SEAS Islands Alliance URGE Pod

Deliverable: Safety Plan

SEAS Safety Plan – A work in progress to be revisited and refined
a) Code of conduct – See Appendix 1

b) Process for reporting violations, (see Complaints and Reporting Policy, Session 2)
As an NSF Includes Alliance, current reporting of violations follows each member's institutional policies. We do have agreed upon SEAS Islands Alliance rules of engagement, which are available on our interactive web portal. This is not public, but is available to all members of the Alliance and included in the URGE Session 2 deliverables. The SEAS code of conduct addresses behavior at SEAS events. The SEAS Steering Committee, or equivalent Event Staff, are currently tasked with providing direction on participant behavior and with taking appropriate action to ensure the safety, security and well-being of SEAS event participants.

c) Outline training resources that are available and requirements for antidiscrimination, bystander intervention, and de-escalation training.
The Alliance does not have mechanisms in place for making these resources available to our team. We do have a plan for expanding our online training resources and expanding discussions in these areas across and within Hubs. Many of the SEAS Alliance team members have participated in a variety of trainings to learn about antidiscrimination behavior. However, we do not believe that either bystander intervention or de-escalation training is currently provided by the Hubs, though recent discussions with the Puerto Rico Hub finds some of the PIs home institutions are seeking training resources on bystander intervention.

d) For field work, include a racial risk assessment of sites, a pre-departure checklist of discussions within the field team, procedures for documenting incidents in the field, as well as additional required or supported training.
Field work for women, LGBTQ, BIPOC, and people with disabilities has long posed a serious risk and has often excluded access for some to participate. Recently, the risks and exclusionary practices of field work are beginning to be discussed within academic and government organizations where expectations of fieldwork participation have been high, but with little recognition or discussion of potential risk or exclusion.

Field work risk prompted a passionate and fairly alarming discussion in our POD. The majority of our pod (all women) had a story to share about harassment or exclusion during field work. Some shared stories or anecdotes about racial risk, too. SEAS Islands Alliance mentors from the USVI Hub and the Puerto Rico (PR) Hub have both engaged with their students regarding field work, risks and issues of inclusion. The materials they have developed for their labs and other projects are available for adaptation for use as procedures for fieldwork for the Hubs.
These materials include, but are not limited to: 1) The NSF Centro TORTUGA project in Puerto Rico instructions for undergraduate students participating in the summer field workshop, a code of conduct, a survey instrument, and a discussion session for undergraduates. The discussion session is conducted so mentors can learn from the students about their skills and knowledge regarding fieldwork, answer questions, further explain what the summer fieldwork will entail and discuss student concerns (Appendix 2). PI Harris has a safety analysis checklist when preparing for a project for her lab at the University of Maryland Center for Environmental Science. In addition, some of her field work requires complying with safety protocols developed by the consulting firm CH2M (Appendix 3). Co-PI Moser along with collaborator Mike Allen have a program on sexual harassment for the Maryland Sea Grant NSF REU program and are looking at how to incorporate safe field work training and bystander intervention into the program. Both the work in the Harris lab and the REU intervention work could be adapted for SEAS.
Importantly, the SEAS Islands Alliance PIs and the Steering Committee anticipate seeking other materials on conducting fieldwork from Hub members and discuss how and what we should implement across the Hubs to strengthen our fieldwork guidance and work towards making it safe and inclusive for all. This may mean

exploring some modifications to existing work to ensure we meet our guidance. However, materials to evaluate and address racial risk doing fieldwork need to be solicited and developed for use across the SEAS Islands Alliance.

In our Pod discussion we covered a plethora of hazards to consider when doing marine science fieldwork, though concerns about racism and sexual harassment when doing field work dominated the discussion. Here are just some of them.

- *Boating safety, risk around water activities, risks working in and around water*
- *Injury from snake and insect bites*
- *Injury and discomfort from plants (scratches, cuts, allergic reactions)*
- *Infection risks due to cuts*
- *Sunburn, hypothermia, dehydration risks*
- *Human risks: working alone makes women vulnerable to sexual harassment, attack and other violence*
- *Poor training in outdoor skills (staying oriented, variety of camping skills, correct clothing for field work, preparation for physical discomfort in field work)*
- *Challenges of team work, balance of workload, equitable distribution of work may lead many to be excluded, disregarded or given little voice in task distribution*
- *Chemicals and other potentially hazardous materials used in the field, or exposure to contaminants while conducting fieldwork in polluted areas*
- *Risks driving to and from field locations. Risks driving with other drivers*
- *Risks lifting, moving and securing heavy or awkward equipment*
- *Lack of knowledge of knots to secure equipment.*
- *Understanding safe maintenance and appropriate use of field equipment*
- *Understanding how to correctly use personal protective equipment*
- *Uneven walking surfaces*
- *Assessing fatigue and when work because more dangerous because of fatigue*
- *Risk of hazardous terrain. Desolate or steep terrain.*
- *Working in areas where people don't look like you.*
- *Using manual and hand powered tools, knives, electrical equipment*

Our URGE team is committed to advancing the work of the SEAS Islands Alliance to ensure we have robust safety plans in place. These must include guidance on racial risk how people with disabilities are often excluded from many types of fieldwork.
The following appendices provide some of the safety plan materials we have in place for some parts of the SEAS Islands Alliance.

APPENDIX 1
SEAS Islands Alliance Code of Conduct – Draft

SEAS Islands Alliance
Event and Collaboration Code of Conduct

The SEAS Islands Alliance ("SEAS") is committed to providing safe and welcoming environments for all who participate in SEAS Events. SEAS prohibits and will not tolerate any form of harassment, bullying, or discrimination. Together, we can ensure that SEAS Events support free expression and exchange of scientific ideas in environments that are positive and productive for all.

Purpose

SEAS has established this Event Code of Conduct (the "Code") to serve as a guideline for the professional conduct of anyone attending or participating in a SEAS Event, as well as the consequences for unacceptable behavior. We expect you to follow this Code so that you and other participants can enjoy the Event responsibly and with respect for the rights of others. Failure to abide by this Code is subject to corrective action and sanctions, including refused admission, ejection, banishment, and other penalties consistent with this Code.

Scope and Applicability

The Code applies to all attendees, media representatives, speakers, exhibitors, sponsors, staff, contractors, volunteers, organizers, and other guests (collectively referred to as "Participants") of official SEAS programs, conferences, events, online and in-person meetings, social gatherings, and other activities held, sponsored, or affiliated with SEAS ("Events"). By attending any SEAS Event, you agree to abide by this Event Code of Conduct.

Expected Behavior

The following behaviors are expected and requested of all Event Participants:

- Behaving in a courteous and professional manner;
- Treating all participants with respect, dignity, and consideration, in the spirit of valuing a diversity of views and opinions;
- Being considerate, respectful, and collaborative in your communication and actions;
- Discussing differences and critiquing ideas in a non-confrontational manner with due regard for the viewpoints of others;
- Refraining from demeaning, discriminatory, or harassing behavior and speech;
- Reporting suspected inappropriate behavior directed at yourself or others;
- Respecting the rules, policies, and property of SEAS and its contracted Event facilities and vendors; and
- Complying with all applicable laws and regulations.

Prohibited Behavior

Violations of this Code include but are not limited to the following:

- Harassment, which is defined for purposes of this Code to include unwelcome or offensive verbal, visual, or physical contact directed at any Participant, including conduct, comments, or images that a person would reasonably find offensive, demeaning, or hostile;
- Sexual harassment, which is defined for purposes of this Code to include unwelcome, unsolicited, and unreciprocated sexual advances, requests for sexual favors, and other verbal or physical conduct or gesture of a sexual nature that has or that might reasonably be expected or be perceived to offend, humiliate, or intimidate another person;
- Exhibiting behavior that is unruly or disruptive, or that endangers the health or safety of yourself or others;
- Discriminatory conduct based on race, sex, sexual orientation, gender expression or identity, transgender status, age, national origin, disability, religion, marital status, veteran status, political affinity, or any other characteristic protected by law;
- Deliberate intimidation, threatening, stalking, or following;
- Sustained disruption of portions of the Event;
- Invasion of privacy;
- Actual or threatened pushing, shoving, or use of any physical force whatsoever against any person;
- Possession of a weapon, or use of any item in a way that may cause danger to others;
- Destruction, theft, dismantlement, defacement, abuse, or intentional misuse of SEAS or SEAS-contracted venues, property, equipment, signage, or supplies;
- Failure to comply with directions of SEAS staff or venue personnel regarding Event operations or emergency response procedures;
- Retaliation against participants for reporting activity that he or she reasonably believed to be in violation of this Code; and
- Knowingly and falsely reporting violations of this Code in bad faith.

Moreover, this Code is not intended to be all inclusive, and it is likely there will be conduct issues that it does not specifically address. In that event, as in all others, Participants are expected to follow the direction of SEAS Steering Committee who will take appropriate action to ensure the safety, security and well-being of Participants.

Collaboration Agreement

The project welcomes interactions with people outside the initial team that could enhance our project. If a new collaborator's work would substantially contribute to the core project activities, please discuss this collaboration with the SEAS Steering Committee co-leads as a way to manage overlapping interests and coordinate activities that involve new collaboration.

The project acknowledges that each institutional site may want to have access to the research data in an anonymized but publishable format. Any manuscripts that make use of this data would acknowledge the project per NSF guidelines. The SEAS Steering Committee would be consulted to ensure compliance with NSF grant guidelines.

The initial lead on a project component will have initial primary control (first authorship) over manuscripts/modules that are directly related to their

stated objectives. For Hub-level authorship, the Hub Lead is most likely to have primary control. For Alliance-level authorship, primary control is most likely held by the research team, evaluator, or backbone organization. As ideas emerge and approach the stage at which a manuscript might be possible, we expect that all project participants within that project component will be informed and given the opportunity to participate in manuscript/module writing.

In order to be considered a co-author, more than one of the following key activities must be done: contributing data, contributing analyses, developing figures/tables, contributing ideas and/or interpretations, writing. In addition, all co-authors must contribute to the development of the manuscript/module by writing draft text, providing critical feedback on the writing, and/or editing AND must read and approve the final manuscript/module. Authorship order should be discussed early on and revisited periodically; we encourage authorship attribution statements, which most journals will accommodate. The lead author (first author) is expected to coordinate and manage the communication and activities needed to guide the manuscript/module forward, as well as take on duties associated with submission, revision, re-submission and be the corresponding author. As manuscripts are developed, attention should be paid to career stage and other needs of authors.

Reporting Unacceptable Behavior

If you believe you are being subjected to inappropriate conduct, believe someone else is being subjected to inappropriate conduct, or have any other concerns, please do not hesitate to contact SEAS Event staff who can work with SEAS leadership to resolve the situation. SEAS Event staff will be happy to assist those experiencing inappropriate conduct to enable them to feel safe for the duration of the Event. If you or someone else is in immediate danger, or if you see something suspicious or would like to report a security issue or emergency, please contact venue security or local law enforcement.

Violations of this Code are taken seriously and should be promptly reported to any SEAS Event staff present. Share as much information as you can to help us make a thorough investigation ofthe incident. SEAS will investigate all incidents reported at an Event with discretion. Participants are required to maintain the confidentiality of materials submitted to or received by SEAS under this Code. SEAS shall make reasonable efforts to maintain the confidentiality of relevant materials but may disclose case-related materials or information in response to legal process, when already publicly known, or when SEAS leadership otherwise determines disclosure is in the best interests of SEAS.

Consequences of Participant Engagement in Prohibited Conduct

Event Participants asked to stop engaging in prohibited conduct are expected to comply immediately.

SEAS, in its sole discretion, will determine the nature of the Participant conduct that warrants corrective action as well as the corrective action to be taken. Corrective action may take any of the following forms: verbal warning; expulsion from the Event; bar from future SEAS Events; and/or notifying appropriate authorities. To protect all parties involved, SEAS will generally not make any detailed public statements about Code incidents. The decision(s) of SEAS are final. SEAS may establish more detailed procedural guidelines for resolving conduct matters that are consistent with the provisions of these bylaws.

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For questions regarding the Event Code of Conduct, please contact one of the SEAS's Steering Committee co-leads, Susan Park or Karen Peterman. This Code is subject to change and may be revised without further notice.

Approved 26 January 2020

APPENDIX 2
SEAS Islands Alliance
Puerto Rico Hub

These are some of the materials the PR Hub PIs developed for the undergraduate students who were participating in our summer weeklong workshop which required several days living away from home to do fieldwork at Laguna Grande. These materials are available for adaptation for the SEAS Islands Alliance summer workshops and other cross-hub activities.

1) Instructions and Code of Conduct for undergraduate students participating in our summer workshop (Centro TORTUGA program) that we expect to continue to use as part of the SEAS Puerto Rico Hub summer workshops.

2) Survey tool to understand student attitudes and concerns regarding fieldwork.

Specific instruction for the workshop

General considerations:

- The workshop will run from Tuesday May 29th, 2018 until Friday June 1st, 2018.
- The workshop is an official activity in which we are representing *Universidad del Turabo* at all times; therefore, the student rulebook should be headed and followed at all times.
- During the workshop, mutual respect and comradery is expected.
- This is an emersion and research workshop.
- Your participation in this workshop requires a 24/7 engagement. In other words, you may not be involved in any other activity while you are participating in the workshop.
- We will meet at *Universidad del Turabo* and then leave in our rented van towards Fajardo. You may not bring your own car.
- The workshop will take place in Fajardo, specifically at the Laguna Grande bioluminescent lagoon.
- Personal visits of any kind are not allowed during the workshop. Not your boyfriend, not your girlfriend, no one. Your dedication to the workshop and your research must be complete. Your family group may join you on Friday June 1st at 3:00pm at UMET for your family presentations.
- We will sleep at a hotel.
- It is expected that everyone will comply with curfew and be in their rooms by 11:00pm
- We will provide all basic meals such as breakfast, lunch and dinner.
- Snacks or munchies are your responsibility
- During the workshop, several types of activities will take place. Please inform your group leader about any concerns you may have, such as the fact you don't know how to swim, you suffer from hypoglycemia, any allergies, etc.
- During the week of May 21st to the 25th you will be called upon to help prepare any equipment or materials necessary for the workshop.
- YOU should bring any medication you may need and have them near your person at all times. It is your responsibility.

Code of conduct

- Your conduct should reflect the highest standards good behavior, always taking into consideration the persons around you.
- The student rulebook and code of conduct will be in effect during the entire duration of the workshop. Specific issues of conduct will be handled by your group leaders during the workshop, but all issues will be reported to the institution. The student rulebook is clear on the consequences of alcohol consumption and the use of controlled substances.
- Breaking the student code of conduct could result in the immediate expulsion from the workshop.
- The student dress code should also be respected. However, since this is a workshop that requires field work, specific requirements will be notified. Please be sure to speak to your professor if you have any questions.
- We will be staying at a hotel, so all hotel rules and regulations should also be followed.
- Any costs resulting in property damage caused by the students will be their responsibility. Students may leave the premises unescorted only when a

supervisor has given permission to do so. Students should remain with their group at all times, as instructed by their group leader.

List of items to bring with you:
On May 29th, be prepared to leave directly for Fajardo.

It is the student's responsibility to inform of any allergies, procedures or conditions. It will also be their responsibility to bring with them and to have on hand any medication needed.
It will be the responsibility of all students participating in the workshop to bring with them the following items: (This is a minimum requirement)

1. Personal hygiene items (tooth brush, tooth paste, soap, deodorant, etc.)
2. Feminine hygiene items
3. Cap or hat
4. Water shoes
5. Sun glasses
6. Minimum of two changes of comfortable clothes per day (including pajamas, work clothes for the beach, water, etc.)
7. Prescription medication
8. Snacks (consider special dietary needs)
9. Mosquito repellent
10. Sun screen SPF 50+
11. Calculator
12. Cell phone and charger
13. Laptop or tablet
14. Pen and/or pencil
15. First aid kit
16. Small notebook (8 3/16" X 6 3/8")
17. Back pack or a small field bag
18. Camera (If you don't have a cell phone)

Survey Questions: Getting ready for Field work! Centro TORTUGA Summer 2018

Fieldwork

When you hear the word fieldwork, which of these options reflect your ideas about this?

1. To gain experience
2. To enhance learning/improve knowledge and understanding
3. To learn in a particular way
4. To learn in a particular environment
5. To learn or apply a particular approach, method or skills
6. To understand or make sense of the world
7. To enhance personal development
8. To prepare for the future
9. To do agricultural work, like gardening

*IMPORTANT: The multiple-choice options may need to be adapted or asked for copyright from publication Stokes, Mandiel and Weaver 2011 (see attachment).

Have you done fieldwork? Yes No

If yes, for what purpose (e.g., course, research, summer internship, other)?
_____

Do you enjoy doing outdoor activities? Yes No Do not know

How often do you go out and engage in outdoor activities (e.g., natural areas, beaches, forest, bioluminescent bays, parks, others?
a. daily
b. once a week
c. biweekly
d. once a month
e. 2-3 times a year

Do you feel comfortable swimming in the sea?
Yes No Do not know how to swim

Do you know how to dive? Yes No

Do you feel comfortable riding a boat or a kayak? Yes No

Have you spent the night away from your family before? Yes No

Thinking about these experiences, please describe what you found most challenging.

Working together in a team *(Note: I'm phrasing these as norms questions, but they could also be phrased to explore attitudes. These would have agree/disagree options).*

When students work together, men usually take responsibility for the physical tasks.

In my school, women and men typically have equal say in decisions about group projects

My teachers expect male and female students to participate equally in group work.

In my family, young women are expected to be obedient, while men are expected to be assertive.

Women in my community are raised to keep their concerns to themselves.

In this school (Here, in PR), women do as well as boys in science.

My family expects men to pursue careers in science, while women are expected to excel in other fields, such as teaching.

When my classmates and I get together, men give equal weight to what women say.

Female students are expected to speak up publicly if they disagree with their male counterparts.

Men should have the final say in field work because they have more experience than women in outdoor activities.

My family believes that the more important for a girl to be a mother than have a career.

Preparing for fieldwork

What do you see as the benefits and challenges of doing field work in mixed sex groups?

Thinking about fieldwork/our upcoming trip, name three things you are looking forward to.

1.

2.

3.

Name three concerns you have about the fieldwork.

1.

2.

3.

What are would you like to discuss with your classmates before we leave?

Would you like to discuss these topics in a mixed group of men and women or in same sex groups? Please share the reasons for your preference.

General information

Please indicate your age _____

How do you self-identify (e.g. female, male, other)? _____

Where do you live (zip code)? _____

APPENDIX 3
SEAS Islands Alliance

PI – Dr. Lora Harris Lab University of Maryland Center for Environmental Science (UMCES)

1) Lab Check list
This was developed based on instructions from the CH2M Field Safety Instructions. Details are below. More simply, there is a check list for all field work from the Harris lab.
1. Follow all UMCES safety and small boat policies.
2. Check in with your field buddy day before to confirm plans
3. UMCES and Harris Lab policies include alerting Michael Hulme and Lora Harris to field activities and plan 24 hours ahead of planned work via cruise plan, paying special attention to weather.
3. Review Safety Checklist one day before
4. Before leaving vehicles, take time for a "Tailgate" Safety chat where you a) review safety checklist again b) identify any new issues c) confirm everyone feels safe proceeding with the work.
5. Tailgate safety chat also includes reminders of nearest hospitals, reminder of either radio or 911 protocols for emergencies, and check of most current weather forecast

These are currently modified to include COVID policies including travel in separate vehicles, sanitation, mask wearing, social distancing, etc.

2) CH2M Field Safety Instructions
This is the document CH2M uses for employee safety procedures

DETAILED TASK HAZARD ANALYSIS

TASK/AREA: WATER QUALITY MONITORING AND GRAB SAMPLING IN ROCK CREEK FROM A BOAT	**Prepared by:**	**Date/Time:**
Project Name: CH2M HILL, INC/UMCES	**Supervisor:**	

Description of the work:

Water quality monitoring and grab sampling from a boat in rock Creek, Maryland. Field monitoring with a YSI multi-probe sonde and a secchi disk. Grab sampling with a weighted submersible pump and transferring to appropriate bottleware. Installing/Retrieving a continuous YSI meter on a dock.

TASK BREAKDOWN *(subtasks required to complete the task)*	**IDENTIFY & ANALYZE THE HAZARDS** *(chemical, physical, safety, and biological/environmental hazards)*	**IDENTIFY HAZARD CONTROLS** *(task training, equipment inspections, permits, air monitoring procedures, required PPE, emergency procedures, etc.)*
Attaching Boat to Truck	Pinching, heavy lifting, vehicle interaction	Have second field staff assist with backing up to hitch.
Backing Truck/Trailer at Boat Ramp	Vehicle-Pedestrain interactions, limited visibility	Passenger to walk behind and direct, open windows and turn-off radio, installed back-up alarm on
Unloading Boat into the water	Work in water, pinching, wet surfaces	Park truck with e-brake, use wellies, walk to boat and push boat off trailer – if it did not float off when backed in, extra caution on wet surfaces – avoid if possible. Do not overload – verify people and total weight.

Boating	Moving on water, power equipment	Life jackets, balance the weight, Follow boat check-off sheet.verify boating safety supplies – whistle, fire extinguisher, life preservers – enough for everyone plus a throwable – navigation lights if working at night.
Working in boat or on dock	Unstable conditions, wet surface, work above water, heavy equipment, sun exposure	stay seated as much as possible and keep the boat balanced (spread people out equally – work on opposite sides), wear life jacket, caution with wet equipment andwet hands, wear sunscreen and stay hydrated,
Loading Boat	Pinching, work in water, wet surfaces Pinching, heavy lifting	park truck with e-brake, use wellies, do not power load the boat, use the winch as much as possible, avoid wet surfaces if possible
De-taching Boat	severe weather, lifting	Park truck-boat on slightly less incline, un-hitch and set tire breaks
Working in the field		File Float plan before leaving for field site. Check radar and forecast before leaving, inform someone that will be at the office you are in the field and anticipated time of return, check-in if weather appears to be changing or if you will be later than anticipated, use team-lift or cart for carrying heavy items out of the office

[redacted]	[redacted]	[redacted]

Field Safety Instructions

Prepared for

Anne Arundel County
Rock Creek Water Quality Monitoring Study
Project No. 411978

Prepared by
Steven Wehrspann, CSP

August 2011

CH2MHILL

HSSE Target Zero World-Class Performance

Contents

Acronyms and Abbreviations

APC	Alternative Procedure Certificate
CPR	Cardiopulmonary Resuscitation
CSEP	Confined Space Entry Permit
ERP	Emergency Response Plan
FSI	Field Safety Instruction
GC	Gas Chromatography
GFCI	Ground Fault Circuit Interrupter
HIV	Human Immunodeficiency Virus
HS&E	Health, Safety and the Environment
HSM	Regional Health and Safety Manager (CH2M HILL)
IDLH	Immediately Dangerous to Life and Health
IRF	Incident Report Form
kV	Kilovolt
LEL	Lower Exposure Limit
mg/m^3	Milligram per Cubic Meter
MRO	Medical Review Officer
MS	Mass Spectrometry
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
NPC	Nonpermit Certificate
OSHA	Occupational Safety and Health Administration
PCB	Polychloronated biphenyl
PEL	Permissible Exposure Limit
PIM	Potentially Infectious Material
PM	Project Manager
PPE	Personal Protective Equipment
PPM	Parts Per Million
PRCS	Permit Required Confined Space
REL	Recommended Exposure Level
RMSF	Rocky Mountain Spotted Fever
SC	Safety Coordinator
SO_2	Sulfur Dioxide
SOP	Standards of Practice
SPTP	Safety Pre-Task Planning
THA	Task Hazard Analysis
TLV	Threshold Limit Value
TWA	Time-Weighted Average
UL	Underwriters Laboratories, Inc.

Definitions

The following definitions define words as they are used in this document.
Subcontractor - Subcontractor in this document refers to subcontractors and/or subconsultants directly contracted with or employed by CH2M HILL. Subcontractor includes contractors or subcontractors employed by those contractors.
CH2M HILL Inc– Includes all employees from CH2M HILL, subcontractors, subconsultants, and guests who will be working on or visiting the project site.
Third Parties – Third parties include third party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of CH2M HILL.
FSI – FSI are Field Safety Instructions, which define the procedures and requirements for the health and safety of CH2M HILL staff and visitors, public, and anyone else under the custody of CH2M HILL when they are physically on the construction site.
Project Site – The project site is the area defined in the contract documents as comprising the area for construction.
HS&E Requirements – HS&E are the health, safety, and environment requirements set forth by this document.
Imminent Danger Situation – An imminent danger situation is defined as that which is immediately life threatening or would cause serious injury.

1.0 Commitment

CH2MHILL

HSSE Target Zero World-Class Performance

Health, Safety, Security and Environment Policy

Protection of people and the environment is a CH2M HILL core value. It is our vision to create a culture within CH2M HILL that empowers employees to drive this value into all global operations and achieve excellence in health, safety, security and environment (HSSE) performance. CH2M HILL deploys an integrated, enterprise-wide behavior based HSSE management system to fulfill our mission and the expectations of our clients, staff, and communities based on the following principles:

- We require all management and supervisory personnel to provide the leadership and resources to inspire and empower our employees to take responsibility for their actions of their fellow employees to create a safety, healthy, secure and environmentally-responsible workplace.
- We provide value to clients by tailoring HSSE processes to customer needs and requiring all CH2M HILL employees and subcontractors to delivery projects with agility, personal service, and responsiveness and in compliance with HSSE requirements and company standards to achieve health, safety, and security and pollution prevention excellence. Our performance will aspire to influence others and continually redefine world-class HSSE excellence.
- We systematically evaluate our design engineering and physical work environment to verify safe and secure work conditions and practices are established, consistently followed, and timely corrected.
- We continually assess and improve our HSSE program to achieve and maintain world-class performance by setting and reviewing objectives and targets, reporting performance metrics, and routinely reviewing our program.
- We care about the safety and security of every CH2M HILL employee and expect all employees to embrace our culture, share our core value for the protection of people and the environment, understand their obligations, actively participate, take responsibility, and "walk the talk" on and off the job.

The undersigned pledge our leadership, commitment, and accountability for making this policy a reality at CH2M HILL.

Dated the 29th date of March, 2011.

Lee McIntire
Chief Executive Officer

John Madia
Chief Human Resources Officer

Mike Lucki
Chief Financial Officer

Margaret McLean
Chief Legal Officer

Mike McKelvy
President, Government, Environment, & Nuclear Division

Bob Card
President, Energy & Water Division

Jacqueline Rast
President, Facilities & Infrastructure Division

Fred Brune
President, International Division

Gene Lupia
President, Delivery Excellence

Keith Christopher
Senior Vice President, Health, Safety, Security and Environment

1.1 CH2M HILL

1.1.1 Safe Work Policy

It is the policy of CH2M HILL to perform work in the safest manner possible. Safety must never be compromised. To fulfill the requirements of this policy, an organized and effective safety program must be carried out at each location where work is performed.
CH2M HILL believes that all injuries are preventable, and we are dedicated to the goal of a safe work environment. To achieve this goal, every employee on the project must assume responsibility for safety.
Every employee is empowered to:

- Conduct their work in a safe manner
- Stop work immediately to correct any unsafe condition that is encountered
- Take corrective actions so that work may proceed in a safe manner

Safety, occupational health, and environmental protection will not be sacrificed for production. These elements are integrated into quality control, cost reduction, and job performance, and are crucial to our success.

1.1.2 Health and Safety Commitment

CH2M HILL has embraced a philosophy for health and safety excellence. The primary driving force behind this commitment to health and safety is simple: employees are CH2M HILL's most significant asset and CH2M HILL management values their safety, health, and welfare. Also, top management believes that all injuries are preventable. CH2M HILL's safety culture empowers employees at all levels to accept ownership for safety and take whatever actions are necessary to eliminate injury. Our company is committed to world-class performance in health and safety and also understands that world-class performance in health and safety is a critical element in overall business success.
CH2M HILL is committed to the prevention of personal injuries, occupational illnesses, and damage to equipment and property in all of its operations; to the protection of the general public whenever it comes in contact with the Company's work; and to the prevention of pollution and environmental degradation.
Company management, field supervisors, and employees plan safety into each work task in order to prevent occupational injuries and illnesses. The ultimate success of CH2M HILL's safety program depends on the full cooperation and participation of each employee.
CH2M HILL will exceed safety standards as we work to be a model in our industry.
CH2M HILL management extends its full commitment to health and safety excellence.

1.2 Project-Specific Health, Safety, and the Environment Goals

All management and employees are to strive to meet the project-specific Health, Safety, and the Environment (HS&E) goals outlined below. The team will be successful only if everyone makes a concerted effort to accomplish these goals. The goals allow the project to stay focused on optimizing the health and safety of all project personnel and, therefore, making the project a great success.
The Project has established eleven specific goals and objectives:

- Create an injury-free environment
- Have zero injuries or incidents
- Provide management leadership for HS&E by communicating performance expectations, reviewing and tracking performance, and leading by example
- Ensure effective implementation of the Field Safety Instructions (FSIs) through education, delegation, and team work
- Ensure 100 percent participation in training programs, Personal Protective Equipment (PPE) use, and HS&E compliance
- Continuously improve our safety performance
- Maintain free and open lines of communication
- Make a personal commitment to safety as a value
- Focus safety improvements on high-risk groups
- Continue strong employee involvement initiatives
- Achieve health and safety excellence

2.0 Field Safety Instructions Applicability

These Field Safety Instructions (FSIs) apply to:

- All CH2M HILL staff, including subcontractors and tiered subcontractors of CH2M HILL working on the project site.
- All visitors to the project site in the custody of CH2M HILL (including visitors from the Client, the Government, the public, and other staff of any CH2M HILL company)

These FSIs do not apply to the third-party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of CH2M HILL.
These FSIs define the procedures and requirements for the health and safety of CH2M HILL staff and visitors when they are physically on the project site. The project site includes the project area (as defined by the contract documents) and the project offices, trailers, and facilities thereon as applicable.
These FSIs will be kept in the project HSSE files, on the project site (or in the field vehicle) during field activities and shall be reviewed as necessary. The FSIs will be amended or revised as project activities or conditions change or when supplemental information becomes available.
The FSIs adopt, by reference and as appropriate, the Standards of Practice (SOPs) in the CH2M HILL Corporate Health and Safety Program. In addition, these FSIs may adopt procedures from the project Work Plan and any other governing regulations. If there is a contradiction between these FSIs and any governing regulation, the more stringent and protective requirement shall apply.
All CH2M HILL staff and subcontractor supervisors must sign the employee sign-off form included in this document as ***Attachment 1*** to acknowledge review and receipt of this document. Copies of the signature page will be maintained onsite by the Safety Coordinator (SC).

2.1 Restricted Areas/Activities and Facility-specific Requirements

The following areas/activities are not covered and must not be entered or performed under these instructions. If any of these areas/activities must be entered or performed, contact the Responsible Health and Safety Manager Steve Wehrspann, (412) 364-4477 for assistance.
Examples include:

- Confined space entry
- Exposed energized electrical equipment (unless accompanied by qualified individual)
- Areas where health hazards exist above action levels (such as Asbestos, Lead)
- Activities requiring respiratory protection
- Working around vehicular traffic; temporary traffic control
- Use of personal protective equipment that personnel have not been trained to use
- Activities requiring lockout and tag out of equipment

3.0 General Information

3.1 Project Information and Description

Project Number:	411978.MN.01
Client Name:	Anne Arundel County Department of Public Works 2662 Riva Road, Annapolis, MD 21401
Project Name and Address:	Rock Creek Water Quality Monitoring Study 1343 Old Water Oak Point Rd Pasadena, MD 21122-7613
CH2M HILL Project Manager:	Laurens Van der Tak
CH2M HILL Office:	BSS
Date (FSI) Prepared:	August 2011
Dates of Site Work:	August 22 to September 26, 2011

3.1.1 Site Description and History

Rock Creek, a tributary of the Patapsco River, is a 270-acre tidal estuary in Anne Arundel County, Maryland. Rock Creek has experienced water quality problems over the past 35 years that are typical of many small, poorly flushed tidal waterways. In October 1988 the Anne Arundel County Department of Public Works (DPW) installed an aeration system in Rock Creek to mitigate against low dissolved oxygen. The aeration system, installed above Whites Cove and Wall Cove, consists of 2,700 feet of diffuser pipe connected to two 30-horsepower (hp) blowers that put out 550 standard cubic feet per minute of air. The objective of the Water Quality Monitoring Study is to provide additional water quality data to assess the extent that the existing system is working and determine future aeration system operating protocols for cost saving.

3.1.2 Description of Specific Tasks to be Performed by CH2M HILL Inc.

Most field work will be performed by subcontractor staff. CH2M HILL staff will provide Subcontractor oversight during field monitoring study for a total of three days. Subcontractor staff will perform water quality analysis at 12 locations near the aeration system.
CH2M HILL employees conducting field work for this project include:

Employee Name/Office	Responsibility	Worker Category	Duration Onsite
Laurens Van der Tak	PM	CSW/PMSS	
Christopher Wiggins	SC	SC-HW	

4.0 Project Organization and Responsibilities

4.1 Client

Name: Anne Arundel County Department of Public Works
2662 Riva Road, Annapolis, MD 21401

Primary Contact: Janis Markusic

Phone: 410-222-4240 ext. 3323

4.2 Project Management Staff

4.2.1 Project Manager

Name: Laurens Van der Tak

Office Phone: 301-495-8840 ext. 41019

Cellular Phone: 301-204-2436

The CH2M HILL project manager (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 document:

- Incorporate 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
- Obtain, review, and accept or reject subcontractor HSSE pre-qualification questionnaires
- Ensure that acceptable certificates of insurance, including CH2M HILL as named additional insured, are secured as a condition of subcontract award
- Incorporate HS&E information in subcontract agreements, and ensure 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 subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, subcontractors 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 interface with third 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

4.2.2 Health and Safety Manager

Name: Steven Wehrspann, CSP

Business Group/Title: Water Business Group; North East Regional HSM

Office Phone: 412-364-4477

Cellular Phone: 412-913-8243

The CH2M HILL HS&E manager is responsible to:

- Review and accept or reject subcontractor pre-qualification questionnaires
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations
- Support the SC's oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with onsite third parties per the site-specific safety plan
- Visit the project as necessary to assess site conditions and review HS&E program implementation
- Assist with program implementation as needed

4.2.3 Safety Coordinator

Name: Christopher Wiggins

Office Phone: 215-640-9081

Cellular Phone: 610-348-7439

The SC should be onsite for the duration of activity and is responsible to:

- Make safety integral to each operation by promoting worker involvement in the work planning and hazard identification process
- Maintain active and visible involvement using open communication with employees regarding safety items on the project

- Review and understand contractual obligations regarding HS&E
- Manage the site and interface with third parties in a manner consistent with our contract agreements and the applicable standard of reasonable care
- Verify these FSI are current and amended when project activities or conditions change
- Implement Drug-Free Workplace Policy
- Verify CH2M HILL site personnel and subcontractor supervision read these FSI and sign the Employee Signoff Form in ***Attachment 1*** prior to commencing field activities
- Verify and document that CH2M HILL team members have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance.
- Assure that the workforce is trained and qualified
- Conduct an HS&E orientation for all CH2M HILL team members prior to entering the project work areas
- Verify compliance with the requirements of these FSI and applicable owner health and safety plan(s) and any federal, state, and local regulations
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in the FSI
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in the FSI
- Post required information onsite if a project site office is established. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established; posters can be obtained by calling 800/548-4776 or 800/999-9111
- Verify that safety meetings are conducted and documented in the project file as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that project health and safety forms and permits are being used as outlined in the FSI
- Perform assessments of subcontractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists are being used by CH2M HILL team members. Provide HS&E project reports to the Regional Health and Safety Manager (HSM) when requested.
- Verify that project files available to site personnel include copies of executed contracts and certificates of insurance (including CH2M HILL as named additional insured), bond, subcontractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations
- Coordinate with the HS&E manager regarding CH2M HILL and subcontractor operational performance, and third party interfaces
- Verify appropriate PPE use, availability, and training

- Conduct safety briefings weekly for CH2M HILL team members and subcontractor supervisors
- Notify HSM of injuries and follow up on injured employee's progress
- Conduct accident investigations including root cause analysis
- Maintain HS&E records and documentation
- Facilitate Occupational Safety and Health Administration (OSHA) or other government agency inspections including accompanying inspector and providing all necessary documentation and follow-up
- Deliver field HS&E training as needed based on project-specific hazards and activities
- Ensure that programs are effectively functioning to prevent and control hazards on the project

4.2.4 Subcontractor Safety Responsibilities

Subcontractors must comply with the following activities, and are responsible to:

- Comply with all local, state, and federal safety standards
- Comply with project and owner safety requirements
- Actively participate in the project safety program and attend all required safety meetings
- Provide a qualified safety representative to conduct and document safety inspections for your work activities as requested by CH2M HILL
- Maintain a first aid kit onsite if the owner does not have first aid kits available for your use
- Maintain and replace safety protection systems damaged or removed by the subcontractor's operations
- Notify the SC of any accident, injury, and/or incident immediately and submit reports to CH2M HILL within 24 hours
- Install contractually required general conditions for safety (example: handrail, fencing, fall protection systems, floor opening covers, etc.)
- Conduct and document weekly safety inspections of project-specific tasks and associated work areas
- Conduct weekly employee safety toolbox meetings and copy CH2M HILL
- Conduct site-specific orientations for all subcontractor employees

4.2.5 Employee Responsibilities

All personnel are assigned responsibility for safe and healthy operations. This concept is the foundation for involving all employees in identifying hazards and providing solutions. For any operation, individuals have full authority to stop work and initiate immediate corrective action or

control. In addition, each worker has a right and responsibility to report unsafe conditions/practices. This right represents a significant facet of worker empowerment and program ownership. Through shared values and a belief that all accidents are preventable, our employees accept personal responsibility for working safely.
Each employee is responsible for the following performance objectives:

- Perform work in a safe manner and produce quality results
- Perform work in accordance with company policies, and report injuries, illnesses, and unsafe conditions
- Complete work without injury, illness, or property damage
- Report all incidents immediately to supervisor
- Report all hazardous conditions and/or hazardous activities immediately to supervisor for corrective action
- Complete an HS&E orientation prior to being authorized to enter the project work areas

4.2.6 Employee Authority

Each employee on the project has the obligation and authority to shut down any perceived unsafe work and during employee orientation, each employee will be informed of their authority to do so.

4.3 CH2M HILL Subcontractors

(Reference CH2M HILL SOP HSE-215, *Contracts*, *Subcontracts*, *and HS&E Management Practices*)

4.3.1 Subcontractor List

Subcontractor	Scope
University of Maryland Center for Environmental Science, Dr. Lora Harris, 410-330-3888	Conduct the water quality field sampling and provide the data with some reporting.

The subcontractors listed above are covered by this FSI and must be provided a copy of this document. If subcontractors have specific hazards associated with their type of work that are not covered by this FSI, the subcontractors are responsible to submit the procedures H&S procedures (i.e. H&S plan and/or task specific safety procedures) to cover these hazards to CH2M HILL for review before the start of field work. Subcontractors must comply with the established health and safety plan(s) of the project. The CH2M HILL SC should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). CH2M HILL's oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s). CH2M HILL team members should continuously endeavor to observe subcontractors' safety

performance. This endeavor should be reasonable, and include observation of hazards or unsafe practices that are both readily observable and occur in common work areas. CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SC is responsible for confirming CH2M HILL subcontractor performance against both the subcontractor's task specific safety procedures and applicable self-assessment checklists. Self-assessment checklists, provided in this document in ***Attachment 5***, are to be used by the SC to review performance.

Health and safety-related communications with CH2M HILL subcontractors should be conducted as follows:

- Brief subcontractors and employees on the provisions of this plan, and require them to sign the Employee Signoff Form, included in ***Attachment 1***
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work
- When apparent, non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action—the subcontractor is responsible for determining and implementing necessary controls and corrective actions
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented
- When an apparent imminent danger exists, immediately remove all affected personnel, notify subcontractor safety representative, stop affected work until adequate corrective measures are implemented, and notify the Project Manager, HS&E Manager, and SC as appropriate
- Document all verbal health and safety-related communications in project field logbook, daily reports, or other records

4.4 Third Party Contractors

(Reference CH2M HILL SOP HSE-215, *Contracts, Subcontracts and HS&E Management Practices*)

4.4.1 Third Party Contractors

These instructions do not cover contractors that are contracted directly to the client or the owner. CH2M HILL is not responsible for the health and safety or means and methods of the contractor's work, and we must never assume such responsibility through our actions (e.g., advising on health and safety issues). In addition to these instructions, CH2M HILL team members should review contractor safety plans so that we remain aware of appropriate precautions that apply to us. Self-assessment checklists, contained in ***Attachment 5***, are to be used by the SC and CH2M HILL team members to review the contractor's performance ONLY as it pertains to evaluating our exposure and safety. The HSM is the only person who is authorized to comment on contractor safety procedures.

Health and safety-related communications with contractors should be conducted as follows:

- Request the contractor to brief CH2M HILL team members on the precautions related to the contractor's work
- When an apparent contractor non-compliance/unsafe condition or practice poses a risk to CH2M HILL team members:
  - Notify the contractor safety representative
  - Request that the contractor determine and implement corrective actions
  - If necessary, stop affected CH2M HILL work until contractor corrects the condition or practice
  - Notify the client, Project Manager, and HS&E Manager as appropriate
- If apparent contractor non-compliance/unsafe conditions or practices are observed, inform the contractor safety representative (CH2M HILL's obligation is limited strictly to informing the contractor of the observation—the contractor is solely responsible for determining and implementing necessary controls and corrective actions)
- If an apparent imminent danger is observed, immediately warn the contractor employee(s) in danger and notify the contractor safety representative (CH2M HILL's obligation is limited strictly to immediately warning the affected individual(s) and informing the contractor of the observation—the contractor is solely responsible for determining and implementing necessary controls and corrective actions)
- Document all verbal health and safety-related communications in project field logbook, daily reports, or other records

5.0 Project Filing System

An organized project filing system is essential for good documentation and recordkeeping. There are many benefits to an organized filing system:

- Other CH2M HILL employees can easily and quickly find documents
- Records are readily available for review
- Records may be needed during OSHA investigations, audits, or other legal matters
- Records may be needed on short notice in case of an accident, illness or other emergency
- Systematic recordkeeping aids in overall project organization

The project filing system shall be established at the beginning of the project and maintained throughout all phases of work. The information contained in the filing system shall be updated regularly and/or as specified in this document. The PM and SC are responsible for collecting documentation and maintaining a complete and organized filing system. The following information is an example of what should be identified in a H&S filing system:

1 Safety Planning
- 1.1 Safety Pre-Task Plan
- 1.2 Task Hazard Analysis

2 Verification & Follow-Up
- 2.1 Jobsite Inspections (subcontractors)
- 2.2 Self-Assessment Checklists
- 2.3 Observation Log
- 2.4 Equipment Checklists (water craft)
- 2.5 Program Reviews
  - 2.5.1 Program Review Reports
  - 2.5.2 Program Review Completed Findings Tables
  - 2.5.3 *External Sources Inspections (subs, Govt., consultation, insurance)*
  - 2.5.4 *External Sources Inspection Follow Up*
- 2.6 Incidents
  - 2.6.1 Incident Log
  - 2.6.2 Incident Investigation Reports
  - 2.6.3 OSHA 300 logs
- 2.7 Disciplinary Actions
- 2.8 Stop Work Orders

3 Employee Empowerment
- 3.1 Recognition Actions
- 3.2 Safety Committee (if one is created)
- 3.3 Safety Suggestions
- 3.4 Observed Hazard Forms

4 Education and Training
- 4.1 Project Orientation
  - 4.1.1 Project Orientation Logs
- 4.2 Toolbox Talk Meetings
- 4.3 Safety Meetings

4.4 FSI Acknowledgment
4.5 Training Certifications (Competent Person, OSHA 10, Heavy Equipment, CPR/FA)
4.6 Chemical Hazard Communication
4.6.1 HazCom Inventory List
4.6.2 HazCom Material Safety Data Sheets
4.6.3 HazCom Chemical Specific Training
4.7 Emergency Drills

5 Subcontractor Management
5.1 Subcontractor Prequalification Packages
5.2 Subcontractor Site Safety Plans
5.3 Pre-Mobilization Meeting Minutes

6.0 Standards of Conduct

All individuals associated with this project must work injury-free and drug-free and must comply with the following Standards of Conduct, the Site Safety Plan, and the safety requirements of CH2M HILL. Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. Misunderstandings, frictions, and disciplinary action can be avoided by refraining from thoughtless or wrongful acts.

6.1 Standards of Conduct Violations

All individuals associated with this project are expected to behave in a professional manner. Violations of the standards of conduct would include, but not be limited to:

- Failure to perform work
- Inefficient performance, incompetence, or neglect of work
- Willful refusal to perform work as directed (insubordination)
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions
- Unwillingness or inability to work in harmony with others
- Discourtesy, irritation, friction, or other conduct that creates disharmony
- Harassment or discrimination against another individual
- Failure to be prepared for work by wearing the appropriate clothing or personal protective equipment
- Violation of any other commonly accepted reasonable rule of responsible personal conduct

6.2 Intolerable Offenses

Certain employee conduct may be so intolerable as to justify removal from the project. Intolerable offenses and actions will include, but will not be limited to, the following:

- Any manager, supervisor or other person in charge of the work being performed who requires, requests, asks, threatens with their job, allows, or condones employees to work in or around unsafe acts or conditions
- Any employee, supervisor, or manager who knowingly falsifies any investigative documents or testimony involving an investigation
- Any employee, supervisor, or manager who openly exhibits disregard, defiance, or disrespect for the safety program
- Any employee who violates established safety rules, regulations, or codes that endanger themselves or other employees

- Any and all parties involved in workplace violence, including physical encounters (fighting) or threats of violence, theft, or destruction of property
- Any employee working more than 4 feet above the next lowest level not implementing proper fall protective system criteria and practices outlined in the Site Safety Plan and/or OSHA 29 CFR 1910
- Any employee, supervisor, or manager failing to comply with procedures contained in the subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations that create the potential for serious or costly consequences
- Any employee who commits repeated minor offenses and shows a lack of responsible effort to correct these offenses

6.3 Enforcement and Discipline

CH2M HILL's Enforcement and Discipline procedures, the Standards of Conduct, the Intolerable Offenses, and the Drug-Free Workplace policy will be thoroughly reviewed with each employee during the employee project orientation.

6.3.1 Intolerable Offenses

CH2M HILL practices zero tolerance for intolerable offenses. Those individuals found participating in such offenses will be:

- Suspended from work for 3 days without pay, or
- Immediately discharged and not allowed to return

6.3.2 Other Violations

Other violations, as outlined in the Standards of Conduct, will be handled accordingly:

- First Offense – Employee will receive a written warning
- Second Offense – Employee will receive a 2-day suspension without pay
- Third Offense – Employee will be discharged

6.4 Subcontractor Default

6.4.1 Stop Work Orders

If subcontractor fails to comply with any of the requirements of the subcontract, Site Safety Plan, or any and all federal, state, or local safety laws and regulations, CH2M HILL may issue a stop work order to subcontractor. Thereupon, subcontractor shall immediately cease all work or portion of work that may be specifically designated in the stop work order until CH2M HILL has concluded in writing that the subcontractor has corrected its failure of performance. No adjustments will be made to the subcontractor price or schedule as a result of any stop work orders being issued by CH2M HILL. A Stop Work Order Form, included in this document as Attachment 7, will be completed by CH2M HILL and a copy will be given to the noncompliant subcontractor on the date of deficiency. If subcontractor fails to correct the deficiencies noted in the Stop Work Order within three working days following the written notice from CH2M HILL,

CH2M HILL may, without prejudice to any other rights or remedies under the subcontract or at law or equity, suspend all further payments to subcontractor and/or terminate subcontractor's right to continue performance of the work.

7.0 Reporting Unsafe Conditions or Practices

Responsibility for effective health and safety management extends to all levels of the project and requires good communication between employees, supervisors, and management. Accident prevention requires a pro-active policy on near misses, close calls, unsafe conditions, and unsafe practices. All personnel must report any situation, practice, or condition which might jeopardize the safety of our projects. All unsafe conditions or unsafe practices will be corrected immediately. CH2M HILL has zero tolerance of unsafe conditions or unsafe practices.

No employee or supervisor will be disciplined for reporting unsafe conditions or practices. Individuals involved in reporting the unsafe conditions or practices will remain anonymous. In addition to the following reporting procedures, employees can also call the Project Phone Number, 412-364-4477 to anonymously report project health and safety concerns.

The following reporting procedures will be followed by all project employees:

1. Upon detection of any unsafe condition or practice, the responsible employee will attempt to safely correct the condition.
2. The unsafe condition or practice will be brought to the attention of the worker's direct supervisor, unless the unsafe condition or practice involves the employee's direct supervisor. If so, the SC needs to be notified at once by the responsible employee.

Either the responsible employee or responsible employee's direct supervisor is responsible for immediately reporting the unsafe condition or practice to the SC.

The SC will act promptly to correct the unsafe condition or practice.

Details of the incident or situation will be recorded by the SC in the Observed Hazard Form, included in this document as Attachment 9.

The Observed Hazard Form, Attachment 9, will be reviewed by the project safety committee for further action and analysis.

If a responsible employee feels that they have been mistreated by any project personnel throughout the process of reporting/correcting an unsafe condition or practice, they will report this complaint to the CH2M HILL WBG Human Resource Director Donald Shipley/DEN at 720-286-4048 for immediate attention.

Again, CH2M HILL policy allows for zero tolerance of unsafe conditions or unsafe practices.

8.0 Drug-Free Workplace Program

8.1 Drug-Free Workplace

CH2M HILL does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employee's work performance or behavior. CH2M HILL has established a policy that its employees and subcontractors shall not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge. Please reference CH2M HILL SOP HS&E 105, Drug-Free Workplace, for more information.

9.0 Planning

9.1 Task Hazard Analysis

9.1.1 General Information

Task Hazard Analysis (THAs) ***(Attachment 2)*** may be required depending on work activities and the hazards associated with those activities. A THA is a procedure which integrates accepted health and safety principles and practices into a particular operation. In a THA, each basic step of the overall task is examined to identify potential hazards and to determine the safest way to do the job.

Four basic stages in conducting a THA are:

- Selecting the task to be analyzed
- Breaking the task down into a sequence of steps
- Identifying potential hazards
- Determining preventive measures to overcome these hazards

THAs are intended to be a starting point and must be reviewed (and modified as appropriate) by the entire work team prior to initially conducting the task.

To complete a detailed THA form, the responsible supervisor obtains a THA form and identifies individuals who will be performing the task. With the assistance of those employees performing the task, the responsible supervisor should go through the four stages of planning listed above. The THA process will identify previously undetected hazards and increase the job knowledge of those participating. Safety and health awareness is raised, communication between workers and supervisors is improved, and acceptance of safe work procedures is promoted. The responsible supervisor must review all THAs with all project personnel who will be performing the task in a safety briefing, prior to task performance. Any new crew members shall be briefed on the THA prior to performing the activity. The completed THA will be the basis for regular contact between SC/supervisors and workers on health and safety. It will serve as a teaching aid for initial job training. The THA is to be used as a standard for health and safety observations and it will assist in completing comprehensive accident investigations.

All THAs will be documented and submitted to the SC and will be maintained onsite.

9.1.2 Tasks Requiring Task Hazard Analyses

The following hazardous work operations are *examples* of those requiring THAs.

- Boating
- Water quality sampling

9.1.3 Task Hazard Analysis Planning Tools

The following are planning tools that shall be utilized when preparing detailed THAs.

9.1.3.1 Task Hazard Analysis Table

The THA Table ***(Attachment 2)*** details potential health and safety hazards for each project phase

or task. Relevant safety procedures must be reviewed to identify the applicable hazard control procedures in the THA.

9.1.3.2 Subcontractor Activity Specific Safety Procedures

Subcontractor Activity-Specific Safety Procedures ***(available as an attachment to most hazard specific CH2M HILL HSSE SOPs)*** are not intended to be all-inclusive, but are provided as a tool to facilitate development and review of safe work procedures. Subcontractors are expected to address each outlined criteria as part of their THA planning.

9.1.3.3 Project-Activity Self-Assessment Checklists

Project Activity Self-Assessment Checklists ***(Attachment 5)*** have been provided as a method of verifying compliance with established safe work practices, regulations, and industry standards pertaining to various activities performed by CH2M HILL and our subcontractors. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Project activity self-assessments shall be performed at the start of specific hazardous work activity, then at intervals appropriate for the nature of work site activities (e.g. monthly) or when otherwise specified by the HSM. Checklists provided in ***Attachment 5*** are for CH2M HILL employee use only. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records, and be submitted to the HSM upon request.
Each subcontractor shall provide their own checklists to be used to assess the adequacy of site-specific safety requirements and determine if control measures identified in the THA are adequate for each work task.

9.1.4 Other Planning Tools

In addition to the other planning tools controls specified in this section, there are other forms that may need to be completed for specific activities (not all may be part of this project's SOW):

9.1.4.1 Hazard Communication

Hazard Communication forms are contained in ***Attachment 3***. The ***Chemical Product Hazard Communication Form*** must be completed prior to performing activities that expose personnel to hazardous chemicals or products. Upon completion of this form, the Safety Coordinator will verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained. This training is documented on the ***Chemical-Specific Training Form***. Project-Specific ***Material Safety Data Sheets*** are also contained in ***Attachment 3***.

10.0 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, the particular hazard or responsible for the employees exposed to the hazards. CH2M HILL team members and subcontractors must remain aware of the hazards affecting them

regardless of who is responsible for controlling the hazards. CH2M HILL team members who do not understand any of these provisions should contact the SC for clarification. Each person onsite is required to follow these rules and regulations.

10.1 Project-Specific Safety Hazards and Controls

10.1.1 Bloodborne Pathogens

(Reference CH2M HILL SOP HSE&Q-202, *Bloodborne Pathogens*)
Exposure to bloodborne pathogens may occur when rendering first aid or CPR. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HSE&Q-202, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

- To eliminate or minimize employee exposure to bloodborne pathogens, observe the following engineering and work practice controls, recommended vaccinations, and personal protective equipment.

10.1.1.1 Training and Medical Requirements

- All employees covered by this section 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 potentially infectious materials (PIMs) 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, receive 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 your HSM.

10.1.1.2 Work Practice Controls and PPE

- 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 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 nitrile 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.

10.1.1.3 Post Exposure

CH2M HILL will provide exposed employees with a confidential medical examination. 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
- Evaluating any reported illness

If the exposed employee consents to blood collection but does not give consent for testing, the sample will be preserved for 90 days. The employee can give consent any time during the 90 days.

If the source individual does not consent to testing, CH2M HILL will establish that consent cannot be obtained. If consent to collect the blood is obtained but consent to test is not, the blood sample will be preserved for 90 days. If within 90 days the source individual agrees to testing, the blood will be tested. Results of the source individual's testing are made available to the exposed employee's physician. Within 15 days of the completed examination, CH2M HILL will verify that the employee has been informed of the results.

10.1.2 Driving Safety

Practice defensive driving. Defensive driving starts from the moment you get behind the wheel. Always be alert to the hazards around you, including changing weather. Driving defensively means taking every possible precaution to avoid an accident, despite the hazards around you. Inspect your vehicle before a trip. Make sure tires are properly inflated, loads are securely tied down, and if trailers are used that they are securely hitched. Anticipate hazards so you can take action before you encounter a hazard. For example, if you are on a wet, slippery road and an upcoming traffic light has been green for some time, assume it will be red by the time you reach the intersection and begin slowing down well in advance.

- Let problem drivers move ahead of you. Do not challenge them.
- A common cause of motor vehicle incidents to CH2M HILL employees is being struck from behind by another vehicle. To lower the risk of someone running into the rear of your vehicle:
  - Check your brake lights often to make sure they are clean and working properly
  - Know what is going on around you. Use your rearview mirrors.
  - Signal well in advance for turns, stops and lane changes.
  - Slow down gradually. Avoid sudden actions.
  - Drive with the flow of traffic (within the speed limit); driving too slow can be as dangerous as driving too fast.
  - To avoid striking the vehicle in front of you, keep at least two seconds following distance, using the two second rule (3 seconds in some states); 1:20 people need more than 2 seconds to react.
  - For bad road or weather conditions, double your safe driving distance.
  - If the vehicle behind you is driving too close to you, especially in bad road or weather conditions, switch lanes or pull over to let the vehicle safely pass.
  - At 40 mph, the safe driving distance for good conditions is 120 feet (180 feet 3SR).

Car rental must meet the following requirements:

- Dual air bags
- Antilock brakes
- Be midsize or larger

- Familiarize yourself with rental vehicle features.
  - Mirror adjustments
  - Seat adjustments
  - Cruise control features, if offered
  - Pre-program radio stations
- Always wear seatbelt while operating vehicle.

- Eliminate or reduce hazards whenever possible. Make sure that no loose items are on the dashboard or by your feet, or that items are not piled to high on seats or floors.
- Bring a mobile phone with you if for no other reason for emergencies.
- Do not use a mobile phone while operating vehicle. A good practice is to turn off your mobile phone while driving.
- Know that some prescription and over-the-counter medications can make you sleepy behind the wheel; if you are taking medications, read the side effects and recommended precautions carefully, and follow their instructions.
- Avoid distractions such as eating, drinking, or changing CDs.
- Adjust headrest to proper position.
- Tie down loose items if utilizing a van.
- Maintain both a First Aid kit and Fire Extinguisher in the field vehicle at all times.
- Close car doors slowly and carefully. Fingers can get pinched in doors or the truck.
- Take shelter in the field vehicle in the event of rain, especially lightning, if an enclosed structure is not available.
    - Listen to car radio for predictions of tornado or lightning.
- Park vehicle in a location where it can be accessed easily in the event of an emergency.
- Always stay alert. If you feel drowsy, pull over and do not attempt to drive.
- All vehicles should be equipped with basic emergency response and safety equipment including:
    - Potable water
    - First aid kit
    - Flashlight with extra batteries
    - Anti-bacterial wipes
    - Fire extinguisher
    - Minimal personal protective equipment necessary for work at the destination, appropriate for the expected exposures.

10.1.3 Fire Prevention

(Reference CH2M HILL SOP HSE-208, *Fire Prevention*)

- A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet (279 m^2) of a combustible building area, or major fraction thereof. Travel distance from any point of the protection area to the nearest fire extinguisher shall not exceed a horizontal distance of 100 feet (30 m)
- When 5 gallons (18 L)or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet (15 m)

- Extinguishers must:
  - Be maintained in a fully charged and operable condition
  - Be visually inspected each month
  - Undergo a maintenance check and certification each year
- The area in front of fire 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 (3 m)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

10.1.4 General Practices and Housekeeping

(Reference CH2M HILL SOP HSE-209, *General Practices*)

- Work conducted during hours of darkness requires enough illumination intensity to read a newspaper without difficulty
- 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
- Nails from stripping operations shall be removed prior to stacking and bent on material being disposed
- 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

10.1.5 Hazard Communication

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

- Effective information and training on hazardous chemicals shall be given to project employees by their employer at the time of initial assignment and/or whenever a new physical or health hazard the employees have not been previously trained about is introduced into their work area
- All onsite hazardous chemicals shall have an accompanying MSDS available to employees for reference
- The employer shall submit a copy of the MSDS sheet to the SC for all onsite hazardous chemicals and when a new hazardous chemical is introduced to the project
- The SC will complete the Chemical Inventory Form in Attachment 3 to verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to personnel are implemented
- The employer shall provide documentation (see the Chemical-Specific Training Form for an example ***Attachment 3***) to the SC to verify that they have provided adequate employee training for the onsite hazardous chemicals
- All chemical containers shall be labeled with the identity of the chemical and with hazard warnings
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions

10.1.6 Laboratory Safety

All CH2M HILL staff conducting work in laboratories must complete the Laboratory Safety training course on the Virtual Office.

In a laboratory, work is done with small amounts of many chemicals while performing different tasks. To stay safe, you must know:

- The hazards of the chemicals used
- The safe procedures for each task
- The emergency procedures

The safe operating procedures in each laboratory is detailed in the Chemical Hygiene Plan (CHP). See the contact for the lab to review the CHP for the lab you will be using or visiting, to be aware of the lab-specific procedures, hazards and controls. The CHP must be reviewed by all CH2M HILL staff and CH2M HILL subcontractors prior to performing work in the lab. The CHP details:

- Standard operating procedures for the different lab operations
- Exposure control equipment such as hoods, glove boxes and ventilation
- Required PPE
- Safe work practices
- Emergency Procedures

The lab's CHP will detail the lab-specific hazards and controls, check with the CHP to review

the lab and activity-specific procedures to follow. Here is a list of general safety practices to be aware.

10.1.6.1 Chemicals

- There must be an MSDS for each chemical. The MSDS will detail the composition and properties of the substance, the physical and health hazards, safe handling information, storage and disposal requirements, signs and symptoms of exposure, PPE requirements, and exposure limits.
- Review the MSDSs for the chemicals used.
- Document the chemicals used and the training received on the forms found in ***Attachment 4*** of this FSI.
- All containers must be labeled with the chemical name and identity and any hazard warnings.

10.1.6.2 Engineering Controls

Engineering controls help physically separate workers form the chemical hazards by isolating or ventilating them. The specific engineering controls used for each activity should be spelled out in the CHP, including information on when to use them and how they operate.

- **Substitution –** Replacing chemicals or equipment with ones that are safer or less hazardous.
- **Ventilation –** Capturing and removing hazardous vapors, gas or dust from the room or from special sections (lab hoods, glove boxes, and isolation rooms).
- **Isolation –** Separating you form hazardous substances or fumes when ventilation cannot prevent exposure, or when ventilation cannot prevent exposure, or when the substance is especially hazardous (hoods, glove boxes, and isolation rooms).

10.1.6.3 Lab Hoods

Lab Hoods are one of the best ways to prevent chemical exposure:

- Check the hood before using it to be sure it's operating properly
- Perform any operation that might release chemical vapors or dust under a hood
- Use the hood for operations that involve a volatile substance
- Keep your head away from the hood operating
- Don't use the hood for storage unless necessary
- Keep stored materials as far back as possible if you use the hood for storage
- Keep materials in closed containers
- Don't block vents or air flow with materials or equipment
- Keep the front sash closed when not working at the hood
- Don't shut off an operating hood if it's used for general ventilation
- Special precautions are required when working with certain carcinogens, reproductive toxins, and substances with high acute toxicity (see the substances MSDS and the lab's CHP for more information, and to see if special precautions are required for the substances you will be working with).

10.1.6.4 **Housekeeping**

Keeping the work area clean and organized prevents problems:

- Remove only what you need from storage and put it back as soon as you finish using it
- Check equipment for damage or wear, and inspect glassware for chips and cracks before you use it
- Make sure ring stands can be adjusted and they operate smoothly, and that tubing and valves aren't leaking
- Label all containers immediately, even those filled with distilled water
- Clear your work area at the end of each day, and make sure everything is cleaned and stored correctly
- Label all waste and place it in proper containers to prevent fires or dangerous reactions

10.1.6.5 **Personal Practices**

- Never use lab ware or equipment for eating or drinking
- Remove lab clothing and wash up before eating, drinking smoking or applying makeup
- Never eat, drink, smoke or apply makeup in the lab
- Avoid practical jokes or any behavior that might startle or distract another worker
- Confine long hair and loose clothing, and wear sturdy shoes
- Remove your lab clothes before you leave the lab and follow all required decontamination procedures
- Clean your protective equipment when you take it off and store it properly
- Wash your gloves before you remove them and then wash your hands and lower arms so you don't carry chemicals around the facility or take them home with you
- Wear the required PPE at all times
- Inspect your PPE and test glove boxes and hoods before you use them
- Never smell or taste chemicals or use your mouth to pipette liquids or start a siphon
- Handle and store glassware and lab equipment carefully
- Never discharge chemical wastes into a sewer, sink or floor drain
- Keep the amount of chemicals in the lab to a minimum
- Move chemicals in shatterproof, non-breakable containers
- Always ground and bond containers of flammable liquids

10.1.6.6 **Emergency Procedures**

The CHP details the proper way to deal with emergencies at the lab you are working at. In general:

- Learn how to respond to spills, including the type of personal protective equipment you need and how to dispose of waste
- Know where to find fire extinguishers, emergency supplies, eyewash stations, safety showers and the two nearest exits
- Know how to call for emergency assistance
- If you get a chemical in your eyes, flush them out with water for at least 15 minutes and get medical attention immediately, even if your eyes feel alright at the moment.
- If you get a chemical on you, rinse the area for at least 15 minutes. If your clothing is also contaminated, remove your clothing under running water. If you symptoms persist, seek medical attention.

10.1.7 Lifting

*(*Reference CH2M HILL SOP HSE-112, *Lifting)*
Proper lifting techniques must be used when lifting any object:

- Plan storage and staging to minimize lifting or carrying distances
- Split heavy loads into smaller loads
- Use mechanical lifting aids whenever possible
- Have someone assist with the lift—especially for heavy or awkward loads
- Make sure the path of travel is clear prior to the lift

10.1.8 Noise Control

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

- Many pieces of equipment operate above the Occupational Exposure Limit for noise of 85 dBA. Noise at this level will cause hearing loss.
- All staff and subcontractors must wear hearing protection in all areas designated by the equipment manuals or Owner as a high noise areas, or where the ambient noise level makes it hard to converse in a normal voice within 5 feet,
- Hearing protectors used on constructions sites shall be ANSI rated (ear plugs, high attenuation ear muffs or combination of both).

10.1.9 Office Safety and Ergonomics

(Reference CH2M HILL SOP HSE-115, *Office Ergonomics*, CH2M HILL SOP HSE-114, *Office & Warehouse Safety*)
At CH2M HILL, between one-half and three-quarters of our workplace injuries occur in the office. We can have the most impact on ensuring that our employees go home healthy and uninjured if we reduce the number of incidents that occur in the office.
The two biggest areas of concern for office workers are ergonomics and lifting. Ergonomics is the science of fitting workplace conditions and job demands to the working population.

Ergonomics is an approach or solution to dealing with a number of problems which include musculoskeletal disorders. It has been shown that performance and quality are improved and injuries and illnesses are reduced when there is a good fit between employees and their workstations.

10.1.9.1 Ergonomic Evaluations and Support

The office safety program includes implementation of an ergonomics program. Corporate HSSE will provide the necessary training, tools, and technical assistance to complete this task.

10.1.9.2 Employees are responsible for:

- Completing the new employee orientation training which contains the ergonomics awareness training module located on CH2M HILL's Virtual Office within one month of coming to work at CH2M HILL.
- Implementing the knowledge gained from the ergonomics awareness training course regarding workstation set-up and safe work practices.
- Setting up their workstation in the most ergonomically correct manner possible, with the tools and equipment available in the workplace.
- Taking breaks from keying, mousing, blackberry use and sedentary work as recommended in the ergonomic awareness training module.
- Implementing all reasonable precautions to prevent an ergonomic injury.
- Notifying their local Ergonomic Evaluator or HSSE staff of any ergonomic issues that may be associated with their workstation.

The Ergonomics Program has changed beginning January 2009:

- **Workstation Setup** – To learn more how to setup your workstation review the Ergonomics Workstation Set Up information on the HSSE site on the VO:

https://www.int.ch2m.com/intrnl/voffice/corp/health/HowDoI/ergnew.asp (or from the HSSE home page, from the menu on the left select: "How Do I?" > "Get an ergonomic evaluation?").

- **Ergonomic Evaluation** – If you are experiencing discomfort, complete the Ergonomic Evaluaiton Worksheet and forward it to the Ergonomics Support Team (ErgnomicSupport@ch2m.com), found on the Ergnomics Website.

- **Ergonomic-Related Questions, or a Minor Issue –** Contact the Ergonomics Support Team (ErgonomicSupport@ch2m.com, or 720-286-ERGO (3746)).
- **Project Assistance –** If you are on a project and need ergonomic assistance, contact your Responsible Health & Safety Manager (Steve Wehrspann 412-364-4477).
- For office workers, go online and perform a self ergonomic evaluation within the first 30 days of working in the office.
- Requesting an ergonomic evaluation, if appropriate, when job duties change, workstation location changes or if experiencing discomfort that may be associated with their workstation set-up, equipment or overexertion.
- Following the guidance provided by the Ergonomic Evaluator, RHSM or occupational physician regarding ergonomic issues and recommendations on work habits and workstation design.
- Providing immediate verbal communication to their direct supervisor regarding any ergonomic injuries or illnesses that may be work-related.
- Once your supervisor has been notified, immediately contacting the Injury Management/Return to Work Program Administrator to report a work-related injury or illness (in the United States or Puerto Rico).

10.1.9.3 Supervisor/PM is responsible for:

- Set up project office spaces with desks, chairs and computer equipment so they promote good ergonomic practices.
- Participating in efforts to educate employees to recognize ergonomic hazards and perform safe work practices.
- Upon notification that an employee may have experienced a work-related ergonomic injury or illness, ensuring that the employee contacts the Injury Management/Return to Work Program Administrator (in the United States or Puerto Rico).
- Completing and submitting an Hours and Incident Tracking System (HITS) Incident Report Form (IRF) for employees under their supervision who have experienced an ergonomic injury.
- For employees sustaining an ergonomic injury or illness, working with the employee, RHSM and the Injury Management/Return-to Work Coordinator to verify that any physician's recommendations for workstation design and work practices are implemented.

10.1.9.4 Office safety hazards:

- Opening several drawers of a file cabinet at once and having it tip forward.
- Leaving filing cabinet drawers open creating a tripping hazard.
- Cluttering the floor of your office creating a tripping hazard for yourself and individuals that enter your office.

- Standing on chairs to reach high shelves instead of using a step stool or stepladder.
- Slipping and falling because of slippery surfaces.
- Using the office as a storage unit for chemicals.
- Tripping over electrical cords across walkways.
- Using makeshift tools to fix something.
- Running or carrying objects in both hands on stairways.
- Being careless with paper cutters.

The office safety program has the following program objectives:

- Reduce the number and severity of office-related injuries and illnesses
- Increase office safety awareness and involvement, and improve health, safety, and environmental protection (HS&E) communications
- Compliance with regulatory requirements specific to the office environment

Everyone is responsible for keeping the office environment free of potential hazards and for performing their work in a safe manner. Each office has either an office safety committee or an office safety coordinator responsible for implementing an office safety program in your location that meets the requirements of HSE SOP-114. The office safety committee is responsible for executing the program elements of the office safety program and providing documentation that the requirements of each element have been implemented. When a non-committee implementation plan is used, the staff who work on office safety issues are responsible for the same responsibilities of an office safety committee, including documentation that the requirements of each element have been implemented.

10.1.9.5 **Office Assessments**

The office safety program includes conducting periodic office assessments. The purpose of office assessments is to identify and eliminate potential workplace hazards and unsafe practices before they cause injury. Assessments are fact finding and not fault finding. Staff must be made aware of office hazards and unsafe practices and be informed of safer methods of performing the same activity. The assessment should also acknowledge safe practices that are observed. Appropriate corrective action must be taken for all identified hazards and a schedule for corrective action determined. A method of distributing assessment findings to all affected staff members shall be determined by each individual office to prevent unsafe conditions/practices from taking place elsewhere in the office.

10.1.10 Sampling Visits

- Wear appropriate personal protective equipment (eye/face protection, gloves, rubber boots) when in areas where splashing, or equipment movement may cause personnel injury.
- Wear appropriate personal protective equipment (eye/face protection, gloves, rubber boots, face mask) when setting up or breaking down sampling equipment as well as while performing sampling.

- Stay as clear as possible of other operating and processes equipment during performance of site visits, site inspections and sampling events.
- Follow all instructions provided by the sampling equipment vendor (if applicable) with regard to unpacking, setting up, calibrating, using and re-packing sampling field equipment.
- Notify project personnel when visiting the and the location that you will be working.
- Prior to commencing work, verify emergency procedures (notification, evacuation routes, assembly area[s]).

10.1.11 Slips, Trips, and Falls

- Institute and maintain good housekeeping practices
- Pick up tools and debris in the work area
- Walk or climb only on equipment and/or surfaces designed for personnel access
- Be aware of poor footing and potential slipping and tripping hazards in the work area

10.1.12 Uneven Walking Surfaces

- Employees walking in ditches, swales and other drainage structures adjacent to roads or across undeveloped land must use caution to prevent slips and falls which can result in twisted or sprained ankles, knees, and backs.
- Whenever possible observe the conditions from a flat surface and do not enter a steep ditch or side of a steep road bed.
- If steep terrain must be negotiated, sturdy shoes or boots that provide ankle support should be used. The need for ladders or ropes to provide stability should be evaluated.

10.1.13 Working Above or Near Water

(Reference CH2M HILL SOP 404, In-Water, Wetlands, and Coastal Areas)

- Fall protection should be provided to prevent personnel from falling into water. Where fall protection systems are not provided and the danger of drowning exists, U.S. Coast Guard-approved personal flotation devices (PFDs), or life jacket, shall be worn.
- Inspect PFDs prior to use. Do not use defective PFDs.
- A life-saving skiff must be provided for emergency rescue.
- A minimum of one ring buoy with 90 feet of 3/8-inch solid-braid polypropylene (or equal) rope must be provided for emergency rescue.

10.1.14 Working Alone

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

- Working alone may not be hazardous in itself, but the work conditions or tasks to be performed on a project site may affect a person's ability to safely perform the work alone or to receive assistance in the event of an emergency.

- Personnel can be assigned to work alone only by their project manager, who must assess potential hazards and appropriate control measures, with assistance from the responsible Health and Safety manager (RHSM).

Listed below are some examples, not all-inclusive, of workplace conditions that must be considered and impact the ability of the employee to safely work alone:

- Is the amount of time needed for the employee to complete the task reasonable, or will fatigue become a factor?
- Do tasks include handling and lifting materials; operating machinery or powered tools; maintaining electrical, pneumatic, or steam powered systems; or working with hazardous substances?
- Is access to the work area difficult, requiring working at heights, below ground, or in structures that are difficult to enter or exit?
- Does the work location present a risk of violence to the employee; require travel off public roads through desolate or steep terrain; or involve work at a remote location or over or near rivers, pools, or lakes?
- What are the environmental conditions, such as temperature extremes or weather conditions?
- Must the work be performed beyond normal business hours or on weekends or holidays?
- Is the person working alone able to communicate with another employee in the event of an emergency or are emergency services readily available?

Examples (not all-inclusive) of precautionary or control measures that can be used to address the conditions or hazards of working alone:

- Conducting a review of the work schedule to determine whether the task could be completed during a time when the employee does not have to work alone.
- Establishing a communication process that will reliably allow contact with the employee working alone, requires check-in at designated time intervals, includes response actions when communication is lost or check-in is not completed, and verifies the employee has returned to their base of operation after completing the task.
- Using an alarm system or employee monitoring system, such as PASS, that signals to another employee when there is a problem or emergency.
- Requiring supervisors to periodically visit and observe worksites where employees work alone.
- Issuing the proper personal protective equipment (PPE) to the employee and ensure it is maintained in acceptable condition.
- Ensuring emergency supplies are provided for employee to use in event of fire, injury/illness, or survival provisions when working in a remote area.

10.2 Equipment Hazards

Equipment operations may pose hazards during project activities. The following sections summarize these hazards.

10.2.1 Boating Safety

10.2.1.1 General

- Never use a water transport alone, always boat with at least one other person.
- Always wear personal flotation devices (PFD) when working on or above water.
- Ensure at least one member of the field team is trained in CPR/First Aid (more are preferable).
- Bring a first aid kit, with plenty of food and water, a whistle or other form of communication.
- Ensure there is a reliable means of communication from the water vehicle in case of emergencies (radio, mobile phone – check coverage in area first, whistle or horn).
- Do not boat in bad weather, especially when there may be thunderstorms in the area or when rough water is forecasted. Check the local weather forecast before using a boat.
- Protect against UV radiation (see Section 6.4 of this FSI), using sunscreen, hats, long sleeves and pants.
- Be sure the boat is in good condition before starting the trip.
- Complete the Self-Assessment Checklist for boating prior to the trip ***(Attachment 5)***.
- Do not litter. Carry out everything brought in.

10.2.1.2 Loading and Unloading

- Load the boat while it is in water, making sure the load is balanced and kept low in the boat with slightly more weight to the rear.
- Do not overload the boat. Be sure to keep all gear plus the people in the boat within the boat's weight limits.
- Tie all of your equipment to the boat. Put your equipment into a waterproof bag to keep it dry and tie it to one of the center beams in the boat so that you do not lose everything if the boat tips over.
- When unloading, put the gear in one pile out of the way of the boat. You don't want your gear to be an obstacle and become a tripping hazard.

10.2.1.3 In Rough Water

- Do not ride a boat in rough water, or when rough water may be expected later on in the day.

- If found in rough water with waves, never boat parallel to the wind or waves. This is a very vulnerable position and can cause the boat to easily capsize.
- On the other hand, do not paddle directly into the waves either.
- The ideal position is to cut into the waves on a slight angle, if this means zig-zagging to your destination.
- If you are going downwind, it is acceptable to ride perpendicular to the waves.

10.2.1.4 If Your Boat Tips Over

- Don't panic.
- Stay with the boat.
- Stay upstream of the boat to avoid being pinned between the boar and a rock or other stationary object.
- In calm waters, angle your way up to shore instead of paddling straight.
- Stay behind the boat, and hold onto it for flotation.
- Always bring along extra clothing in a waterproof container. Be prepared in case your boat tips or the weather changes.

10.2.2 Gas Powered Sump Pumps and Generators

- Never refuel a gas engine until it is cooled off! Fires regularly are caused from fueling hot engines.
- Store extra fuel in a metal fuel can.
- Have a fire extinguisher on site.
- If the gas powered equipment is loud wear hearing protection while working near that location.
- Remove rings while starting the pump. There have been cases where someone used his left hand to stabilize a gas engine while starting it and the ignition sparked to his wedding ring and caused third degree burns.

10.2.3 Hand and Power Tools

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

- The employer is responsible for complying with all applicable HS&E training requirements relating to hand and power tool safety and for providing any additional training necessary to complete their tasks safely.
- Operate all tools according to the manufacturer's instructions and within design limitations
- All hand and power tools shall be maintained in a safe condition

- Tools are to be inspected and tested before use—if a tool is found to be defective it is to be tagged "Do Not Use" and removed from service until repaired
- Personal protective equipment, such as gloves, safety glasses, earplugs, and face shields, are to be used when exposed to a hazard from the tool
- Power tools are not to be carried or lowered by the cord or hose
- Disconnect tools from energy sources when not in use, before servicing and cleaning, and when changing accessories such as blades, bits, and cutters
- Safety guards on tools are to remain installed while the tool is in use and promptly replaced after repair or maintenance has been performed
- Tools are to be stored properly, 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 (i.e., intrinsically safe, spark proof, etc.) for work in that environment
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion taking care not use excessive force that could damage tool, material being cut, or unprotected hands
- As alternatives to manual and pistol-grip hand tools that involve work with highly repetitive movement, extended elevation, constrained postures, or positioning of body members (e.g., hand, wrist, arm, shoulder, neck, etc.):
  - Consider alternative tool design
  - Improve posture
  - Select appropriate materials
  - Organize work—sequencing to prevent muscular skeletal, repetitive motion, and cumulative trauma stressors
- Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool—training and certification must be provided to the SC before using the tool

10.3 Outdoor Exposures

Operations conducted outdoors may expose workers to weather, ecological hazards and other location-related hazards. The following sections summarize these hazards.

10.3.1 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 (e.g., EpiPen) if you have had allergic reactions in the past, and inform the SC 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.

10.3.2 Heat Stress

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

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F (10° – 16 ° C) should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, 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 or avoid consumption of coffee, carbohydrate-rich beverages, 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 consult the SC 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.	A skin irritation caused by excessive sweating during hot, humid weather. 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 cool, moist and/or clammy; complexion pale, muddy, flushed or red skin; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	**Life threatening.** Red, hot, dry skin; dizziness; confusion; rapid breathing and rapid weak pulse; high oral temperature (as high as 105 degrees F)

Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Keep skin clean and dry and preventing infection. Avoid using ointments or creams as they keep the skin warm and moist and may make the condition worse.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Remove or loosen tight clothing and apply cool, wet cloths such as towels or wet sheets. Rest lying down, with head in low position. If person s awake and alert, give a half glass of cool water every 15 minutes. Do not let them drink too quickly. Seek medical attention.	**CALL 911 or local Emergency Medical Services** Move the person to a cooler place. Keep the person lying down. Quickly cool the body by wrapping wet sheets around the body and fan it. If you have ice packs or cold packs, wrap them in a cloth and place them on each victim's wrists and ankles, in the armpits and on the neck to cool the large blood vessels. Watch for signals of breathing problems and make sure the airway is clear.

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.

10.3.3 Lightning and Thunderstorms

- Monitor the weather to identify potentially hazardous weather approaching the area (TV/cable, radio, etc.).
- Decide when to suspend activities and move to a safe location.
- Know and use the 30-30 Rule (promoted by the National Oceanic and Atmospheric Administration). When the time between lightning and thunder is 30 seconds or less, immediately seek safe shelter.
- Wait at least 30 minutes after hearing the last thunder before leaving safe shelter.
- If the lightning can't be seen, hearing thunder means you should seek safe shelter.
- Note that the 30-30 Rule is best suited for existing thunderstorms moving into the area. It cannot protect against the first lightning strike.

- Safe evacuation sites include substantial and enclosed buildings and fully enclosed metal vehicles with the windows up.
- Unsafe shelters include solitary trees, water, metal objects, electrical and electronic equipment, open fields, and high ground.
- If your skin tingles or your hair stands on end, squat low to the ground on the balls of your feet. Place your hands over your ears and your head between your knees. Make yourself the smallest target possible and minimize your contact with the ground. Do not lie down.
- If someone is struck by lightning, call 911 and administer first aid immediately.

10.3.4 Mosquitoes and West Nile Virus

The following information is taken from the Centers for Disease Control and Prevention (CDC) Website:
Human illness from West Nile virus is rare, even in areas where the virus has been reported. The chance that any one person is going to become ill from a mosquito bite is low. On rare occasions, West Nile virus infection can result in a severe and sometimes fatal illness known as West Nile encephalitis (an inflammation of the brain). The risk of severe disease is higher for persons 50 years of age and older. There is no evidence to suggest that West Nile virus can be spread from person to person or from animal to person.
Most infections of West Nile encephalitis 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 incubation period in humans (i.e., time from infection to onset of disease symptoms) for West Nile encephalitis is usually 3 to 15 days. If symptoms occur, see your doctor immediately.
You can reduce your chances of becoming ill by protecting yourself from mosquito bites. To avoid mosquito bites:

- Apply insect repellent containing DEET (N,N-diethyl-meta-toluamide) when you're outdoors. Apply sparingly to exposed skin. DEET in high concentrations (greater than 35 percent) provides no additional protection.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing.
- Read and follow the product directions whenever you use insect repellent.
- Wear long-sleeved clothes and long pants treated with repellent and stay indoors during peak mosquito feeding hours (dusk until dawn) to further reduce your risk.
- Limit the number of places available for mosquitoes to lay their eggs by eliminating standing water sources.

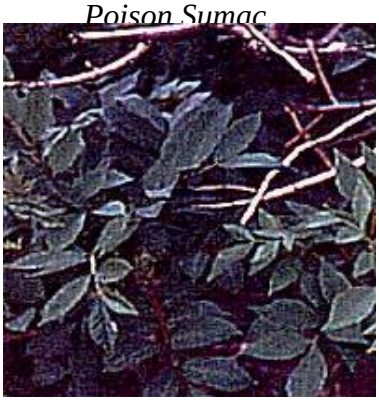
10.3.5 Poison Ivy, Poison Oak and Poison Sumac

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. Shrubs are usually 12 to 30 inches high, or can also be a tree-climbing vine, with triple leaflets and short,

smooth hair underneath. Plants are red and dark green in Spring and Summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in Fall, but plants lose its (yellowed, then brown) leaves in Winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons. These plants contain urushiol (you-ROO-shee-ol), a colorless or pale yellow oil that oozes from any cut or crushed part of the plant, including the roots, stems and leaves and causes allergic skin reactions when contacted. The oil is active year round.

Become familiar with the identity of these plants (see below). 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.

Poison Ivy *Poison Sumac* *Poison*



Contamination with poison ivy, sumac or oak can happen through several pathways, including:

- Direct skin contact with any part of the plant (even roots once above ground foliage has been removed).
- Contact with clothing that has been contaminated with the oil.
- Contact from removing shoes that have been contaminated (shoes are coated with urishol oil).
- Sitting in a vehicle that has become contaminated.
- Contact with any objects or tools that have become contaminated.
- Inhalation of particles generated by weed whacking, chipping, vegetation clearing.

If you must work on a site with poison ivy, sumac or oak the following precautions are necessary:

- Do not drive vehicles onto the site where it will come into contact with poison ivy, sumac or oak. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed as soon as possible after leaving the site.
- All tools used in the poison ivy, sumac or oak area, including those used to cut back poison oak, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the site vehicle. If on-site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated.

- Personal protective equipment, including Tyvek coveralls, gloves, and boot covers must be worn. PPE must be placed into plastic bags and sealed if they are not disposed immediately into a trash receptacle.
- As soon as possible following the work, shower to remove any potential contamination. Any body part with suspected or actual exposure should be washed with "Tecnu" or other product designed for removing urushiol. If you do not have Tecnu wash with cold water. Do not take a bath, as the oils can form and invisible film on top of the water and contaminate your entire body upon exiting the bath.
- Tecnu may also be used to decontaminate equipment.
- Use IvyBlock or similar products to prevent poison oak, ivy and sumac contamination. Check with the closest CH2M HILL warehouse to see if these products are available. Follow all directions for application.

If you do come into contact with one of these poisonous plants and a reaction develops, contact your supervisor and the occupational nurse 1-866-893-2514.

10.3.6 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.

10.3.7 Spiders

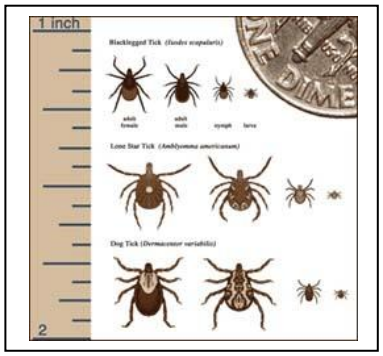
Most spiders are not poisonous. If a spider or web is found, promptly report them to the SC so others can avoid them.

To Prevent Spider Bites:

- Inspect material before use
- Wear gloves when handling lumber, rocks
- Remove trash, boxes, piles of material
- Eliminate clutter in trailers
- Stack wood away from buildings
- Clean up dead insects
- Use rolled up paper to kill spiders, not bare hand
- Use insecticides
- Report all bites immediately (ice, collect spider for identification). Bites look like a small white blister. Symptoms may include:
- Restlessness, Itching
- Fever, Chills

- Nausea, Vomiting, Shock

10.3.8 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.

In some geographic areas exposure is not easily avoided. 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.

Take precautions to avoid exposure by including pre-planning measures for biological hazards prior to starting field work. 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.

Further information is presented below 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.

Background

Ticks typically found are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown. They are very small, with adults no larger than one-quarter inch in size. Ticks resemble a flea or a beetle, with a small head and eight legs.

Ticks may carry diseases and pathogenic organisms, and transfer them to people when they bite. Also the bite wounds themselves may become infected.

Tick Habitat

Ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow and other elements. They may also be found in heavily wooded areas surrounded by tracts of land cleared for agriculture, scrub, high brush, and open grasslands.

Illnesses, Signs, and Symptoms

The bite site may be red, swollen or develop ulceration or lesions. For Lyme disease, the bite

area will sometimes resemble a target pattern.
There are six notable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite, normally hours after attachment (a reason to find tick bites and remove ticks quickly). The illnesses, presented in order of most common to least, include:

- Lyme (bacteria) – To see the Lyme Disease risk for your area: www.aldf.com/usmap
- RMSF (Rocky Mountain Spotted Fever) (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 include some or all of the following: fever, headache, muscle aches, chills, stiff neck, joint aches, nausea, vomiting, abdominal pain, bone pain, diarrhea, fatigue, malaise, weakness, small solid ring-like or spotted rashes. If these symptoms appear after a tick bite, seek medical attention immediately (call the injury reporting number, 1-866-893-2514, see Section 4.6).
A variety of long-term symptoms may result if the illness is left untreated, including debilitating effects and death.

Controls

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 insecticide
- Personal protection through use of protective clothing, repellants (DEET), and contact insecticides (permethrin or permanone)
- Frequent tick inspections and proper hygiene

Note vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.
When avoiding the habitat or reducing tick abundance is not feasible, to prevent tick bites:

- **Clothing:**
  - Wear light-colored clothing so they may be more easily seen before they bite.
  - Wear long sleeves and long pants.
  - Tuck in your clothes (shirt inside your pants, and pants legs inside your socks or boots)
  - Check your clothing frequently for ticks.
- **Repellants and Contact Insecticides:**
  - Use repellents (DEET) on your skin with contact insecticide (permethrin or permanone) on your clothing only, as directed on the product label; these products

are nearly 100% effective in preventing tick bites when used together, and used correctly.

- Apply repellants to all areas of exposed skin. Insects may only need unprotected skin the size of a quarter, repellant on nearby skin or on clothes will not protect this area of skin.
- Reapply repellants before the duration of protection expires:

DEET Concentration	Hours of Protection
5-10%	2-4 hours
15%	6 hours
25-30%	up to 8 hours
100%	10+ hours

Tick Check

A tick check should be performed after field activities in potential tick habitats, 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 thoroughly as possible before entering the vehicle. Once the field day is completed, repeat this procedure and perform a thorough self-check.

At the end of the day, search your entire body carefully for ticks, (particularly the groin, armpits, neck and head), and shower.

Tick Removal

If a tick has embedded itself into the skin, remove the tick as described below. Before performing activities in potential tick habitats, obtain a Tick Removal Kit from the regional warehouse. The tick must be removed quickly, cleanly and intact:

- The tick must be removed quickly, the sooner it is removed the less likely the transmission of potentially infectious organisms, if it is carrying them.
- The tick must be removed cleanly, to prevent the bite wound form becoming infected.
- The tick must be removed intact, to prevent infecting the ticks fluids into the bite wound which may contain infectious organisms. Also if intact, the tick may be assessed to determine if it is carrying infectious organisms (see procedures below).

1. Use pointed, precision tweezers. Cosmetic tweezers with wide, flat ends may crush the tick, increase the potential of the transmission of potentially infectious organisms if the tick is carrying them, and make the wound worse. Choose unrasped fine-pointed tweezers whose tips align tightly when pressed firmly together.

2. After disinfecting the area first, 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 mouth parts to break off and remain in the skin. If this happens, remove mouthparts with tweezers, and consult your healthcare provider if infection occurs.
- Do not grasp, squeeze, crush, or puncture 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.
- Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin.

3. Place tick in a zip lock bag.
4. Thoroughly disinfect the bite would and wash your hands with soap and water.
5. Work with the IMRTW staff to determine if there is the need to send the tick away to be analyzed.

Tick Bite Treatment

Tick bites should always be treated with first aid. Clean and wash hands and disinfect the bite wound site before and after removing the embedded tick.
Monitor the site of the bite for the appearance of a rash or early tick-borne illness symptoms beginning 3 to 30 days after the bite. If infection or symptoms and effects of tick-borne illnesses develop call the occupational nurse (866-893-2514).

10.3.9 Ultraviolet Radiation/Sun Exposure

(Reference CH2M HILL SOP HSE-217, *Ultraviolet Radiation*)

- Sunlight is the most intense source of Ultraviolet Radiation (UV). Welding operations may produce levels of UV radiation that can result in significant health effects, primarily to the eyes (see SOP HSE-314, *Welding and Cutting*).
- Health effects caused by UV radiation are confined to the eyes and skin.
- Overexposure to the skin can result in redness, sunburn, skin rash, premature skin aging, and numerous types of skin cancer (melanoma is the most serious type of skin cancer, and accounts for 75 percent of skin cancer deaths).
- Overexposure to the eyes may lead to inflammation of the cornea (sunburn to the cornea, also known as snow blindness, which leads to redness and a gritty feeling which progresses to pain and an inability to tolerate any kind of light). Working around or in water, or other natural UV reflectors, can cause a combination of direct and reflected sunlight resulting in double exposure. Long-term exposure to sunlight may also cause cataracts or clouding of the lens of the eye.
- UV exposure can lead to skin cancer, premature aging of the skin, wrinkles, cataracts, and other eye problems. See a health care physician if you find an unusual skin change (spot on the skin changing in size, shape or color over a period of 1 month to 2 years).
- The amount of UV exposure depends on:

  - The strength of the light
  - The length of exposure
  - The protection provided for the skin

- The skin and eyes are the most susceptible to UV damage. You need to be especially careful in the sun if you have:

  - Numerous moles, irregular moles, or large moles
  - Freckles or burn before tanning
  - Fair skin, or blond, red or light brown hair
  - Spend a lot of time outdoors

When working outdoors, follow these five steps to protect against UV radiation and the adverse health effects it can cause:

1. Wear Appropriate Clothing and Protection. Reduce UV radiation damage by wearing proper clothing.

   - Wear long sleeved shirts with collars, and long pants.
   - Wear clothing to protect as much of your skin as possible.
   - Wear clothing that does not allow visible light through it.
   - To determine if the clothing will protect you: Place your hand between the fabric and a light source. If you can see your hand through the fabric, the garment offers little protection against sun exposure.
   - Head protection should be worn to protect the face, ears, and neck. A wide brim hat is ideal because it protects the neck, ears, eyes, forehead, nose and scalp. Pith-style hard hats are available, as well as brim attachments for hard hats for additional protection. A baseball cap may not be appropriate depending on the hazards in the area. Baseball caps provide some protection for the front and top of the head, but not for the back of the neck or the ears where skin cancers commonly develop.
   - Wear UV-absorbent sunglasses or safety glasses. These should fit closely to the face. Wrap-around style glasses provide the best protection. Ideal sunglasses do not have to be expensive, but they should block 99 to 100% of UVA and UVB radiation. Check the label to make sure they do. Darker glasses are not necessarily the best. UV protection comes from an invisible chemical applied to the lenses, not from the color or darkness of the lenses.
   - Use “broad spectrum” sunscreen with at least 15 SPF. Experts recommend products with a Sun Protection Factor (SPF) of at least 15. The number of the SPF represents the level of sunburn protection provided by the sunscreen. An SPF 15 blocks out 93% of the UV rays; an SPF 30 blocks out 97% of the UV rays. Products labeled “broad spectrum” block both UVB and UVA radiation. Both UVA and UVB contribute to skin cancer.
   - Apply sunscreen generously to all exposed skin surfaces at least 20 minutes before exposure, allowing time for it to adhere to the skin.
   - Reapply sunscreen at least every 2 hours, and more frequently when sweating or performing activities where sunscreen may be wiped off.

- 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. Provide Shade

- Take lunch and breaks in shaded areas
- Use the shade form existing buildings and trees

3. Limit Direct Sun Exposure

- Rotate staff so the same personnel are not exposed all of the time.
- Limit exposure time when UV radiation is at peak levels. UV rays are most intense when the sun is high in the sky, between 10 AM and 4 PM. If you are unsure about the sun's intensity, take the shadow test: If your shadow is shorter than you, the sun's rays are the strongest. Seek shade whenever possible. Also, check the UV Index forecasted for your area while working outside (see below).
- Avoid exposure to the sun, or take extra precautions when the UV index rating is high.
- The UV Index is used to quantify the forecasted UV intensity. It is based on a scale from 1 (about 60 minutes before the skin will burn) to 10 (about 10 minutes before the skin will burn). The higher the number, the greater the exposure to UV radiation. The UV Index helps determine when to avoid sun exposure and when to take extra protective measures. It is forecasted daily for 58 cities. The UV Index can be found in the local newspaper on the local TV and radio weather broadcasts, or on internet weather forecasts (including the National Weather Service at www.nws.noaa.ov/om/uvi.htm).

11.0 Personal Protective Equipment

(Reference CH2M HILL SOP HSE-117, *Personal Protective Equipment*, and HSE-121, *Respiratory Protection*)

11.1 General Information

When actual or potential hazards exist and engineering controls or safe work practices cannot eliminate the hazard, employees shall use PPE. The employer shall provide field personnel with the required project-specific PPE and training.
Employees are responsible to:

- Acquire the necessary PPE from the employer
- Complete the appropriate training to learn the proper use and care
- Use PPE as required in the project-specific written safety plan
- Inspect PPE prior to use and maintain it in a clean and safe condition
- Not modify, tamper with, or repair PPE beyond routine maintenance
- Inform the employer of equipment that is damaged
- Inform the employer of equipment that they believe does not adequately protect them from actual or potential hazards

11.2 Hazard Assessment

The employer shall identify actual or potential hazards and the need for PPE. Two conditions typically dictate the necessity for PPE: general hazards present in the work area, and hazards created by the tasks being performed. Some work areas have actual or potential hazards that can be present at any time, thereby potentially exposing any personnel working or walking through the area. Such areas should be posted as PPE-required areas, or personnel should be informed of the requirements in an equivalent manner. In addition, the actual task being performed may create a hazard and require personnel who perform this task to wear appropriate PPE. The areas where these tasks are taking place may become PPE-required areas as long as that specific task is taking place.
At a minimum the following PPE shall be used by field project personnel:

- Personal Floatation Device

In addition personnel must comply with the PPE requirements as specified in the following table.

PPE Specifications [a]

Hazard	PPE
General entry to active industrial facility or construction site, or when required by client/facility.	▪ ANSI approved steel or polycarbonate -toe leather work boots, safety glasses, and hardhat.
Skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns and harmful temperature extremes.	▪ Leather work gloves for protection against cuts and abrasions. ▪ Nitrile, or other appropriate chemical-resistant gloves for protection against contact with chemicals or untreated wastewater.
Working around heavy equipment or other noisy machinery, or if you must raise your voice to be heard while communicating with persons near you, hearing protection is required.	ANSI-approved ear plugs or earmuffs. Employees should be enrolled in a hearing conservation program.
Danger of foot injuries due to falling or rolling objects, objects piercing the sole, or when the feet are exposed to electrical hazards.	ANSI-rated footwear or ANSI approved steel or polycarbonate -toed leather work boots.
Potential for head injury from impact, falling or flying objects.	ANSI-approved hardhat.
Flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.	ANSI-approved safety glasses with side shield, safety goggles, face shield, or welding glasses. Face shield may be used only in conjunction with the use of other protective eyewear.
Work with Chemicals or Laboratory Work (COD Test—see MSDS for chemical specific requirements)	PPE as required by the MSDS of the specific chemical or procedure used, which may include: ▪ Goggles/Safety Glasses with side shields ▪ Face Shield ▪ Rubber Gloves ▪ Rubber Apron
Work over or near water	▪ U.S. Coast Guard-approved personal flotation devices (PFDs) ▪ A minimum of one ring buoy with 90 feet of 3/8-inch solid-braid polypropylene (or equal) rope must be provided for emergency rescue.

Reasons for Upgrading or Downgrading Level of Protection

Upgrade[d]	Downgrade
▪ Request from individual performing tasks. ▪ Change in work tasks that will increase potential for injury. ▪ Known or suspected presence of dermal hazards.	▪ Situation is less hazardous than originally thought. ▪ Change in site conditions that decreases the hazard. ▪ Change in work task that will reduce potential for injury.

NOTES:

(Reference CH2M HILL SOP HSE-117, *Personal Protective Equipment* and HSE-121, *Respiratory Protection*)

Note that PPE is required when exposed to the general hazards listed in the table. Because certain tasks (e.g., welding, energized work, etc.) require specialized PPE, refer to HSE-121 to conduct an assessment for task-specific PPE requirements.

[a] CH2M HILL will provide PPE only to CH2M HILL employees.
[b] Performing tasks that require respiratory protection is permitted only when the PPE requirements have been approved by the HSM, and a SC qualified at that level is present. 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 SC qualified at that level is present.

11.3 Training

CH2M HILL requires each PPE user to receive training on the proper care, maintenance, limitations, and instructions on how to wear and adjust PPE. The proper use of PPE should also be included in project safety briefings and toolbox meetings.

12.0 Safety Inspections

In addition to the hazard controls specified in this document, Project Activity Self-Assessment Checklists are contained in Attachment 5. Any site-specific requirements outlined in this FSI that are more stringent than those contained in the Project-Activity Self-Assessment Checklists are to take precedence. The Project-Activity Self–Assessment Checklists are based upon minimum regulatory compliance and some site-specific requirements may be more stringent. Each subcontractor shall provide their own checklists to be used weekly to assess the adequacy of site-specific safety requirements and determine if employees will be safe. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. The self-assessment checklists, including documented corrective actions, shall be made part of the permanent project records and maintained by the SC. The self-assessment checklists will also be used by the SC and potentially any safety committee that may be formed, in evaluating CH2M HILL's project exposures.

If hazardous conditions exist or are apparent during the self-assessment, immediately notify the employees in the area and do not continue work in that area. If an imminent danger situation exists, that which is immediately life threatening or would cause serious injury, immediately stop work and warn the contractor employee(s) in danger and notify the contractor safety representative and report it to the SC.

Self-assessment checklists should be completed and permit-to-work reviewed prior to exposure of the activities outlined below. Self-assessments shall be completed prior to subjecting personnel to that particular hazard exposure. Follow-up self-assessments shall be conducted on a regular basis as defined by the project team and your HSM or more frequent if conditions warrant.

The following list of hazardous activities are those most likely to be found for this project's SOW. Each of the following Project Activity Self-Assessment Checklists are found in Attachment 5. The SC is responsible for identifying site-specific hazardous activities not included in this list (for example: chlorine safety, tunneling, traffic control, etc.) and informing the HSM. The HSM and SC shall integrate methods for verifying compliance with established safe work practices, regulations, and industry standards pertaining to those additional site-specific hazardous activities.

- Boating
- Hand and Power Tools

The SC will perform regularly scheduled site safety inspections to verify that CH2M HILL's project activities are conducted in a safe manner. The SC should keep a log to track the health and safety observations. In addition to the SC's log, certain high hazard exposures that are discovered by the SC should be documented on the Observed Hazard Form, Stop Work Order Form, or the Health and Safety Audit Findings Table. These documents can be found in the Attachments to this FSI.

13.0 Safety Training

13.1 CH2M HILL Employee Training

The intent of CH2M HILLs employee training program is to ensure that CH2M HILL employees receive the appropriate level of training to conduct their work in a safe manner and to comply with applicable regulations. All employees are required to maintain the training qualification necessary to perform their assigned duties and job functions. Guidance on required courses can be obtained from HSMs and CH2M HILL SOP HSE-110, *Health, Safety, and Environment Training*.

13.2 Project Employee Orientation

CH2M HILL employees expecting to access the site are required to have CH2M HILLs project employee orientation. The training provided to the employees in the employee orientation shall include:

- Review the FSIs
- Present an overall site safety briefing (general site safety)
- Review employee responsibilities
- Review emergency procedures and evacuation plan
- Review injury and incident reporting procedures
- Review reporting procedures for hazardous conditions and/or hazardous activities

13.3 Safety Pre-Task Planning and Training

Safety meetings provide a method for maintaining safety awareness and providing safety-related information and training to employees.
Each day, the onsite supervisors shall hold informational safety training with each member of their crew. Information discussed and training performed shall pertain to current project activities and scope of work. Contractors are encouraged to use this time for employee input and task-specific training (see Safety Pre-Task Planning).

13.4 Vendor/Contractor Training

Vendors/contractor that supply equipment to CH2M HILL personnel will be required to perform a training session to review and explain the safe operation procedures to the parties that will be using or operating the equipment (e.g., fall protection equipment, confined space entry equipment, scaffolding, aerial lift platforms, powder actuated tools, and power tools).

13.5 Emergency Response Plan Training

Emergency Response Plan (ERP) training will occur during the employee orientation and retraining will occur periodically in safety meetings. The ERP training will include the

procedures for reporting to external emergency response organizations (e.g., police, fire department, ambulance services, hospitals, rescue services, and hazardous material response services), building or site evacuation, designated evacuation assembly areas, and methods of accounting for staff upon evacuation. Emergency drills will be performed periodically, but at least once per year. See ***Section 10*** for the Emergency Preparedness procedures.

13.6 Training Documentation

All training shall be documented. Documentation and certificates verifying completion will be maintained onsite by the employer and copies of the training documentation will be submitted to the SC. Training documentation will be made available for review at all times.

14.0 Incident Reporting, Investigation, and Management

14.1 Scope and Application

This section describes requirements for internal notification, report and investigation of all incidents occurring in CH2M HILL facilities or projects, including serious incidents. Refer to CH2M HILL SOP HSE-111, *Incident Notification, Reporting and Investigation* for more information.

14.2 Definitions

I**ncidents** are events that cause or could have caused undesired consequences. An incident may be caused by natural forces, employees, subcontractors, or third parties in any location associated with CH2M HILL operations, including offices, warehouses, project sites, private property, or public spaces. Incidents include:

- Injury or illness to a CH2M HILL employee or subcontractor employee
- Property damage
- Spill or release of hazardous or regulated material
- Environmental or permit violation
- A "near-miss"
- Other (e.g., fire, explosion, bomb threat, workplace violence)

Serious incidents must be immediately reported to senior management. Serious incidents include:

- Work related death, or life threatening injury or illness of a CH2M HILL employee, subcontractor, or member of the public
- Kidnap/missing person
- Acts or threats of terrorism
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage.
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

14.3 Verbal Notification

- For all incidents, employees and subcontractors shall immediately notify the Safety Coordinator ***and*** their direct supervisor.

- The employee, Safety Coordinator or supervisor shall immediately notify the Project/Facility Manager ***and*** the Responsible Health and Safety Manager (RHSM) of all incidents.
- The Project/Facility Manager shall notify the Crisis Manager (720-286-4911) immediately of all serious incidents.
- The RHSM shall notify the REM of spills/releases and environmental/permit incidents.

14.4 Hours and Incidents Tracking System

The CH2M HILL **Hours and Incidents Tracking System** (HITS) is an online tool for reporting, tracking and trending all CH2M HILL incidents.

- The Safety Coordinator shall complete the Incident Report Form (IRF) in the HITS database **within 24 hours** for all non-injury/illness project incidents, including subcontractor incidents.
- The employee's supervisor shall complete the IRF **within 24 hours** for all injury/illness incidents.
- The WBG HSE Lead or designee shall update and evaluate the IRF for accuracy and completeness, consistent with company and regulatory requirements.

14.5 Incident Notification and Reporting

14.5.1 General Provisions

- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the PM and/or the DSC (the PM or DSC will notify the HSM).
- For CH2M HILL subcontractor incidents, complete and incident report form and submit to the HSM.
- For CH2M HILL work-related injuries or illnesses, follow the procedures detailed in Section 9.5.2 below.
- Notify and submit reports to CH2M HILL and to the client as required in the contract.

14.5.2 Incidents that Involve CH2M HILL Staff Only—Injury Management/Return-to-Work (IMRTW)

(Reference CH2M HILL, 124, *Injury Management/Return-to-Work*)

- **Background and Benefits:** The Injury Management Program has been established to provide orderly, effective and timely medical treatment and return-to-work transition for an employee who sustains a work-related injury or illness. It also provides guidance and assistance with obtaining appropriate treatment to aid recovery, keep supervisors informed of employee status, and to quickly report and investigate work-related injury/illnesses to prevent recurrence.

- **How it works:** All non-emergency work-related injuries and illnesses to a CH2M HILL employee within the United States and Puerto Rico must be reported immediately. This includes even minor injuries. In the case of an emergency, call 911 immediately.

  - ***Employees***, if you are injured:

1. Notify your supervisor immediately
2. Call the Injury Management number **(866) 893-2514**
3. Obtain medical treatment as directed, and follow the medical providers directions

  - ***Supervisors***, if your employee is injured:

1. Ensure they have called the Injury Management number – **(866) 893-2514**, and are obtaining proper medical treatment. Make the call for them if they are not able to do so.
2. Complete the incident report form (Hours and Incident Tracking System, HITS) on the VO, with as much information as you know at that time (https://www.int.ch2m.com/hits).
3. Provide transitional duty when necessary, and ensure the restrictions given by the medical provider are followed.

14.5.3 Serious Incident Reporting

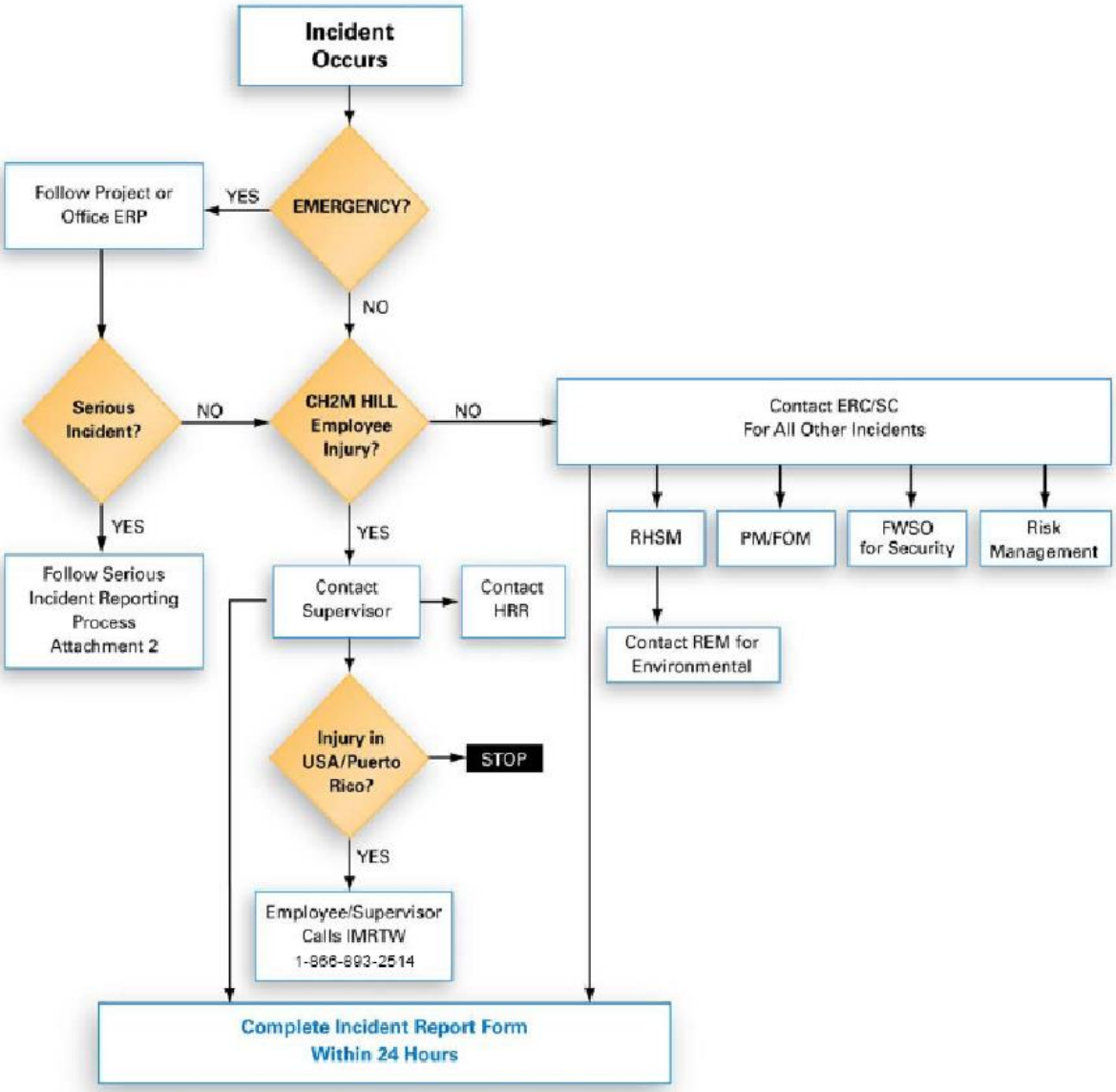
(Reference CH2M HILL, SOP 111, Incident Notification, Reporting, and Investigation)

- Serious Incidents must be reported in accordance with CH2M HILL Standard of Practice, *Serious Incident Reporting Process,* immediately. Serious incidents are those that involve any of the following:
  - Work related death, or life threatening injury or illness of a CH2M HILL employee, subcontractor, or member of the public
  - Kidnap/missing person
  - Acts or threats of terrorism
  - Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $500,000 in damage.
  - Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

14.6 Flowcharts

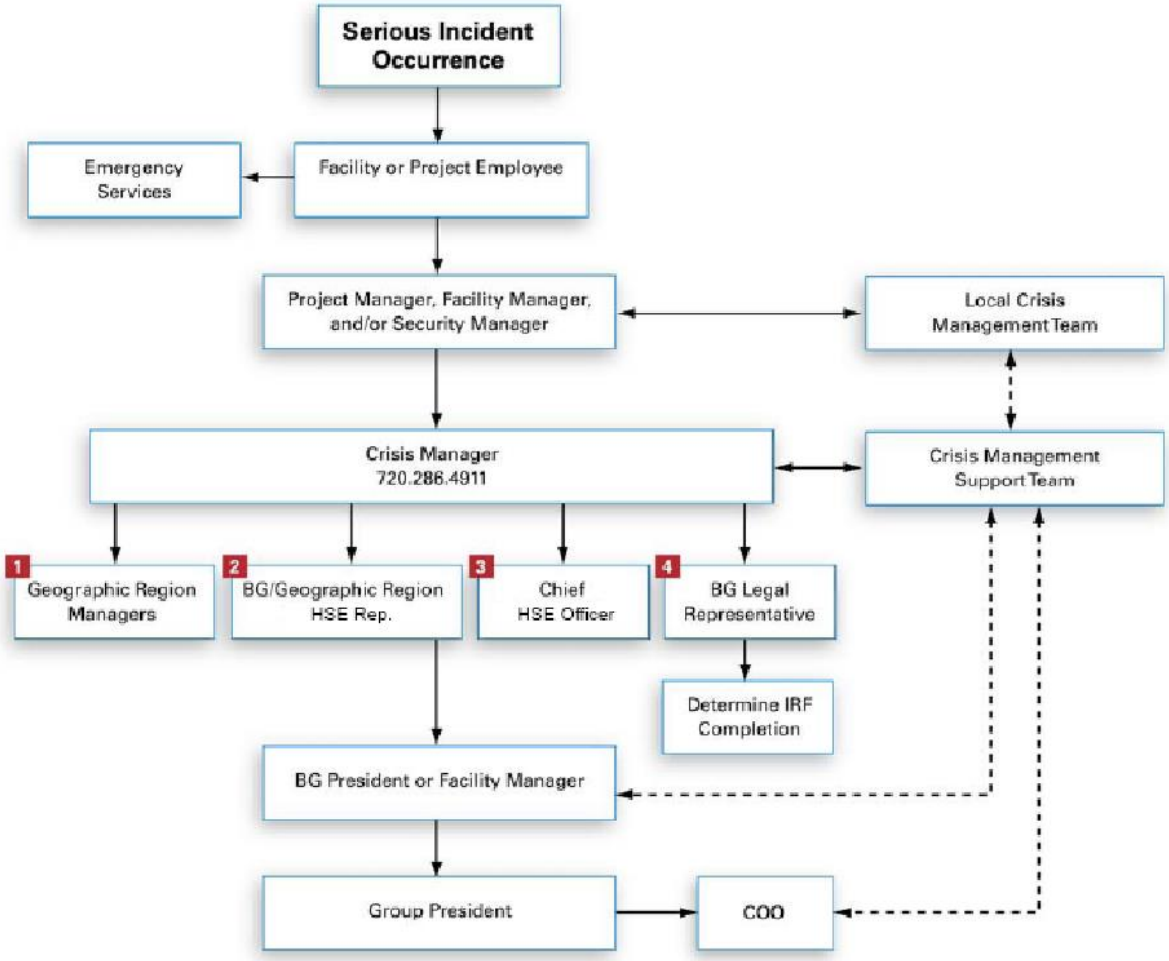
CH2MHILL

Attachment 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

Attachment 2
CH2M HILL Serious Incident Notification



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.

14.7 Investigation

The purpose of an incident investigation is to understand how the incident happened, analyze the root causes, and prevent recurrence by implementing corrective actions and distributing lessons learned.

- Incident investigations shall be initiated by the supervisor or Project Manager and completed as soon as possible, but no later than 72 hours after the incident has occurred.

- Except for serious incidents, the RHSM or REM (depending on the type of incident) shall be responsible for determining the level of the investigation. The RHSM/ECC may conduct the investigation directly or may delegate this function to the Safety Coordinator.
- Non-serious investigations shall be documented by updating the HITS form.
- The Project Manager/Facility Manager shall implement all corrective actions.
- The RHSM/REM shall distribute lessons learned as needed and verify that corrective actions are implemented to prevent further incidents.

14.8 Incident Root Cause Analysis

The accident analysis is essential if all causes of the incident are to be identified for the correct remedial actions to be taken to prevent the same and similar type of incident from recurring. The investigation team will consist of the SC, the responsible supervisor, and the safety committee. The Root Cause Analysis Form must be completed for all Loss Incidents and Near Loss Incidents. This form must be submitted to the investigation team for review.
For minor losses or near losses, the information may be gathered by the supervisor or other personnel immediately following the 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, determine the root cause, and 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.”

14.8.1 Personal Factors

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

14.8.2 Job Factors

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

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.

14.9 Corrective Actions

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 timeframe for completion. Be sure the corrective actions address the causes.

Once the investigation report has been completed, the PM shall hold a review meeting to discuss the incident and provide recommendations. The responsible supervisors shall be assigned to carry out the recommendations, and shall inform the SC upon successful implementation of all recommended actions.

15.0 Emergency Preparedness

An emergency may be an injury to a worker, an explosion, evacuation, fire, or chemical release. Employees must know what to do if an emergency occurs. This requires pre-planning and communication of these plans to employees.

15.1 Pre-Emergency Planning

- The SC 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 (For additional Emergency Planning, reference CH2M HILL SOP HSE-106 *Emergency Planning*)
- Review the facility emergency and contingency plans where applicable
- Coordinate with third party contractors and the Client to review the plant and project site emergency and contingency procedures:
  - Emergency reporting procedures
  - Notification procedures for all workers onsite that an emergency is taking place
  - Emergency notification means
  - Assembly area(s) for anticipated emergencies (chemical release, fire, severe weather, etc.)
  - Site evacuation routes
- 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
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases
- 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

- Also, it is of the utmost importance that we carefully coordinate all of our emergency activities, particularly natural disasters, with our Information Technology groups. Be sure to include them, beginning in the planning stages.

15.2 Emergency Equipment and Supplies

The SC will verify that these supplies are available, as needed, and in proper working order and mark the locations of emergency equipment on the site map when a map is provided.

TABLE 10-1
Emergency Equipment and Supplies

Emergency Equipment and Supplies	Location
20 lb (9 kg)(or two 10-lb (4.5 kg)) fire extinguisher (A, B, and C classes)	Field Vehicle
First aid kit	Field Vehicle
Personal eye wash	Field Vehicle
Potable water	Field Vehicle
Bloodborne-pathogen kit	Field Vehicle
Additional equipment (specify):	Field Vehicle

15.3 Emergency Response

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

- Shut down CH2M HILL operations and evacuate the immediate area
- Notify appropriate response personnel
- Account for personnel at the designated assembly area(s)
- Assess the need for site evacuation, and evacuate the site as warranted
- Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled

15.4 Evacuation Procedures

- Evacuation routes and assembly areas will be designated by the SC before work begins
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation
- The SC will account for all CH2M HILL personnel and subcontractor at the assembly area
- The SC will write up the incident as soon as possible after it occurs and submit a report to the Corporate Director of Health and Safety

15.5 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to the Injury Management/Return to Work number (866) 893-2514. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CH2M HILL medical consultant.
Emergency contact information for the site office personnel and local vendors are included in the Emergency Contacts Table below and in the Project Contacts List.
Follow these procedures as appropriate:

- Notify appropriate emergency response authorities listed in Emergency Contacts
- Report the incident to the SC (the SC will notify the RHSM). Provide the following information:
  - Your name and telephone number (including extension).
  - The nature of the emergency.
  - The exact location of the emergency and any information you may have about the victim or other persons involved.
  - The name, sex and approximate age of the victim (as much as known).
  - The nature of the injury or illness.
  - Is the victim:

    1. Conscious
    2. Breathing without assistance
    3. Bleeding
- Do not move the victim
- The SC will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room. If possible, have someone meet responding personnel to lead them to the victim's location.
- Prevent further injury
- Initiate first aid and CPR where feasible
- Get medical attention immediately
- Make certain that the injured person is accompanied to the emergency room
- If the injured is a CH2M HILL employee, the SC or PM must accompany the injured CH2M HILL employee to the emergency room and to any follow-up appointments until the injured is released to full duty.
- When contacting the medical consultant, state that the situation is a CH2M HILL matter, and give your name and telephone number, the name of the injured person, the extent of the

injury or exposure, and the name and location of the medical facility where the injured person was taken

- Report incident as outlined in Incident Notification and Reporting section 9.5

15.6 Emergency Notification Flow Chart

- The following Emergency Evacuation Flow Chart has been established for communicating incidents or accidents that may require an emergency evacuation.

Emergency Notification Flow Chart

Field Incident or Emergency Occurs

↓

Eyewitness communicates event to CH2M HILL PM and/or SC

↓

CH2M HILL PM and/or SC communicates required actions to all field personnel

↓

Field personnel stop work and proceed to previously designated Evacuation and Assembly Area if path is safe and available from the work areas. Otherwise, exit work area and move to a safe area outside or along the construction perimeter. Project employees will create a mustering point where supervisors can perform a headcount. The headcount will be given to CH2M HILL PM and/or SC.

↓

Field personnel follow evacuation direction from CH2M HILL PM and/or SC

All events will not necessarily constitute a site evacuation, and will be determined by the SC and the PM. CH2M HILL will communicate required actions to all subcontractor supervisors who will in turn follow the procedures as directed.

Emergency Contacts

In the event of a Serious Incident:

- fatality, critical injuries,
- kidnap/missing person,
- event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $ 500,000 in damage.
- Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

Immediately Contact the Crisis Manager at 720-286-4911

Medical Emergency – 911
Local Ambulance #:

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

Fire/Spill Emergency – 911
Local Fire Dept #:

CH2M HILL Medical Consultant
Dr. Peter Greaney, Workcare
866-893-2514

Security & Police – 911
Local Police #:

Occupational Clinic
Patient First Neighborhood Medical Center
8105 Ritchie Highway
Pasadena, MD 21122

Utilities Emergency
Water:
Gas:
Electric:

Health & Safety Manager (HSM)
Name: Steve Wehrspann
Phone: 412-364-4477
steve.wehrspann@ch2m.com

Environmental Manager
Name: Megan Morrison
Phone: 720- 286-0125

Safety Coordinator (SC)
Name: Christopher Wiggins
Office Phone: 215-640-9081
Cellular Phone: 610-348-7439

Corporate Human Resource
INC/WBG: Donald Shipley/DEN
Human Resources Director
720-286-4048
Donald.Shipley@ch2m.com

Project Manager (PM)
Name: Laurens Van der Tak
Office Phone: 301-495-8840 ext. 41019
Cellular Phone: 301-204-2436

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

Automobile Accidents
Rental: Carol Dietz/COR (303) 713-2757
CH2M HILL Vehicle: (800) VISA-911
Zurich Insurance (877) 246-3373
Report fatalities AND vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Facility Alarms: *NA*	**Evacuation Assembly Area(s):**
Facility/Site Evacuation Route(s):	
Hospital Name/Address: Baltimore Washington Medical Center 301 Hospital Dr. Glen Burnie, MD 21061	**Hospital Phone #:** 410-787-4565
Clinic Name/Address: Patient First Neighborhood Medical Center 8105 Ritchie Highway Pasadena, MD 21122	**Hospital Phone #:** 443-573-0564

Directions and Map to Hospital

Directions to Hospital: See below.

Directions and Map to Medical Clinic

Directions to Medical Clinic: See below.

EMERGENCY PREPAREDNESS TRAINING

The emergency response plan will be reviewed during the employee orientation and occasionally during site safety briefings. The briefings should include:

- Emergency procedures for fires, explosions, chemical and vapor releases, personnel injuries, and suspected overexposure as they apply to the site
- Location of onsite emergency equipment and supplies of clean water
- Local emergency contacts, hospital routes, evacuation routes, and assembly points
- Site communication and location of phone nearest to the site
- Names of onsite personnel trained in first-aid and CPR
- Procedures for contacting CH2M HILL's medical consultant and occupational physician(s)

Emergency drills will be performed periodically, but at least once per year (initially within the first 90 days of construction). Upon completion of each drill, an evaluation shall be made of the ERP to determine its effectiveness. Any problems or concerns identified during the evaluation will be corrected.

16.0 Spill Control Procedures

CH2M HILL and subcontractor personnel working at the project site shall be knowledgeable of the potential health, safety and environmental concerns associated with petroleum and other hazardous substances that could potentially be released at the project site. Refer to the chemical hazard section of this plan for more information.

The following is a list of criteria that must be addressed in the subcontractor's plans in the event of an oil/petroleum spill or release of any other hazardous substance. In the event of a large quantity spill that would require cleanup procedures that are beyond the means of the subcontractor, an emergency spill cleanup subcontractor shall be hired by the subcontractor. In the event the subcontractor has the personnel necessary to clean up the spill, the following procedures shall be followed:

1. Personnel discovering or responding to a spill shall:

   (a) Identify and locate the source of the spill. If unsafe conditions exist, then leave the area, inform nearby personnel, notify the site supervisors, and initiate spill reporting. The SCC is to be notified immediately. Upon notification, the SC will contact Megan Morrison/DEN, WBG Environmental Manager (720-286-0125, 850-261-4296)

   (b) Limit the discharge of product, if safety possible, by: (1) diverting discharge to a containment area; (2) creating temporary dikes; and (3) utilizing sorbent materials. If secondary containment is present, verify that valves and drains are closed prior to diverting the product to this area.

   (c) The individual discovering a spill shall initiate containment procedures to prevent material from reaching a potential migratory route, through implementation of the following actions, or any other methods necessary. Methods employed shall not compromise worker safety.

      (i) Stop the spill immediately (if possible).

      (ii) Extinguish sources of ignition (e.g., flames, sparks, hot surfaces, cigarettes, etc.)

      (iii) Clear personnel from the spill location and barricade the area.

      (iv) Utilize available spill control equipment in an effort to ensure that fires, explosions, and releases do not occur, recur, or spread.

      (v) Use sorbent materials to control the spill at the source.

      (vi) Construct a temporary containment dike of sorbent materials, cinder blocks, bricks or other suitable materials to help contain the spill.

      (vii) Attempt to identify the character, exact source, amount, and extent of the released materials. Identification of the spilled material should be made as soon as possible so that the appropriate cleanup procedure can be identified.

      (viii) Assess possible hazards to human health or the environment as a result of the release, fire or explosion.

(ix) If spill response measures involve the temporary cessation of any operations, the subcontractor shall monitor the affected equipment for: (1) leaks; (2) pressure buildup; (3) gas generation; or (4) ruptures in valves, pipes, or other equipment.

2. Qualified and duly trained subcontractor project plans and procedures shall address spill cleanup criteria:

   (a) Use of proper waste containers and marking, labeling.

   (b) Waste removal methods and measures to ensure incompatible wastes are not commingled.

   (c) Use of sorbent materials to pick up remaining liquid after bulk liquid has been removed.

   (d) Personal, equipment and container decontamination methods and spill response equipment restocking.

3. Spill Report shall be completed, including a description of the event, root causes, and corrective actions.

17.0 Approval

This FSI has been written for use by CH2M HILL and their subcontractors 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 FSI is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

17.1 Original Plan

Written By: Steve Wehrspann **Date:** August 2011

Approved By: **Date:**

17.2 Revisions

Revisions Made By: **Date:**

Revisions to Plan:

Revisions Approved By: **Date:**

Attachments

Attachment 1: Employee Signoff Form – Field Safety Instructions
Attachment 2: Safety Planning Forms (THA and SPTP)
Attachment 3: Hazard Communication (Forms and MSDS)
Attachment 4: Project-Specific H&S Forms and Permits
Attachment 5: Project Activity Self-Assessment Checklists
Attachment 6: Injury Management Poster
Attachment 7: Incident Forms
Attachment 8: Stop Work Form
Attachment 9: Observed Hazard Form

ATTACHMENT 1

Employee Signoff Form
CH2M HILL Field Safety Instructions

CH2MHILL

EMPLOYEE SIGNOFF FORM

Field Safety Instructions

- **The CH2M HILL project employees and subcontractors listed below have been provided with a copy of this FSI, have read and understood it, and agree to abide by its provisions.**
- **The FSI should be reviewed on continuously to determine if the current FSI adequately addresses ongoing project work.** This includes whenever new tasks are considered or changed conditions are encountered. The Safety Coordinator should contact the RHSM for assistance in updating the FSI, or update the FSI and provide it to the RHSM. The follow conditions should be considered when determining if the FSI needs to be updated:
  - ☐ Access is needed to the restricted areas or activities listed in Section 2 of this FSI;
  - ☐ The scope changed, or additional tasks added to the project;
  - ☐ New CH2M HILL staff joined the project;
  - ☐ New subcontractor added to the project;
  - ☐ New chemical or product used that is not listed in Attachment 4;
  - ☐ New contaminants or higher than anticipated levels of original contaminants been encountered.
  - ☐ Any other safety, equipment, activity or environmental hazards encountered that are not addressed in the FSI;
  - ☐ New CH2M HILL or WBG policies, procedures or practices.

Project Name: Rock Creek Water Quality Monitoring Study **Project Number:** 411978

EMPLOYEE NAME (Print)	EMPLOYEE SIGNATURE	COMPANY	DATE

ATTACHMENT 2

Safety Planning Forms
CH2M HILL Field Safety Instructions

Task Hazard Analysis Form and Safety Pre-Task Planning Form

Task Hazard Analysis Table

(Refer to Hazard Controls section)

POTENTIALHAZARDS	TASKS BREAKDOWN									
Aerial Lifts (HSE-301)										
Buried/overhead Utilities										
Compressed Gas Cylinders										
Concrete Work (HSE-302)										
Confined Space Entry (HSE-203)										
Cranes and Hoisting (HSE-303)										
Demolition (HSE-305)										
Drilling Safety (HSE-204)										
Earthmoving Equipment (HSE-306)										
Electrical Safety (HSE-206)										
Excavation and Trenching (HSE-307)										
Fall Protection (HSE-308)										
Fire Prevention (HSE-208)										
Flammable/combustible liquids										
Forklift operations (HSE-309)										
Ladders & Stairways (HSE-214)										
Lockout & Tagout (HSE-310)										
Manual Lifting (HSE-112)										
Material Handling										
PPE (HSE-117)										
Potential Chemical/Radiation exposures										
Power Tools (HSE-210)										
Process Safety (HSE-213)										
Scaffolding (HSE-311)										
Steel Erection (HSE-312)										
Traffic Control(HSE-216)										
Tunneling/shaft operation (HSE-313)										
Welding and cutting (HSE-314)										

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DETAILED TASK HAZARD ANALYSIS

TASK/AREA:	Prepared by:	Date/Time:
Company Name:	Supervisor:	

Description of work:

TASK BREAKDOWN *(subtasks required to complete the task)*	**IDENTIFY & ANALYZE THE HAZARDS** *(chemical, physical, safety, and biological/environmental hazards)*	**IDENTIFY HAZARD CONTROLS** *(task training, equipment inspections, permits, air monitoring procedures, required PPE, emergency procedures, etc.)*

Personnel to Perform Task

MY SUPERVISOR HAS REVIEWED THE THA FORM WITH ME AND I HAVE RECEIVED THE NECESSARY TRAINING TO PERFORM THIS TASK SAFELY.

NAME	SIGNATURE	DATE

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SAFETY PRE-TASK PLANNING

PROJECT: _____ **LOCATION:** _____ **DATE:** _____

SUPERVISOR: _____ **JOB ACTIVITY:** _____

EMERGENCY NUMBER(S): _____ **ALARMS/SIGNALS:** _____

TASK PERSONNEL NAME:	**TASK PERSONNEL SIGNATURE:**

EMPLOYEE SUGGESTIONS AND COMMENTS

LIST TASKS
1.
2.
3.
4.

TOOLS/EQUIPMENT REQUIRED FOR TASKS
(LADDERS, SCAFFOLDS, FALL PROTECTION, CRANES/RIGGING, HEAVY EQUIPMENT, POWER TOOLS, ETC.):

1.	**2.**	**3.**	**4.**

SAFETY PRE-TASK PLANNING

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):

_____

_____

_____

_____

_____

_____

HAZARD CONTROL MEASURES (CHECK ALL THAT APPLY):

PPE	**PROTECTIVE SYSTEMS**	**FIRE PROTECTION**	**ELECTRICAL**
__ Head	__ Sloping	__ Fire extinguishers	__ Lockout/tagout
__ Eye	__ Shoring	__ Fire watch	__ Grounded
__ Hand	__ Trench box	__ Non-spark tools	__ Panels covered
__ Foot	__ Barricades	__ Grounding/bonding	__ GFCI/extension cords
__ Respiratory	__ Competent person	__ Intrinsically safe equipment	__ Power tools/cord inspected
__ Reflective vests	__ Locate buried utilities	__ Other	__ Other
__ Hearing	__ Daily inspections		
__ Other	__ Other		

SAFETY PRE-TASK PLANNING

FALL PROTECTION	**AIR MONITORING**	**PROPER EQUIPMENT**	**WELDING & CUTTING**
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/ Heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane w/current inspection	__ Flame retardant clothing
__ Warning system	__ Other	__ Proper rigging	__ Appropriate goggles
__ Other		__ Operator qualified	__ Other
		__ Other	
CONFINED SPACE ENTRY	**MEDICAL/ER**	**HEAT/COLD STRESS**	**VEHICLE/TRAFFIC**
__ Isolation	__ First-aid kit	__ Work/rest regime	__ Traffic control
__ Air monitoring	__ Eye wash	__ Rest area	__ Barricades
__ Trained personnel	__ FA-CPR trained personnel	__ Liquids available	__ Flags
__ Permit completed	__ Route to hospital	__ Monitoring	__ Signs
__ Rescue	__ Other	__ Training	__ Other
__ Other		__ Other	
PERMITS	**DEMOLITION**	**INSPECTIONS:**	**Training:**
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	__ Hazwaste
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	__ Competent person
__ Excavation	__ Competent person	__ Heavy equipment	__ Task-specific (THA)
__ Demolition	__ Hazmat present	__Cranes and rigging	__ Hazcom
__ Energized work	__ Other	__ Other	__ Other
__ Other			

ADDITIONAL HAZARD CONTROL MEASURES:

_____

_____

_____

FIELD NOTES:

_____

_____

_____

_____

Supervisor signature:_____ Date:_____

ATTACHMENT 3

Hazard Communication
CH2M HILL Field Safety Instructions

Project-Specific Chemical Product Hazard Communication Form
Chemical-Specific Training Form
Project-Specific Material Safety Data Sheets
1. Substance Name
2. Substance Name
3. Substance Name
4. Substance Name
5. Substance Name

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Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the DSC shall verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to CH2M HILL and subcontractor personnel. Labeling and MSDS systems will also be explained.

Project Name: Rock Creek Water Quality Monitoring Study **Project Number:** 411978

MSDSs will be maintained at the following location(s):

Hazardous Chemical Products Inventory

Chemical	Quantity	Location	MSDS Available	Container labels	
				Identity	Hazard

Refer to SOP 107 *Hazard Communication* for more detailed information.

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IFIC TRAINING FORM

Location: Project #: 411978

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.

ATTACHMENT 4

Project-Specific H&S Forms and Permits
CH2M HILL Field Safety Instructions

CALL – IN CONTACT FORM

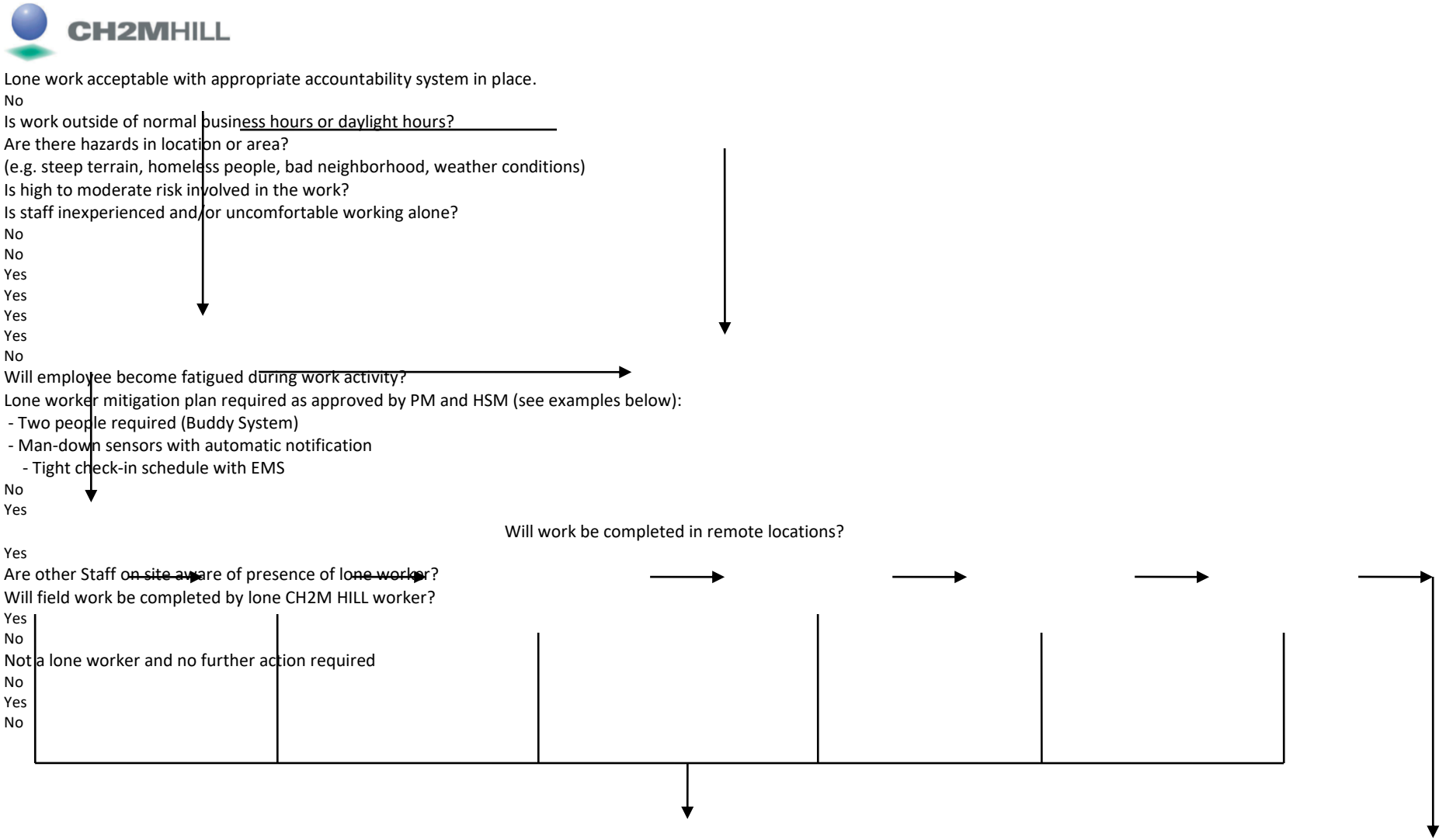
Date of site work:_____ Expected start time:_____
Name of CH2M HILL employee in the field:_____
Name of CH2M HILL employee responsible to receive contact:
Client Emergency Contact (if any):
CH2M HILL employee's contact numbers:
Radio #_____
Cell Phone #_____
Address and Location of work:_____
Directions/Map:

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 work acceptable with appropriate accountability system in place.
No
Is work outside of normal business hours or daylight hours?
Are there hazards in location or area?
(e.g. steep terrain, homeless people, bad neighborhood, weather conditions)
Is high to moderate risk involved in the work?
Is staff inexperienced and/or uncomfortable working alone?
No
No
Yes
Yes
Yes
Yes
No
Will employee become fatigued during work activity?
Lone worker mitigation plan required as approved by PM and HSM (see examples below):
- Two people required (Buddy System)
- Man-down sensors with automatic notification
- Tight check-in schedule with EMS
No
Yes
Will work be completed in remote locations?
Yes
Are other Staff on site aware of presence of lone worker?
Will field work be completed by lone CH2M HILL worker?
Yes
No
Not a lone worker and no further action required
No
Yes
No

ATTACHMENT 5

Project Activity Self-Assessment Checklists
CH2M HILL Field Safety Instructions

ATTACHMENT 6

Injury Management Poster
CH2M HILL Field Safety Instructions

CH2MHILL

1-866-893-2514

24/7 physician access

Injured on the job—who do you call?

The Injury Management/Return to Work program has a different hotline number—and some improvements:

- Direct access is available with a nurse and physician—24/7
- The physician coordinates the employee's visit to the clinic for treatment and follow-up

Look for your Injury Management/Return to Work card at your office or project site—keep yours with you wherever you go.

Remember—if you get injured or sick on the job, report to your supervisor and call the number!

For more information please visit us on the VO at:

Company Resources | Corporate Groups | Health, Safety, Security, and Environment

HSSE

[illegible]

ATTACHMENT 7

Incident Forms
CH2M HILL Field Safety Instructions

CH2MHILL 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**

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

Determination of Root Cause(s)

For minor losses or near losses the information may be gathered by the supervisor or other personnel immediately following the 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

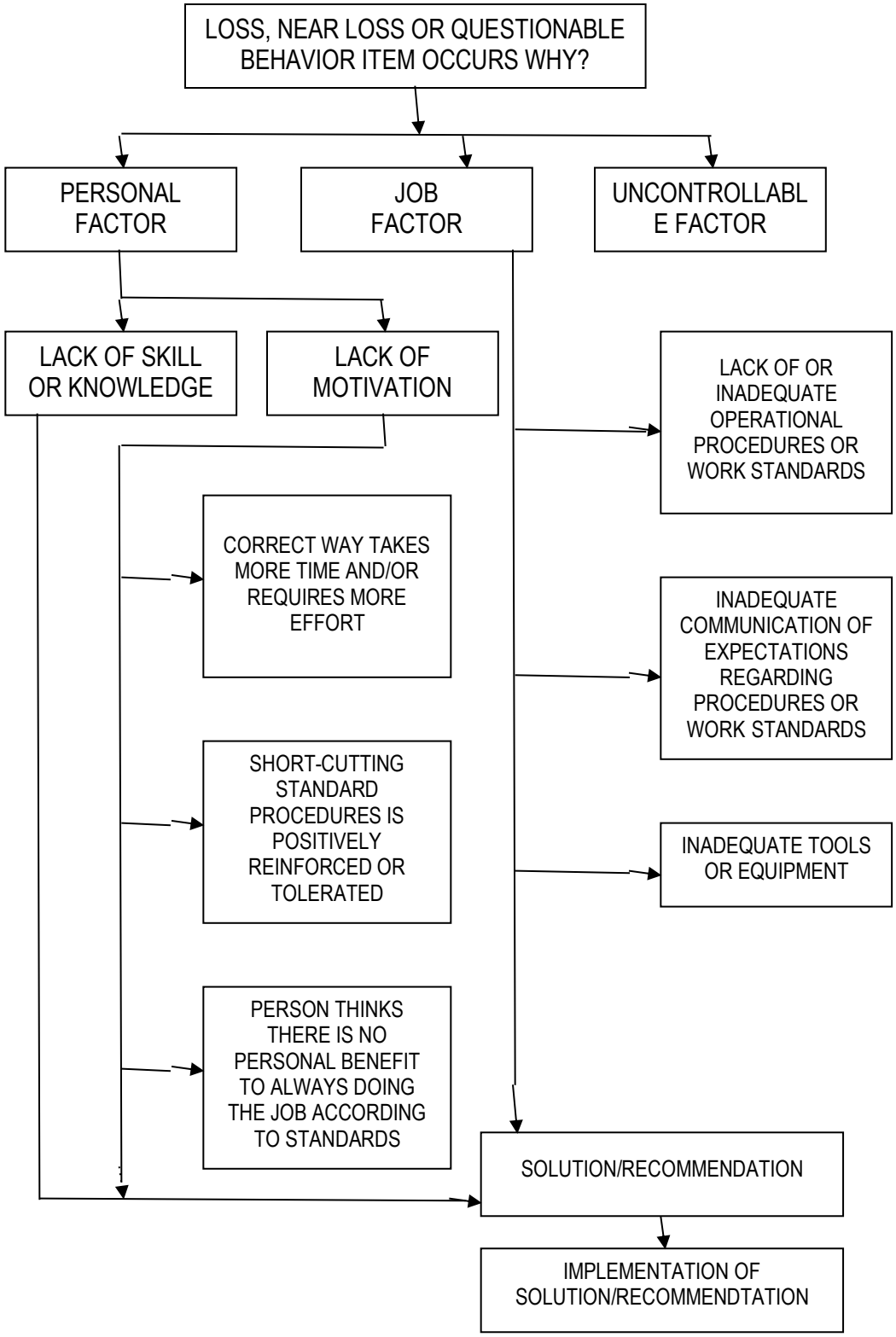
- Lack of skill of knowledge
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks that there is no personal benefit to always doing the job according to standards

Job Factors

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

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
Flow Chart



ATTACHMENT 8

Stop Work Order Form
CH2M HILL Field Safety Instructions

CH2MHILL

Stop Work Order Form

A WORK STOPPAGE IS ISSUED FOR NONPERFORMANCE ISSUE(S) SPECIFIED BELOW AND SHALL REMAIN IN EFFECT UNTIL ALL CORRECTIVE ACTIONS ARE COMPLETED.

REPORT PREPARED BY:

Name:	Title:	Signature:	Date:

ISSUE OF NONPERFORMANCE

Description:_____ _____ _____ _____ _____ _____	Date of Nonperformance: _____

**** Corrective action is to be taken immediately. Note below the action taken, sign and return to CH2M HILL.****

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:_____ _____ _____ _____ _____ _____	Date of Corrective Actions: _____

ATTACHMENT 9

Observed Hazard Form
CH2M HILL Field Safety Instructions

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Observed Hazard Form

Name/Company of Observer:

Date Reported:	**Time Reported:**

Contractor(s) Performing Unsafe Act or Creating Unsafe Condition:

1. _____
2. _____
3. _____

Unsafe Act or Condition:

_____
_____
_____
_____
_____

Location of Unsafe Act or Condition:

_____
_____
_____

Name of CH2M HILL Representative:

Corrective Actions Taken: **Date:**

_____
_____
_____
_____

Project Safety Committee Evaluation: **Date:**

_____
_____
_____
_____