _____

Project Name: _____ Task Order: _____

Project Location: _____

Task Location: _____

Job Assignment: _____

Preparer's Name: _____ Preparer's Employee Number: _____

Incident Specific Information

Date of Incident: _____ Time of Incident: _____ a.m./p.m.

Location of incident:
☐ Company premises ☐
☐ Field Other: _____
☐ In Transit _____

Address where the incident occurred: _____

Equipment Malfunction: Yes ☐ No ☐ Activity was a Routine Task: Yes ☐ No ☐

Describe any property damage: _____

Specific activity the employee was engaged in when the incident occurred:

_____

_____

All equipment, materials, or chemicals the employee was using when the incident occurred:

_____

_____

Describe the specific incident and how it occurred:

_____

_____

_____

_____

_____

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_____

_____

Describe how this incident may have been prevented:

Contributing Factors (Describe in detail why incident occurred):

Date employer notified of incident: _____ To whom reported: _____

Witness Information (First Witness)

Name: _____
Employee Number_____
Address:_____
City: _____
Zip Code : _____
Phone: _____

Witness Information (Second Witness)

Name: _____
Employee Number_____
Address:_____
City: _____
Zip Code : _____
Phone: _____

Additional information or
comments:_____

A ROOT CAUSE ANALYSIS FORM MUST BE COMPLETED FOR ALL INJURIES AND ILLNESSES OR ACTUAL LOSSES.

COMPLETION OF THE ROOT CAUSE ANALYSIS FORM FOR NEAR LOSSES IS OPTIONAL, AT THE DISCRETION OF THE HEALTH AND SAFETY MANAGER.

Determination of Root Cause(s)

For losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss or near loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more "root causes" and "contributing factors". The "root cause" is the primary or immediate cause of the incident, while a "contributing factor" is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors". Causes that pertain to the *system* within which the loss or injury occurred should be referred to as "job factors".

Personal Factors

- Lack of skill or knowledge, lack of motivation
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks that there is no personal benefit to always doing the job according to standards

Job Factors

- Lack of or inadequate operational procedures or work standards.
- Inadequate communication of expectations regarding procedures or standards
- Inadequate tools or equipment

Other

- Uncontrollable Factors*

The root cause(s) could be any one or a combination of these seven possibilities or some other "uncontrollable factor". In the vast majority of losses, the root cause is very much related to one or more of these seven factors.

*** Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.**

Root Cause Analysis Form

Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. **Lack of skill or knowledge**
2. **Lack of or inadequate operational procedures or work standards**
3. **Inadequate communication of expectations regarding procedures or work standards**
4. **Inadequate tools or equipment**
5. **Correct way takes more time and/or requires more effort**
6. **Short-cutting standard procedures is positively reinforced or tolerated**
7. **Person thinks there is no personal benefit to always doing the job according to standards**
8. **Uncontrollable Factor (Note: Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.)**

RCC #	Root Cause(s)	Corrective Actions	RC[1]	CF[2]	Due Date	Completion Date	Date Verified

[1] RC = Root Cause; [2] CF = Contributing Factors (check which applies)

Investigation Team Members

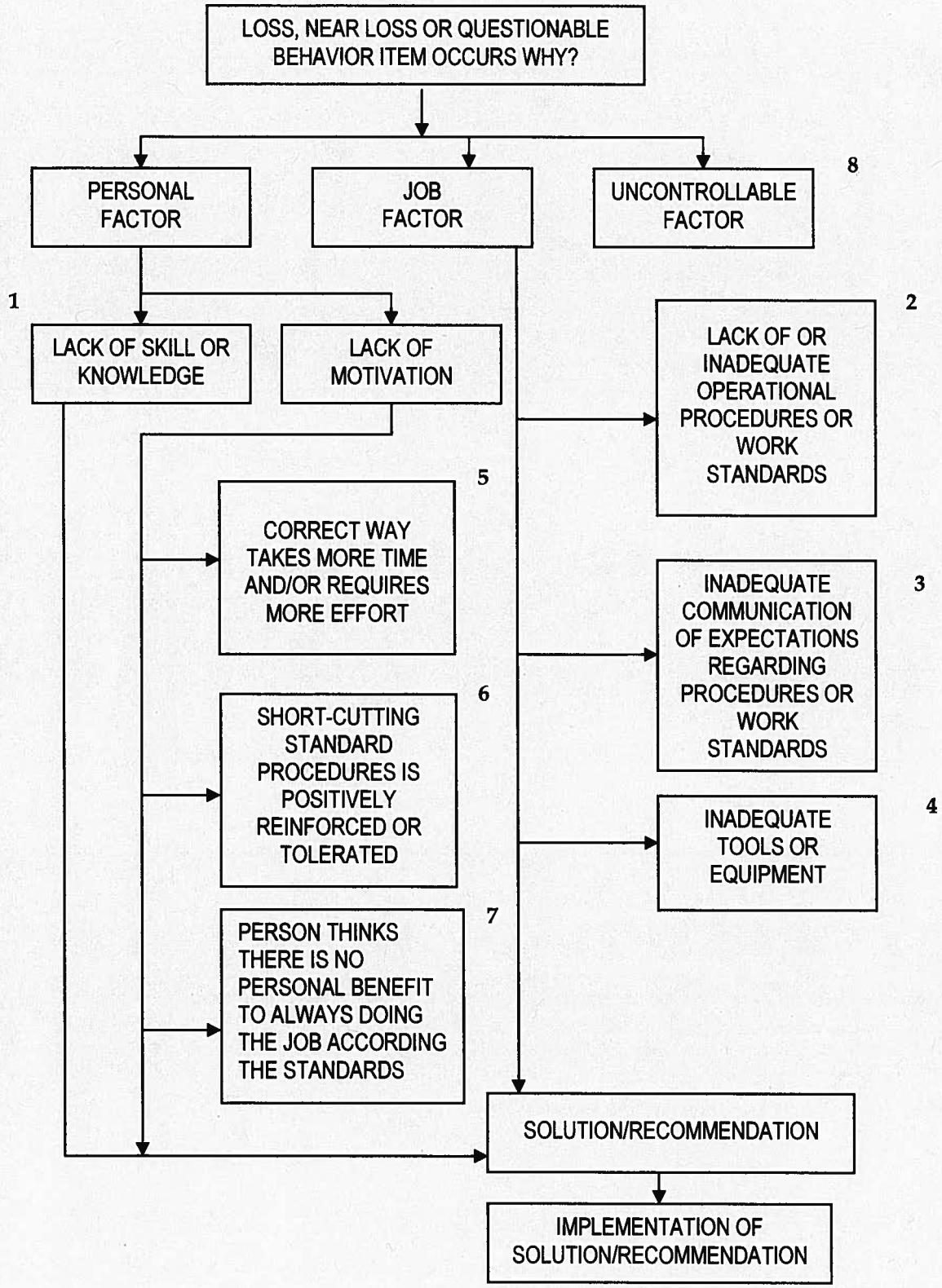
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis Flow Chart



Emergency Nurse Assistance Instructions
(CH2M HILL personnel only)

- After informing their supervisor (CH2M HILL Project Manager), the injured employee calls CH2M HILL's contracted Occupational Nurse.

- 24-hour CH2M HILL Emergency Nurse Assistance
- 1-866-893-2514
- The Occupational Injury Nurse listens to the injured employee to understand the injury/illness.
- Employee is provided guidance on appropriate treatment options (triage).
- If instructed to visit a medical facility by the Occupational Injury Nurse, the Supervisor is responsible for instructing the injured employee to take a copy of the **CH2M HILL Initial Medical Treatment Form** with them to the physician, clinic or hospital.
- Appropriate treatment details are handled by the Occupational Injury Nurse, and Workers Compensation Groups.
- Nurse communicates and troubleshoots with and for employee through full recovery
- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the CH2M HILL PM.
- For work-related injuries or illnesses to CH2M HILL personnel, contact and help Human Resources administrator complete a Hours and Incident Tracking System (HITS) Form. HITS must be completed within 24 hours of incident.

CH2MHILL **INITIAL MEDICAL TREATMENT FORM**

To be completed by CH2M HILL Supervisor – Send with employee visiting medical facility or forward within 24 hours.

Employee name: _____ Date of Injury: _____
Supervisor: _____ HS
Representative: _____
Visit Authorized by: _____ Phone #; _____

CH2M HILL Workers Compensation Administrator: Cambridge
Send Bills to: CH2M HILL
Attn: Jennifer Rindahl
P.O. Box 22508
Denver, Colorado 80222-0508

To be completed by medical provider:

Physician's name: _____ Phone #: _____
Address: _____
CH2M HILL employee: _____ has been treated for: _____

It is the policy of CH2M HILL to provide temporary modified duty whenever possible for employees with physical restrictions resulting from an occupational injury or illness.

☐ Released to full duty

☐ Released to restricted duty only (list restrictions below)

☐ Out of work until _____(date)

Please list any physical restrictions:

_____

_____

Expected duration of restricted duty?

_____

CH2M HILL would like the best and most efficient care extended to all our employees. Please recommend over-the-counter (OTC) medication as a suitable alternative when medically feasible.

☐ Prescribed medication: _____

☐ Recommended OTC alternative: _____

Date of follow-up appointment: _____

Physician's signature: _____ Date: _____

Please return this form to the injured employee and FAX to Health Resources at 1-800-853-2641. If you want to discuss the employee's work restrictions, please call the person listed in the "Visit Authorized by" field.

CH2M HILL Health and Safety Plan

Attachment 6

Material Safety Data Sheets

CH2M HILL Health and Safety Plan

Attachment 7

Tick Fact Sheet

Tick-Borne Pathogens — A Fact Sheet

Most of us have heard of Lyme disease or Rocky Mountain Spotted Fever (RMSF), but there are actually six notifiable tick-borne pathogens that present a significant field hazard. In some areas, these account for more than half of our serious field incidents. The following procedures should be applied during any field activity—even in places that are predominantly paved with bordering vegetation.

Hazard Recognition

An important step in controlling tick related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs and symptoms of tick-borne illnesses.

Tick Identification

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

These varieties and their geographical locations are illustrated on the following page.

Tick Habitat

In eastern states, ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture.

On the Pacific Coast, the bacteria are transmitted to humans by the western black-legged (deer) tick and habitats are more diverse. For this region, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

Illnesses and Signs & Symptoms

There are six notifiable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite—normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

- Lyme (bacteria)
- RMSF (bacteria)
- Ehrlichiosis (bacteria)
- STARI (Southern Tick-Associated Rash Illness) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs & symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. For Lyme disease, the bite area will sometimes resemble a target pattern. A variety of long-term symptoms may result if the illness is left untreated, including debilitating effects and death.

Deer Tick

From Left: adult female, adult male, nymph, and larvae Deer Tick (cm scale)

Lone Star Tick

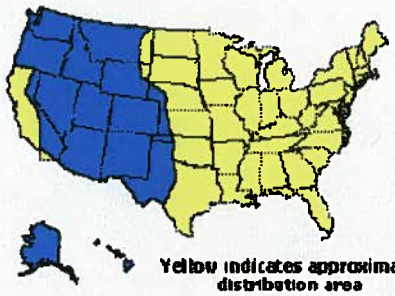
Dog Tick

Rocky Mountain Wood Tick

Distribution of Deer Tick (dark green)

Distribution of Pacific Deer Tick (dark green)

Distribution of Lone Star Tick (Green)



Hazard Control

The methods for controlling exposure to ticks include, in order of most- to least-preferred:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acracide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved. Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants—tick-borne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction through the use of tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative maintenance such as removing leaf litter and trimming grass and brush. Tick populations can be reduced by between 72 and 100 percent when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant or to a licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

Personal Protection

After other prevention and controls are implemented, personal protection is still necessary to control exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be easily seen, wear light-colored clothing. Full-body New Tyvek (paper-like disposable coveralls) may also be used
- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots
- Wear long-sleeved shirts, a hat, and high boots
- Apply DEET repellent to exposed skin or clothing per product label
- Apply permethrin repellent to the outside of boots and clothing before wearing, per product label
- Frequently check for ticks and remove from clothing
- At the end of the day, search your entire body for ticks (particularly groin, armpits, neck, and head) and shower
- To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands and/or wear surgical-style nitrile gloves any time ticks are handled

Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid situations such as hand-to-face contact, eating, drinking, and smoking when applying or using repellents.

Remove and wash clothes per repellent product label. Chemical repellents should not be used on infants and children.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMErix™ Lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician.

Tick Check

A tick check should be performed after field survey before entering the field vehicle (you do not want to infest your field vehicle with ticks). Have your field partner check your back; the backs of your legs, arms, and neck; and your hairline. Shake off clothing as thorough as possible before entering the vehicle. Once the field day is complete, repeat this procedure and perform a thorough self check.

If a tick has embedded itself into the skin, remove the tick as described below.

Tick Removal

1. Use the tick removal kit obtained through the CH2M HILL Milwaukee warehouse, or a fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.

Tick Bites\Tick Remover.pdf

2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.

3. Avoid squeezing, crushing or puncturing the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.

4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.

5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.

6. Should you wish to save the tick for identification, place it in a plastic bag, with the date of the tick bite, and place in your freezer. It may be used at a later date to assist a physician with making an accurate diagnosis (if you become ill).

Note: Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

First-Aid and Medical Treatment

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Individuals previously infected with Lyme disease does not confer immunity—re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

The employee should contact the Injury Management/Return To Work provider (IMRTW), WorkCare using the toll-free number 866-893-2514 to report the tick bite. WorkCare will follow-up with each CH2M Hill employee who reports a tick bite and is at risk of developing Lyme disease by monitoring for symptoms up to 45 days, and will refer the employee to a medical provider for evaluation and treatment as necessary.

CH2M HILL Health and Safety Plan

Attachment 8

Working Alone Standard

CALL - IN CONTACT FORM

Date of site work:_____ Expected start time:_____

Name of CH2M HILL employee in the field:_____

Name of CH2M HILL employee responsible to receive contact:

Client Emergency Contact (if any):

CH2M HILL employee's contact numbers:

Radio #_____

Cell Phone #_____

Address and Location of work:_____

Directions/Map:

Planned Activity:_____

Specified Frequency and time for call in:_____

Time	Verified	Location

If lone worker fails to call in at specified frequency/time:

1) Call worker's radio and cell to determine if an emergency exists.
2) If no reply, immediately call Client security/emergency service if there is one at the site.
3) If there is no client security call Emergency Services (911). Inform the dispatcher there is a lone worker that cannot be contacted and there may be an emergency on site. Provide the lone worker's name, their last known location, and your contact information.
4) After Emergency Services have been contacted, call the other emergency contacts, Project Manager, and Health and Safety Manager.

Lone Worker Protocol