

SITE-SPECIFIC HEALTH AND SAFETY PLAN

PENOBSCOT ESTUARY REMEDIATION

Prepared for
**Greenfield Penobscot Estuary Remediation Trust LLC,
Trustee of the Penobscot Estuary Mercury Remediation Trust**



Prepared by
WSP

511 Congress Street, Suite 200
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March 2023

SIGNATURES

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Vice President

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete.

Field Team Review: I acknowledge that I have read the requirements of this HASP and agree to abide by the procedures and limitations specified herein. I also acknowledge that I have been given an opportunity to have my questions answered regarding the HASP and its requirements prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during on-site activities.

Name	Date	Name	Date

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ACRONYMS AND ABBREVIATIONS

AHA	Activity Hazard Analysis
CIH	Certified Industrial Hygienist
COC	contaminant of concern
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professionals
DT	Dräger tube
ERP	Emergency Response Plan
GFCI	ground-fault circuit interrupters
HASP	Health and Safety Plan
HSE	Health, Safety & Environment
IDLH	Immediately Dangerous to Life and Health
IDW	investigation-derived waste
iSMS	Integrated Safety Management Systems
LEL	lower explosive limit
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PEL	permissible exposure limits
PID	photoionization detector
PPE	personal protective equipment
RAC	Risk Assessment Code
SCBA	self-contained breathing apparatus
SDS	Safety Data Sheet
SHSO	Site Health and Safety Officer
SOW	Statement of Work
USCG	United States Coast Guard
WSP	WSP USA Environment & Infrastructure Inc.

1 INTRODUCTION AND OBJECTIVES

This Site-Specific Health and Safety Plan (HASP) has been prepared by WSP USA Environment & Infrastructure, Inc. (WSP) on behalf of the Greenfield Penobscot Estuary Remediation Trust LLC (Greenfield), Trustee of the Penobscot Estuary Mercury Remediation Trust (the Remediation Trust) for Work on the Penobscot River Estuary located in Hancock, Penobscot, and Waldo counties, Maine (the Site) as provided in **Figure 1-1**. This HASP has been prepared in accordance with the Consent Decree¹ and appendices, including Paragraph 31(a) of the Statement of Work (Appendix A to the Consent Decree). **Table 1-1** presents the compliance matrix for the Statement of Work requirements. The Supporting Deliverables (e.g., Field Sampling Plan, Quality Assurance Project Plan, Health and Safety Plan, etc.) incorporate, as appropriate, and build on the protocols, methodologies, etc. used during the Phase III Engineering Study, providing for procedures and data consistent with and comparable to existing/historical procedures and data. This HASP is a living document and may be reviewed, revised, and updated as needed in accordance with the Consent Decree to support the Work activities. At minimum it will be reviewed on an annual basis from the date of approval.

This HASP has been prepared to safely guide sediment, surface water, and biota sampling, and pre-design investigation activities for the Penobscot Estuary Remediation Site-specific Work. This document must be consulted prior to conducting any of the specific field activities presented in Investigation Work Plans as described in Paragraph 6(a) Investigation Work Plan of the Consent Decree SOW.

The primary objective of the HASP is to provide guidance for conducting investigations at the Site in a safe and effective manner. **Table 1-2** provides this objective in addition to the objectives identified to meet the requirements and intent of the Consent Decree SOW.

¹ The Consent Decree was approved and entered by the U.S. District Court for the District of Maine (in the case Maine People's Alliance and NRDC v. Holtrachem Manufacturing Company LLC, et al., No. 1:00-cv-00069-JAW (D. Me.) (ECF No. 1187, October 11, 2022).

2 OVERVIEW OF THE WSP HSE MANAGEMENT SYSTEM

This section of the HASP presents expectations and requirements regarding Health, Safety, and the Environment (HSE) for WSP personnel working at the Site. Although the content of this section is a WSP requirement, contractors and subcontractors performing work at the Site are encouraged to read and understand the contents.

2.1 EXPECTATIONS FOR HEALTH SAFETY AND WELLBEING MANAGEMENT

The WSP [HSW Safety Expectations](#), (Appendix N) includes elements that apply to the global operations, and E&I. The purpose of this document is to set out WSP’s “Expectations for Health, Safety and Wellbeing Management”. These Expectations are based on international best practices, including ISO 45001: Occupational Health and Safety Management System; and ISO 45003: “Occupational Health and Safety Management - Psychological Health and Safety at Work: Managing Psychological Risks – Guidelines”.



2.2 WSP OVERARCHING REQUIREMENTS

- To be competent, authorised, and physically and mentally fit.
- To conduct a pre-job risk assessment and establish appropriate mitigating measures.
- To wear suitable PPE.
- To stop work and re-assess the risk before proceeding when there is a change.
- To have a suitable emergency response plan in place.
- To have equipment and tools available, fit for purpose, and in working condition.
- Obligation and authority to stop unsafe work.

2.3 SMARTOOL

The SMARTool is a WSP standardized platform used to assess site hazards and points out key hazards and risks. Below includes the SMARTool Assessment Summary which is an output of the SMARTool. This output provides a summary of the Site and Site hazards, as entered into the SMARTool. Please review for an overview of the Work, including site hazards. **The SMARTool Assessment will be updated as the Work progresses and tasks change.**

Penobscot River Remediation

E&I HSSEA SMARTool Results

Assessment Date: **Wednesday, February 1, 2023** Contract Value: **\$2,000,000 USD**
 Completed By: **Charles Lyman, Senior 2 Scientist-Environmental**
 Project Number: **3617237573** Project Type: **Active Project**
 Project Phase/Task: **.06.A02**
 Business Unit: **Consulting** Business Group: **Resilient Environments**
 Project Location: **Maine, United States** Sub Business Group: **East US**
 Project Role: **Designer, Engineer, Consultant or Inspector with field subcontractors**
 E&I is Engineer of Record: **N/A**

HSSE Risk Rank	Project Risk Category	Project Tier
Orange 1	C	Tier 3

Comments

Sampling biota, sediment and water from the Penobscot River. Utilizing boats to access sample locations. Traversing tidal marsh to access sample locations.

Action Items

Contact and discuss **Engineer of Record liabilities** with your [Chief Technical Lead \(CTL\)](#).

Initial Screening























1. Does the project have low-risk contract terms meeting E&I Mandatory Contracting Principles? **Yes**
2. Is project scope within technical competency of primary office managing the work? **Yes**
3. Will the project involve field work? **Yes**
4. Is E&I responsible for all aspects of engineering, design, procurement and construction/construction management?
No
5. Does the project include elements that involve International Clients, Dam Safety Services, Disclosure Services, Nuclear Services or invoke the Technical Safety Standard (i.e. those that could result in catastrophic incidents due to design or project execution: retaining structures, or scenarios where E&I assumes a process liability)? **No**

Preliminary Screening

1. Do we have Subcontractors? **Yes**
2. Maximum E&I and subcontractor staff expected in the field: **5-10**

Hazards

Emp	Sub	Hazard Level	Hazard
<input type="checkbox"/>		Substantial	Bloodborne pathogens, sharps/needles exposure
<input type="checkbox"/>	<input type="checkbox"/>	Substantial	Boating - Boats, canoes, rafts, proximity to water
<input type="checkbox"/>		Low	Calibration compressed gas cylinders use (small containers)
<input type="checkbox"/>	<input type="checkbox"/>	Moderate	Cold stress
<input type="checkbox"/>	<input type="checkbox"/>	Moderate	Conventional decontamination of personnel or equipment at hazardous waste sites using decon stations
<input type="checkbox"/>		Moderate	Environmental spills
<input type="checkbox"/>		Moderate	Extended work hours
<input type="checkbox"/>	<input type="checkbox"/>	Substantial	Flooding
<input type="checkbox"/>		Moderate	Ground disturbance without mechanical equipment
<input type="checkbox"/>		Moderate	Hand and portable power tools
<input type="checkbox"/>		Moderate	Hand digging or augering
<input type="checkbox"/>	<input type="checkbox"/>	Moderate	Hazardous waste site projects, when adequately controlled, no heavy equipment
<input type="checkbox"/>	<input type="checkbox"/>	Moderate	Heat stress
<input type="checkbox"/>	<input type="checkbox"/>	Moderate	High Winds
<input type="checkbox"/>		Substantial	Insects - Biting and Stinging
<input type="checkbox"/>	<input type="checkbox"/>	Moderate	Lightning

<input type="checkbox"/>	<input type="checkbox"/>		Moderate	Manual lifting, within 50 lbs limits
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Marine Charter vessels
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Non-Routine driving at work (when journey management is/may be required)
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Operating mobile equipment including ATVs, boats, snowmobiles, aerial work platforms, etc.
<input type="checkbox"/>			Substantial	Particulates not otherwise specified - hazardous
<input type="checkbox"/>			Moderate	Particulates not otherwise specified - nuisance
<input type="checkbox"/>	<input type="checkbox"/>		Moderate	Personal Protective Equipment (PPE) Modified Level D required (refer to PPE Procedure, linked in Instructions)
<input type="checkbox"/>			Substantial	Poisonous Plants
<input type="checkbox"/>			Moderate	Poor access, steep slopes (less than 30 degrees), need to climb to get access
<input type="checkbox"/>			Substantial	Poor access, steep slopes (more than 30 degrees), need to climb to get access
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Remote and difficult to access project sites
<input type="checkbox"/>	<input type="checkbox"/>		Low	Self decontamination, self removal of PPE (with only low levels of contamination)
<input type="checkbox"/>	<input type="checkbox"/>		Moderate	Sun, UV light exposure
<input type="checkbox"/>	<input type="checkbox"/>		Moderate	Toxic/Hazardous Substances (HAZCOM/WHMIS) not listed as substantial
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Traffic - Proximity to traffic, managing traffic
<input type="checkbox"/>			Moderate	Walking uneven terrain
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Water - Boating
<input type="checkbox"/>			Substantial	Wildlife - Dogs
<input type="checkbox"/>			Substantial	Wildlife Exposure
<input type="checkbox"/>			Moderate	Work at night, shift work
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Working in Proximity to Traffic
<input type="checkbox"/>	<input type="checkbox"/>		Substantial	Working near oceans, lakes, rivers, streams - within 6 feet/1.8 meters of water

High HSSE Risk Screening

1. Will the project/opportunity involve any High Risk hazards? **No**
2. Will the project/opportunity involve non-routine, simultaneous operations (SIMOPS)? **No**
3. Will the project/opportunity be staffed with an inexperienced PM and Project Team? A team who does NOT have experience identifying and effectively controlling all substantial hazards associated with the work and/or does NOT have had experience doing this type of work? **No**
4. Does the Proposal/Opportunity Lead or Project Manager lack an understanding of the regulatory and client requirements associated with the project/opportunity? **No**
5. Will the project/opportunity have work in/for a High-Risk Country or in/for a country where no work has been performed by WSP? **No**
6. Are there any enforcement notices (or similar) currently against E&I and mitigations for this risk not yet deployed? **No**
7. Does the project/opportunity involve Dam Safety Services, Disclosure Services, Nuclear Services, or is there a potential for catastrophic process safety or technical safety related incidents? (AKA 'Safety by Design' - safety requirements related to design and operation of hazardous processes. Is there a potential for a large chemical release, critical structural failure or any other significant environmental impact?) **No**

2.4 ISMS (INTEGRATED SAFETY MANAGEMENT SYSTEM)

iSMS is the WSP corporate observation reporting system that all WSP employees are to use to report safety or environmental observations. To enter an iSMS observation, use the following link: [LINK](#) (accessible by WSP personnel only; non-WSP personnel may have observations entered by a WSP employee)

Access the training for **Incident Reporting and Injury Management**, and **Intro to iSMS**.



WSP E&I Canada Limited / WSP USA Environment & Infrastructure, Inc.

As WSP will be providing health and safety oversight for Site investigations, the SHSO will regularly seek out observations from contractors and subcontractors for entry into the iSMS.

2.5 WSP ZERO HARM

Our Zero Harm Vision is a commitment shared by WSP and all employees to consider and effectively reduce or mitigate health, safety, and wellbeing risks from our activities.

Our goal is to ensure that our activities result in:

- 1 Zero Fatalities
- 2 Zero permanently disabling injuries
- 3 Zero injuries to members of the public
- 4 Zero Long term harm to health



By Actively Caring for personal safety, and the safety of those around you, accidents and injury can be prevented. Caring together, we can attain Zero Harm.

3 SITE AND WORK DESCRIPTION

As general Site background, the Holtrachem Manufacturing Company is located on 235 acres adjacent to the Penobscot River in Orrington, Maine (ME) and operated from 1967 through 2000. The plant manufactured chlorine, sodium hydroxide, hydrochloric acid, and chloropicrin. The chlor-alkali process used at the facility included sending a saltwater solution through a mercury cell which acted as cathode to collect the sodium from the water. When the solution is reintroduced to water, sodium hydroxide and hydrogen are produced, and the mercury is left behind. Since mercury is highly volatile, mercury contamination was left behind in the wastewater that was discharged to the Penobscot River. It is estimated that 9-12 tons of mercury were discharged to the river with 9.3 tons estimated to be retained in the riverine sediments (Phase III Engineering Study, Amec Foster Wheeler 2018).

3.1 WORK DESCRIPTION

The Work activities are primarily related to capturing samples and data from biota, water, and sediment in the tidal, inter-tidal, riverine, and marine environments of the Penobscot River Estuary to evaluate data gaps and develop feasibility-based assessment of the location, extent, concentration, and remedial response action measures to address environmental impacts of mercury contamination in the Estuary.

The predominant vehicle for collecting these data and media samples are motor vessels either self-operated or subcontracted and typically under 25 feet in length. WSP considers boating to be a critical task relative to safety and requires implementation of specific planning, hazard identification, and training in the avoidance of safety incidents.

This document is intended to identify health and safety objectives and activities for the tasks involved.

3.2 SITE DESCRIPTION

The Penobscot River in Northern Maine is the second largest river in New England, draining an area of 22,300 km². Its estuary extends 35 km southward from Bangor to about Searsport with Penobscot Bay extending further southward. It is the largest estuary in New England with an area of about 90 km².

The work area will be centrally based in Winterport, Maine and extends approximately 12 miles upstream to Bangor and the former Veazie Dam location and approximately 12 miles south to Cape Jellison near Castine (the Site) as provided in **Figure 3-1**. The Penobscot River Estuary width ranges from 0.1 to 2.3 miles, with depth ranging from 0.0 to 75 feet at mean low water and has tidal fluctuations between 10 and 14 feet. Currents typically run 3 to 5 knots and may be influenced by various factors including tides, manmade structures, weather, and shoaling. Bottom conditions range from soft sediments and grass, to mud, gravel, boulders, and rock or ledge. There are numerous bridges, submarine cables and pipeline crossings, restricted areas, commercial vessel travel channels and routes, and navigational aids.

It is anticipated that the work environment will be constantly changing and evolving and will seldom be static. Wind can change direction and velocity in seconds, tides ebb for only brief periods and reverse flow direction, and storm fronts appear without warning. It is imperative for personnel to constantly be aware of their surroundings and to changing conditions to avoid potentially serious safety conditions. A designated spotter must be identified to provide constant evaluation of the crew's surroundings, as staff perform critical tasks which require concentration, especially in the marine environment.

3.3 APPLICABLE LIFE SAVING ACTIONS

The following WSP Life Saving Actions potentially apply to the work being conducted at the site:

- Plant / People / Interface – Working around heavy equipment
- Suspended Loads
- Driving
- Hazardous Atmospheres / Substances
- Working on or Near Water
- Lone or Remote Work

- Ground Stability
- Energy Sources
- Working at Height

Expected start date: April 2023

Expected duration of Work: 8 months (in 2023)

Expected average number of workers on site per day: 5 to 10

4 SUBCONTRACTORS/THIRD PARTIES/SUPPLIERS – INTERFACE ARRANGEMENTS

WSP will provide oversight and coordinate on-site/field activities to ensure the successful execution of tasks described within this HASP. Each contractor/consultant and subcontractor is responsible for providing supervision of its employees (as defined by 29 CFR 1910) and will provide qualified personnel and/or competent persons as, and where required by law or regulation. Each contractor/consultant and subcontractor will be responsible for managing and recording any injury or incident involving its employees as required by OSHA or other applicable laws and regulations on their own OSHA 300 forms. WSP will collect and enter contractor/consultant and subcontractor observations and incidents into the WSP database, iSMS .

WSP may also be present in an oversight capacity and will abide by the Subcontractor safety protocols in general for the project UNLESS they are counter to WSP Corporate protocols and directives or those of the WSP project HASP. Subcontractors will have a corporate and site-specific HASP developed for the project. However, WSP is the General Contractor and controlling entity.

In cases where a site has multiple employers/consultants that may be impacted by site activities, coordination with each affected employer/consultant will be required. At a minimum, a copy of the HASP and the applicable AHAs shall be offered to and discussed with each affected employer/consultant at a preparatory meeting. The purpose of the meeting will be to coordinate work activities and share pertinent emergency response information.

A record of the meeting will be maintained in the project file on-Site. Unless Work conditions change that warrant communication to discuss work activities, it shall be each employer's responsibility to share relevant information regarding site activities to affected personnel.

A current list of contractors/consultants and subcontractors will be maintained at the site.

4.1 COMPLIANCE

Each contractor/consultant and subcontractor is responsible for compliance with applicable federal, state, local, and safety requirements identified in the HASP (except where noted otherwise), including but not limited to:

- 29 CFR 1910.120/29 CFR 1926.65 (OSHA) guidelines regarding 40-hour HAZWOPER and/or 24-hour awareness training and annual refresher training.
- Medical monitoring, medical examination for fitness to work including respirator use pursuant to 29 CFR 1910.134, if required.
- Supplying personal protective equipment (PPE) (coveralls, respirators, boots, gloves, etc.) as required by site conditions and OSHA under 29 CFR 1910, Subpart I.
- 29 CFR 1926 (OSHA Construction Standards) and 29 CFR 1910 (OSHA General Industry Standards).
- Providing and enforcing the requirements of individual subcontractor corporate safety programs and procedures as they relate to the Work activities contemplated.
- Evaluating task-specific AHAs for construction activities performed.

4.2 INFORMATION EXCHANGE

Prior to the start-up of work, the project and site managers will ensure all relevant HSE information is received/exchanged from contractor/consultants, subcontractors, and suppliers to enable the management of HSE risks and emergencies. As a minimum this must include information outlined in the Safety Readiness Review Checklist found in **Appendix K**.

4.3 SUBCONTRACTOR SAFETY RESPONSIBILITIES

All subcontractors will be provided with a copy of this HASP and applicable AHAs (either WSP and/or subcontractor developed). Subcontractors will develop, and provide to WSP for concurrence, AHAs for the work they perform. Subcontractors will review the HASP and AHAs with their employees and supervisors. Each worker

is expected to sign the signature sheet, certifying that they understand and will comply with the requirements of this plan. Subcontractors will provide company-specific Health and Safety procedures/safe work plans and AHAs to WSP for inclusion in the HASP, if requested. If the subcontractor develops their own site-specific HASP, it will be consistent with and meet the standards established in this HASP.

Applicable subcontractor personnel are expected to participate in all daily health and safety briefings. In accordance with contract requirements, all subcontractors are expected to comply with necessary plans and procedures. Deviation is cause for dismissal.

WSP requires its employees and subcontractors to work in a safe and responsible manner. Subcontractors for this Work are required to adhere to the applicable requirements set forth in the HASPs and in their work and safety plans. Documented joint safety inspections will be performed by the Site Manager (SM), SHSO, the Field Operations Lead (FOL) and the various subcontractor representatives at least weekly, at a minimum, during periods of active site work (See **Appendix H**).

5 STOP WORK AUTHORITY

All workers on the Site (contractors/consultants and subcontractors) have Stop Work Authority. If work assigned or observed is deemed to be unsafe, any worker should stop work and notify their supervisor. Follow the Work Refusal Procedure found below.

5.1 PROCEDURES FOR RESOLVING WORK REFUSAL

5.1.1 AGREEMENT OF UNSAFE CONDITIONS

Where the SHSO agrees that the work is unsafe, he/she will:

- Inform all other employees involved with the work being refused to discontinue work until further notice
- Post the work, indicating it is unsafe and not to be conducted, or lock out the equipment preventing it from being used until it is made safe
- Make arrangements to immediately to have the work made safe
- Complete a report of the refusal of unsafe work and forward a copy of the report to the PM

5.1.2 DISAGREEMENT OF UNSAFE CONDITIONS

Where there is a disagreement that the work is unsafe, the SHSO (in consultation with the PM):

- Will explain to the individual who feels the work is unsafe his/her reason for considering the work to be safe
- May ask another individual to perform the work after explaining, in the presence of the first individual, that the first individual has refused, and the reasons for the refusal
- Will ask the first individual to remain at a safe location near the work until the disagreement is resolved.
- Will complete a report of refusal of unsafe work and forward a copy of the report to the PM.

5.1.3 CONTINUED REFUSAL

If, after the investigation and action taken by the SHSO, the individual continues to believe that the work is unsafe, he/she again will have the right and the responsibility to refuse the work and is expected to do so. The following actions will be taken:

- The individual will remain at a safe location near the work.
- Where an individual continues to refuse, the SHSO will contact at least the FOL or SM and one additional on-Site worker who both have knowledge of the work to inspect the work, review the conditions of refusal in the presence of the individual and give their opinion as to the conditions.
- The SHSO will also notify a non-supervisory member of the Safety Committee, the office HSSE Coordinator and the Group HSSE Manager.

5.1.4 PROHIBITION OF REPRISAL

- No reprisals on any kind shall be taken against an individual exercising his/her right and responsibility to refuse unsafe work. Such reprisals would include direct or indirect action resulting in any negative impact on the individual.
- Persons found taking reprisals shall be considered in non-compliance with the procedure described herein, and their company supervisor will be notified and appropriate action, up to dismissal from the Site, will be implemented by the person's company.

6 KEY PERSONNEL AND HEALTH AND SAFETY RESPONSIBILITIES

The Project Manager (PM) has overall responsibility for HSE during the Work and is responsible for ensuring that the WSP HSE policy is communicated to site personnel, that site personnel clearly understand their HSE roles and responsibilities on the Work Site.

Figure 6-1A shows the project organizational chart. Table 6-1 describes health and safety responsibilities for key project personnel.

Figure 6-1A 2023 Project Organizational Chart

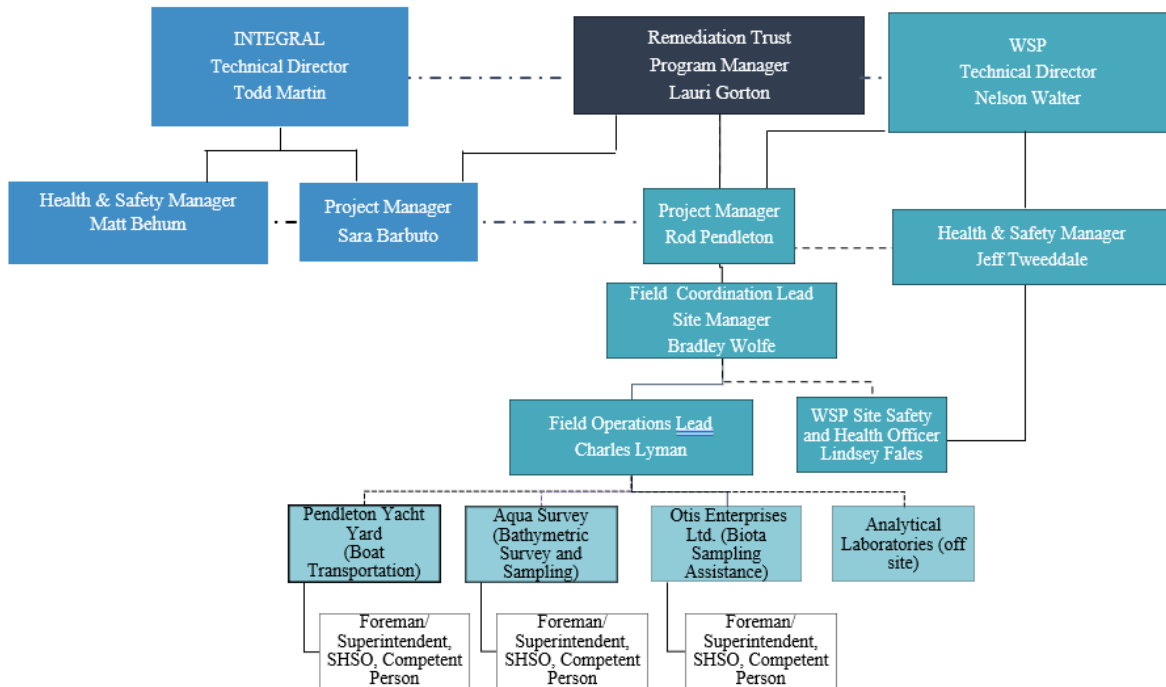


Table 6-1 Key Personnel Health and Safety Responsibilities

WSP Group or Regional HSE Manager	Project Manager	Site Manager	Site Safety and Health Officer (SHSO)	Project Personnel	Subcontractors
<ul style="list-style-type: none"> • Implement appropriate corporate health and safety policies, or environmental projects. • Approve HASP and amendments. • Maintain exposure monitoring records. • Notify Senior Vice President of HSE in the event of an emergency situation. • Verify that corrective actions recommended on Incident Analysis Forms have been implemented. 	<ul style="list-style-type: none"> • Monitor, where it is reasonably practical, that safety requirements of WSP, the client and relevant sections of OSHA regulations are applied and followed by Site workers and visitors. • Monitor that all employees on the Site have the required training and are qualified to work in a safe manner. • Monitor that employees are using the identified PPE and monitoring equipment. • Arrange for this HASP to be updated and the updates communicated to site personnel when new tasks are added, new hazards identified or otherwise when site conditions change. • Monitor organization of the work schedules and tasks to provide safe working conditions. • Verify that the safety meetings and inspections are performed as required. • Report all incidents immediately and to arrange for medical treatment, as required, in case of injury or illness including transportation to a doctor or hospital, as necessary. 	<ul style="list-style-type: none"> • Review this HASP with site personnel so that they are aware of its provisions, including potential hazards, that they are instructed in safe work practices; and are familiar with emergency procedures. Document review. • Use the Safety Readiness Review Checklist (See Appendix K) to verify personnel and subcontractor compliance with Safety Requirements. • Verify that appropriate monitoring equipment and PPE are available and used. • Monitor the Field Logbooks to ensure the health and safety work practices are employed. • Manage any change by ensuring HSE risk assessments are conducted and AHAs developed for any new task. • Verify Subcontractors have completed AHAs for their tasks. • Oversee subcontractor's compliance with safety regulations and contract requirements. • Coordinate with SHSO so that emergency response procedures are implemented. • Ensure corrective actions identified on Incident 	<ul style="list-style-type: none"> • Implement HASP; report to the Project and Site Manager for action if any deviations from the anticipated conditions exist; and authorize the cessation of work at site investigations if necessary. • Confirm that prior to a hazardous waste site visit, site personnel meet the proper medical requirements and have the health and safety training to qualify them to perform their assigned tasks. Identify all site personnel with special medical conditions. • Assuring that subcontractor personnel have appropriate safety qualifications, training, certifications, that supervision and competent personnel are onsite when the work is being conducted, subcontractors complete AHAs for their tasks, that subcontractor inspections are being completed and corrective actions are identified and closed. See the Safety Readiness Review Checklist, Appendix K • Conduct pre-entry briefing and tailgate safety meetings. Document meetings on Daily Tailgate Safety Meeting Checklist (Appendix G). • Verify that all monitoring equipment and PPE is operating correctly according to manufacturer's instructions and such equipment is used by on-site personnel. Calibrate or 	<ul style="list-style-type: none"> • Be familiar with and abide by the HASP(s). • Review AHAs before beginning tasks. • Wear required PPE. • Be aware of surroundings, do a last-minute risk assessment before starting any task. • Notify the SHSO of any special medical conditions (e.g., allergies). • Immediately report any incidents and/or unsafe conditions or behavior observations to the SHSO. • Be aware of training requirements. Ensure you have all required training, and the training is current. No individual may go on site where he/she does not have the required safety training. • Intervene and initiate your "Stop Work Authority" when hazardous conditions are identified. • Wear masks, social distance and follow other Covid-19 safety measures 	<ul style="list-style-type: none"> • Participate in HSE meetings (e.g., tailgates, safety committee, etc.) • Designate a subcontractor employee to act as a Competent Person, when required by regulation. • Understand and comply with policies and procedures identified in the HASP and regulatory requirements applicable for their scope of work. • Will not direct or permit one of their employees to work under conditions that are not in compliance with any applicable OSHA standards. • Will determine schedule and conduct inspections of their work area and equipment to ensure equipment is in good working order and worksite hazards are identified and corrected. Schedule will be based on safe work practices and regulatory requirements. • Subcontractor will document any findings and will track corrective actions to closure. • Will develop and provide WSP with a copy of their Activity Hazard Analysis

Table 6-1 Key Personnel Health and Safety Responsibilities					
WSP Group or Regional HSE Manager	Project Manager	Site Manager	Site Safety and Health Officer (SHSO)	Project Personnel	Subcontractors
	<ul style="list-style-type: none"> Investigate all incidents fully, and to coordinate these activities with the SHSO on how to prevent similar incidents in the future. 	<p>Analysis Forms or from HSE inspections are implemented.</p> <ul style="list-style-type: none"> Enter reported or observed HSE hazard identifications and observations, into the iSMS database. Ensure Covid-19 measures have been implemented at the Site. 	<p>verify calibration of all monitoring equipment and record results.</p> <ul style="list-style-type: none"> Conduct weekly inspections of job site using the Weekly Site Safety and Health Checklist (Appendix H). Implement site emergency and follow-up procedures as directed in this HASP. Enter reported or observed HSE hazard identifications and observations, into the iSMS database. Ensure Covid-19 measures have been implemented at the Site. 		<p>(AHA) for each major phase of its work, prior to starting that work.</p> <ul style="list-style-type: none"> Follow emergency procedures as directed in this HASP or follow the procedures outlined in their own HASP as long as they have been coordinated with this HASP and follow regulatory requirements. Wear masks, social distance and follow other Covid-19 safety measures

7 PROJECT HSE ORGANIZATION

Section 7 provides the framework for the management of health and safety practices at the Site.

7.1 GOALS/TARGETS

The goals and targets for investigation work to be conducted at the Site include:

- Zero OSHA Recordable Incidents
- Weekly HSE Inspections (documented)
- One Leadership (PM) HSE Inspections
- One iSMS observation per day

7.2 ISSUING PERMITS

As required by the Consent Decree, Greenfield will obtain necessary permits with the exception of the permits and licenses that are issued to the individual sampler. Permits and approvals anticipated to be required before biota sampling activities commence include:

- U.S. Department of Interior/U.S. Geological Survey Federal Bird Banding Permit
- U.S. Fish & Wildlife Service Federal Migratory Bird Scientific Collecting Permit for collection of Nelson’s sparrow, red-wing blackbird, American black duck – blood sampling
- State of Maine Department of Inland Fisheries and Wildlife permit allowing for collection of American eel, lobster, Atlantic tomcod, Rainbow smelt, and mummichog
- State of Maine Department of Marine Resources Special License exempting samplers from regulations 12 M.R.S. and DMR Regulation Chapters pertaining to American eel, lobster, Atlantic tomcod, Rainbow smelt, mummichog, and polychaetes

None of the proposed tasks require issuing permits such as Confined Space Entry, Hot Work, Lockout/Tagout, or subsurface work.

7.3 MEETINGS

The following meetings will be held at the site: Meetings shall be attended by both WSP and applicable Subcontractor personnel.

Meeting		Led by		Frequency				
		WSP	Sub	Initial	Daily	Weekly	Monthly	As Needed
<input checked="" type="checkbox"/>	Work Activities Kick-off ¹	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Tailgate ²	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Incident Reviews ¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹ Attended by contractor/consultant and subcontractor management representatives.

² Attended by all contractor/consultant and subcontractor employees and supervisors.

7.4 INSPECTIONS

Regular inspections will be conducted by WSP, contractor/consultant and subcontractor personnel. Inspections will be documented, and corrective actions established for all findings. Corrective actions will be tracked to closure. iSMS observations will be entered into the [iSMS database](#) (accessible by WSP personnel only; non-WSP personnel may have observations entered by a WSP employee). Note: Subcontractors inspect their own equipment. WSP and other contractors inspect their own equipment. WSP verifies that Subcontractors are conducting their inspections, as required.

8 WORKER TRAINING AND MEDICAL SURVEILLANCE

8.1 WORKER TRAINING

Upon designation of individuals anticipated to perform investigation at the Site, **Table 8-1** will be completed to summarize the training experience of the project team with respect to 29 Code of Federal Regulations (CFR) 1910.120(e), 29 CFR 1910.120(l), and 29 CFR 1910.1200 and WSP Integrated HSE Manual. All personnel must meet the minimum training and medical surveillance requirements defined in OSHA's HAZWOPER standard (29 CFR 1910.120(e) and (f)). Personnel entering the Site will be required to produce copies of certificates and clearances documenting the required training and medical surveillance. Personnel without the required training and medical surveillance, including visitors, will not be permitted in any area with potential for exposure to toxic substances or harmful physical agents (i.e., exclusion zone).

- All employees who participate in the Work will be provided with a **mercury awareness safety training** presentation included in Appendix A.
- Designated field personnel who are required to operate a boat will be required to complete training offered through an online **USCG-approved boating safety course** (<https://www.boat-ed.com/maine/>). Additionally, the PM must certify in writing that the individual receiving the training has sufficient knowledge and experience to safely operate a boat/vessel in the execution of Work. At minimum, training provided for boat operation will include:
 - Boat terminology, crossing wakes, responsibility for wakes, capsizing and swamping, incident reporting, docking/undocking, weather and adverse conditions, man overboard recovery, first aid and cardiopulmonary resuscitation (CPR), hypothermia awareness, anchoring, floatation device throwing and retrieval practice, lines and knots, lifesaving gear location, and rescue techniques.
 - The fueling of a boat means safely managing the fuel, and this topic is covered in the Emergency Response Plan (WSP, 2023b).
 - Use of a fire extinguisher and containment of a fuel/oil spill, covered in the ERP (WSP, 2023b).
 - Right-of-way, overtaking, meeting, maneuvering, warning signals, restricted visibility, and boat running lights.
 - Use of nautical charts, types of navigational aids and use, barges and tows, locks, and lockage.
 - Radio use and navigational knowledge (e.g., GPS, charts reading, dead reckoning, course plotting and planning).
 - Engine troubleshooting and boat trailering (an AHA is presented in **Appendix B** for the use of a boat trailer and includes a checklist to ensure appropriate steps are taken to hitch, tow and unhitch a boat trailer and associated boat safely).

8.2 MEDICAL SURVEILLANCE

Upon designation of individuals anticipated to perform investigation at the Site, **Table 8-1** will be completed to indicate the workers who participate in the company's Medical Surveillance Program (29 CFR 1910.120(f)). All workers who could potentially be exposed to concentrations of contaminants above the Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) for 30 days per year or more must be included in the Medical Surveillance Program. Any site-specific medical surveillance conducted for site workers will also be listed on the table.

Medical surveillance for mercury was completed in 2016 to indicate the workers who participate in the company's Medical Surveillance Program (29 CFR 1910.120(f)) are not being exposed to mercury through sampling activities. A baseline laboratory-based mercury level was completed for all onsite personnel prior to any field work and at the completion of the project. The laboratory evaluation included a complete urinalysis. Results of the mercury urinalysis from the 2016 select sample crew was used to evaluate exposure and the requirement for future field crew mercury urinalysis. The results of the testing concluded that exposure did not elevate mercury in blood, therefore, routine medical monitoring is no longer conducted at this Site.

Table 8-1 Training/Medical Surveillance/Respiratory Protection Records						
Role:	Site Manager Brad Wolfe	Site Safety and Health Officer Lindsey Fales	Field Operation Lead Charles Lyman			
Training/Medical	Dates	Dates	Dates	Dates	Dates	Dates
Medical Surveillance	02/23/2022	07/11/2022	07/23/2021			
40-Hour Initial	05/23/1997	07/06/2022	06/01/1995			
8-Hour Supervisor ^{1, 3}	07/31/2019	scheduled	06/12/2001			
8-Hour Refresher	08/29/2022	12/09/2022	02/04/2022			
Respirator Fit Test ^{1, 4}	11/14/2014		11/13/2014			
First Aid/CPR ^{1, 2}	04/20/2018	scheduled	02/07/2022			
Hazard Communication	09/09/2013	scheduled	04/16/2012			
Fire Extinguisher ¹	08/04/2016		11/13/2014			
Maine Boater Safety (>10hp motor)						
Other ¹: Mercury Training	04/26/2016	scheduled	01/11/2018			

¹ If applicable.

² At least one worker must be trained in First Aid/CPR.

³ Required if acting as Site Manager or SHSO.

9 COVID-19

The WSP COVID-19 procedures are closely aligned with those outlined by the Centers for Disease Control and Prevention (CDC). WSP requires those who test positive for COVID-19 to self-isolate for a minimum of 5 days, regardless of vaccination status, and after receiving two negative COVID-19 tests on Day 5 and Day 6, may return to work wearing a medical grade mask or higher (e.g., surgical mask, N95, KN95) for Days 6-10. Those who are in close contact with a COVID-19 positive individual do not need to self-quarantine, regardless of vaccination status unless they exhibit symptoms consistent with COVID-19, but do need to wear a medical grade mask, or higher, for 10 days post exposure. An AHA on Communicable Disease Prevention (e.g., COVID-19) is provided in **Appendix B**. See **Appendix L** for further guidance on return to work and COVID-19 testing requirements:

- COVID Easement of Controls Table
- COVID Testing Posters
- Declaration Form (Covid-19) (if still required by the client)
- Facility Lobby Poster – Green Easement of Controls
- Guidance on Social Distancing
- WHO Hand Washing Guidance

Any person coming to the Site (pre-deployment) to perform work must review the Communicable Disease Prevention AHA (**Appendix B**). In addition, by entering the Site and signing in, workers are declaring they are free of COVID-19 symptoms.

Visitors, contractors/consultants, and subcontractors are to provide their contact information to facilitate contact tracing.

Anyone that does not fulfill the requirements of this HASP section will be refused access to the Site.

10 JOURNEY MANAGEMENT PLAN

This section of the HASP is a requirement for WSP personnel, although contractors/consultants and subcontractors on the Site are welcome to adopt this procedure if they deem it is warranted for their personnel. The WSP FOL will develop a Journey Management Plan to address non-routine/non-commute type travel to and from the Site.

Considerations will include anticipated weather, work duration prior to travel, travel route, etc. This plan will be shared with all associates conducting field work in support of this Long-Term Monitoring Work. See the Vehicle Travel – Journey Management Plan AHA in **Appendix B**.

Figure 10-1 Journey Management Plan

JOURNEY MANAGEMENT PLANNING		
<p><i>All projects with a field component must have a journey management plan completed for each work location. Complete the below as accurately as possible with your knowledge of the Work, site location, time of year, etc. If there are significant changes to the scope of the Work, or the conditions of travel, the plan must be updated, or new journey management plan must be completed.</i></p> <p style="text-align: center;">Not required for city or urban driving</p>		
Question	Points	List Control Measures
1. How many total hours will the driver have been on duty at the end of the journey? Note: Maximum 14 duty hours permitted. (12+ hours = 10 pts)		
2. Will the overall journey distance exceed 120 miles/~200km? (Yes = 10 pts)		
3. Will the journey require driving in wet, flooded, icy, and/or snowy roads? (Yes = 10 pts)		
4. Will the journey require driving in conditions that limit visibility (dark, fog, snow, hail, etc.)? (Yes = 10 pts)		
5. Will the journey require driving overnight (after 9pm - 5am)? (Yes = 10 pts)		
6. Is the driver familiar with the route for this journey? (No = 5 pts)		
7. How many hours of sleep has the driver had in the past 24 hours? (If < 8 hrs. = 5 pts)		
8. Will there be a passenger in the vehicle during the journey? (No = 5 pts)		
9. Is heavy traffic congestion expected during the journey? (Yes = 5 pts)		
10. Was a pre-trip inspection performed (walk around, towing, load securement, etc.)? (No = 5 pts)		
11. Is the vehicle towing a heavy or oversized load OR permit required? (Yes = 5 pts)		
12. Will the driver encounter unpaved or mountainous road conditions? (Yes = 5 pts)		
13. In case of emergency, will the driver have suitable means of communication? (No= 5 pts)		
14. Are there elevated security risks associated with this journey? (Yes = 5 pts)		
15. Is there an elevated risk of striking an animal on the roadway during this journey? (Yes = 5 pts)		
TOTAL		<p>Low Risk = 0-25 pts, Medium Risk = 30-55 pts requires mitigation, High Risk = 60 or more requires Management Approval</p>
<p>Workers must also establish a check in/check out system for any Site where there is significant driving and where they will not be returning to the office at the end of the day. This process should be documented.</p>		

11 SITE CONTROL

The field station and Work activity locations are not designated to have site control procedures, as required by 29 CFR 1910.120(d) and the WSP Hazardous Waste Operations and Emergency Response (HAZWOPER) Program. Procedures addressing control of Site worker, general public, and bystander exposures to contaminants at the Site are documented in the AHAs and standard operating procedures. Controls and work zones will be discussed during daily tailgate meetings for Site-specific tasks.

Access by the general public to work areas will be controlled during the short duration of sampling activities to maintain safe conditions for bystanders. The following are considerations for vessel work areas:

- United States Coast Guard (USCG) Rockland Station indicated that the USCG does not patrol above upper Penobscot Bay (Searsport). However, they will respond/assist in emergencies and recommend filing a general notice of our Work areas to their office, Local Harbor Master(s), and The Penobscot Regional Communications Center Dispatch(s). A listing of Maine Harbormasters is located at the following link: <http://me.usharbors.com/directory/Harbormasters>
- USCG **does not** require a “Notice to Mariners” to be filed for Site-specific activities nor are there any specific devices which are required for display (day flags) in the identified vessel shipping channels. The field teams will be diligent working within these channels to avoid impeding vessel traffic.
- Sample locations will be planned relative to navigational aids, bridge structures, submarine utility locations, oil transfer areas and areas where channel maintenance may be performed. Utility crossings may be under sediments or exposed due to current and shoaling conditions. Restricted areas have inherent hazards and are considered federal security watch areas. Field crews will not enter, loiter, dragging, conduct invasive sampling or anchor in these areas without proper approval to work. Utilities located within the navigable waters are identified on **Figure 1-2**.
- Utility clearance activities on land are governed by DIG-SAFE in the State of Maine, and are outlined in the AHA Utility Clearance provided in **Appendix B**. Land-side investigations may be conducted for collection of samples in potential equipment and material staging areas for future remedial activities, and these areas will require DIG-SAFE procedures be followed prior to any intrusive activities. For Penobscot Estuary Remediation investigation activities, the vast majority of invasive sampling locations will be conducted in intertidal and subtidal zones. DIG-SAFE requirements are not applicable to these environments. However, Site personnel collecting samples in these environments will consult the NOAA nautical charts and perform visual surveys of the shoreline for submerged electrical cable crossing notifications prior to conducting sampling. where soil collections penetrate surfaces beyond 6-inches must be cleared and follow the DIG-SAFE New England requirements and AHA procedure for utility clearance.

11.1 WORK ZONES

The work zones will be defined relative to the location of the work activity. The Exclusion Zone is the area within a 10-foot diameter of the sampling location. The Contamination Reduction Zone is the area within a 20-foot diameter of the sampling location in land-based areas. The decontamination zone will be located upwind of the work area. Work zones will be maintained using the items identified below.

Marine work areas will be monitored by a constant onboard observer and will utilize VHF hailing frequencies, air horns or visual location devices (navigation lights, flares) to broadcast their location and intent to others as indicated in the boating guides and standard marine protocols, presented in **Appendix M** with additional Marine Activity Guidance information.

Work zones will be maintained using:

- ☒ Warning tape (for land-side investigations)
- ☒ Cones and/or barricades (for land-side investigations)
- ☒ Visual observations (for marine investigations)

11.2 BUDDY SYSTEM

Due to the anticipated Work activities and locations in the estuarine and marine environments, no field work will be performed without employing the buddy system (i.e., work will be always performed with a minimum of two people).

11.3 SITE ACCESS

Access to the Penobscot River Estuary is not controlled, any interactions with the public while sampling will be done outside of our contaminant reduction zone. In many cases, property rights within the State of Maine extend to the mean low water mark, which requires obtaining permission from property owners to access intertidal and marsh areas along the Penobscot Estuary. Greenfield will lead the effort to obtain access agreements from property owners; no intertidal or upland (above mean high water level) property will be accessed for the purpose of water, sediment, or biota sampling without a written authorization from the owner of the property.

Sample collection will be conducted following a daily float/work plan. The plan will be filed electronically by electronic field data record, and prior to deploying and upon return from work on or near the water, the field crew will notify the FOL and SHSO. The Daily Float Plan is provided as a field data record in Appendix B of the Field Sampling Plan (WSP 2023a). Access to the field office and vehicles is limited to WSP employees and subcontractors. Other office visitors (i.e., client, regulators, etc.) will be documented on a field office sign in/sign out sheet.

11.4 GENERAL SAFE WORK PRACTICES

General safe work practices to be implemented during work activities at this site are included in **Table 11-1**:

Table 11-1 General Safety Work Practices
<ul style="list-style-type: none">• Workers have the right and responsibility to Stop Work that he/she has reason to believe may cause injury or illness to himself/herself or any other person. If work is deemed unsafe, immediately notify the Site Health and Safety Officer (SHSO).• Minimize contact with excavated or contaminated materials. Plan work areas, decontamination areas, and procedures accordingly. Do not place equipment or drums on the ground. Do not sit on drums or other materials. Avoid standing in or walking through puddles or stained soil.• Smoking, eating, or drinking after entering the work zone and before decontamination will not be allowed. Use of illegal drugs and alcohol are prohibited.• Practice good housekeeping. Keep everything orderly and out of potentially harmful situations. This is especially applicable on boats being used for sampling activities.• In an unknown situation, always assume the worst conditions.• Be observant of your immediate surroundings and the surroundings of others. It is a team effort to notice and warn of impending dangerous situations. Withdrawal from a hazardous situation to reassess procedures is always the preferred course of action.• Conflicting situations may arise concerning safety requirements and working conditions and must be addressed and resolved rapidly by the SHSO, Site Manager and Project Manager to relieve any motivations or pressures to circumvent established safety policies.• Unauthorized breaches of specified safety protocol will not be allowed. Workers unwilling or unable to comply with the established procedures will be discharged.• Practice good housekeeping. Keep everything orderly and out of potentially harmful situations.• In an unknown situation, always assume the worst conditions.

Table 11-1 General Safety Work Practices
<ul style="list-style-type: none">• Be observant of your immediate surroundings and the surroundings of others. It is a team effort to notice and warn of impending dangerous situations. Withdrawal from a hazardous situation to reassess procedures is the preferred course of action.• “You must Intervene” if you see a worker putting him/herself in danger or endangering others.• Conflicting situations may arise concerning safety requirements and working conditions and must be addressed and resolved rapidly by the SHSO, Site Manager, and Project Manager to relieve any motivations or pressures to circumvent established safety policies.• Unauthorized breaches of specified safety protocol will not be allowed. Workers unwilling or unable to comply with the established procedures will be discharged.

12 HAZARD ANALYSIS

12.1 RISK REGISTER

Appendix J contains the Risk Register which lists the HSE hazards/risks associated with these Work Activities. Each hazard has been assigned an inherent risk level: high, substantial, moderate, or low. The following is a summary of the hazards identified in the SMARTool with the specific risk level associated with these Work Activities.

High Risk

N/A

Substantial Risk

- Biological Hazards/Exposures (e.g., known contagions such as Covid)
- Extreme Environments (i.e., difficult to access sites)
- Operating Mobile Equipment (boat)
- Working Over or Near Water

Moderate Risk

- Biological Hazards/Exposures (e.g., poisonous plants, insects, wildlife)
- Environmental Conditions (e.g., heat, cold)
- Environmental Spill
- Hazardous Waste Sites
- Inspections
- Machine Guarding, lack of
- Manual Lifting, Line of Fire
- Radiological Hazards (Sun Exposure)
- Slips/Trips/Falls
- Unusual Work Hours
- Working Offshore

Low Risk

- Ergonomics/Muscular Skeletal
- Field Office Safety
- Housekeeping, Drinking Water, and Sanitation, lack of
- Noise/Hearing Conservation
- Power and Hand Tools
- Workplace Violence/Personal Security/Harassment

12.2 CONTAMINANTS OF CONCERN (COCS)

Pertinent site information (e.g., records of chemicals used, records of disposal) and previous sampling data (e.g., groundwater, soil, sediment) have been reviewed to determine the COCs for this project. The known or suspected contaminants for the Site are listed below:

Contaminants of Concern (Attach Fact Sheets)	Maximum Concentrations		PEL/TLV
	Sediment (mg/kg)	Water (µg/L)	
Mercury	73.3	50	0.1 mg/m ³ / 0.025 mg/m ³
Methylmercury	22	0.5	0.01 mg/m ³ TWA, 0.03 mg/m ³ STEL [skin]

Appendix A contains Contaminant Fact Sheets for each of these COCs.

Health hazards will be evaluated using air monitoring equipment (Section 12.0) and controlled by implementing PPE (Section 13.0).

12.3 ACTIVITY HAZARD ANALYSIS

AHAs have been developed for primary and subordinate tasks associated with the Work activities. Each contractor/consultant and subcontractor will develop their own AHAs. AHAs will be submitted to the PM and SHSO to verify completion. The primary tasks to be conducted for investigation activities as part of the Penobscot Estuary Remediation, and their associated AHAs, required PPE, and author, are presented in **Table 12-1**. AHAs can be found in **Appendix B**.

Primary Task	AHA	PPE	AHA developed by:
Surface Water and Sediment Sampling from a Vessel	AHA-Boat Surface Water and Sediment Sampling AHA-Working Over Near Water AHA-Winch Operation	Modified Level D, Personal Flotation Device (PFD)	WSP
Soil, Surface Water, and sediment Sampling from Shore	AHA-Sediment/Soil Sampling AHA-Surface Water Sampling AHA-Sediment/Soil Sampling AHA-Sediment/Soil Sampling by Slide Hammer AHA-Soil/Sediment Sampling by Hand Auger	Modified Level D, PFD	WSP
Biota Sampling from a Vessel (lobster, tomcod, smelt, eel)	AHA-Fish and Shellfish Sampling	Modified Level D, PFD	WSP
Biota Sampling from Mud Flats (worms, smelt, ducks)	AHA-Working in Muddy Areas AHA-Fish and Shellfish Sampling AHA-Duck Sampling	Modified Level D, PFD	WSP
Biota Sampling from Marsh (birds, terrestrial invertebrates, mummichogs)	AHA-Bird Sampling AHA-Fish and Shellfish Sampling	Modified Level D, PFD	WSP

The following is a complete list of AHAs included in **Appendix B**:

- Communicable Disease Prevention
- Vehicle Travel - Journey Management Plan

- Mobilization/Demobilization and Site Preparation
- Utility Clearance
- Field Work - General
- Field Work Oversight
- Insect Stings and Bites
- Poisonous Plants
- Surface Water and Sediment Sampling from a Boat
- Winch Operations while Sampling from a Boat
- Sediment/Soil Sampling
- Sediment/Soil Sampling w/ Hand Auger/Hand Tools
- Sediment/Soil Sampling by Slide Hammer
- Working in a Muddy Area
- Working Over or Near Water
- Streams and Wetlands Characterization
- Surface Water Sampling
- Bird Sample Collection
- Black Duck Collection
- Fish and Shellfish Collection
- Dry Ice Handling (Sample Preservation)
- Decontamination - Hg Low-Level Sediment Collection
- Managing Contaminated Waste

During the Penobscot Estuary field investigations contractor/consultant field staff may be on-site as individuals working with subcontractors and should develop a safety relationship with the Subcontractor to discuss daily activities and functions, to review SSHO safety concerns, HASP procedures and the subcontractor's safety procedures, and to attend daily work briefings and safety meetings as a part of a safe project team.

All contractor/consultant and subcontractor field personnel, regardless of company and/or management responsibility, adhere to the following:

1. Check in with the Site FOL upon arrival at the site each day. It is advisable to provide emergency contact information to the subcontractor for yourself.
2. Always maintain eye contact with vessel operators and vehicle drivers. Broadcast your intentions at all times when moving about the site and your intentions for the work you are performing.
3. Do not enter a boat, mud flat, and/or wetland without assessing safe ingress and egress, tidal conditions, weather conditions and without additional support (i.e., the "buddy system").
4. No activity or task will place field personnel in unsafe situations or locations where activity-specific project planning and safety considerations have not been evaluated.
5. The mercury-contaminated media on-Site includes sediment and surface water, and care should be taken to reduce direct exposures to these media. Best practices in handling sediments are to manage them while they are damp or wet to minimize respiratory uptake and to wear designated PPE.

13 AIR MONITORING

Section 12.2 of this HASP lists the known and suspected contaminant of concern at the site. **Table 13-1** lists the monitoring instruments and upgrade/action limits that could potentially be used at the site.

Contaminants of concern in Site media are limited to mercury, and air monitoring is not anticipated to be required under normal investigative activities. Periodic monitoring will be conducted when the possibility of an Immediately Dangerous to Life and Health (IDLH) condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it will be considered whether the possibility that exposures have risen are as follows:

- When contaminants other than those previously identified are being handled.
- When a different type of operation is initiated (e.g., management and sampling of IDW drums).
- When management of fuel spills is required.

All monitoring equipment will be calibrated before each day of use. Results will be documented in the Field Logbook or calibration forms.

In 2017 an indoor air monitoring program was conducted inside the field office where sediment samples were being processed. There was no indication of indoor mercury vapor during processing. Based on the results of the 2017 indoor air monitoring program, there will be no air monitoring during these activities. In addition, sample processing activities are mostly taking place at sample location, open to the environment.

Areas of airborne dust and odor should be avoided. Skin contact with soil, sediment, surface water and ground water should be avoided. Personnel and equipment decontamination is required where there are possible exposures to Site media.

13.1 DUST CONTROL

The collection and processing of surface water, sediment, and biota samples does not (typically) create dust; therefore, air monitoring devices will not be utilized and dust control measures are not required. However, due to the presence of mercury at the Site, any sediment on sampling equipment or personnel protective equipment should be removed prior to drying to eliminate potential exposures to dust. Should dust become an issue, the use of a dust palliative (calcium chloride) will be utilized in designated areas to provide dust control. No specific work is anticipated in local roadways (except commuting – See AHA Mobilization - Demobilization) requiring dust control.

Table 13-1 Air Monitoring Action Level Summary						
PID/FID Reading ^{1,2}	Detector Tube ¹ Benzene	Detector Tube ¹ Vinyl Chloride	Dust Meter ¹	LEL ² /O ₂ ¹	Action	Level of PPE
<0.5 ppm ²	--	--	<1.5 mg/m ³		Continue to monitor with PID.	Level D / Modified Level D
≥0.5 ppm ¹	<0.5 ppm	<0.5 ppm			Begin monitoring breathing zone with PID and benzene Dräger tube (DT).	Level D / Modified Level D
0.5–9 ppm ¹	<0.5 ppm	<0.5 ppm	<1.5 mg/m ³		Continue to monitor with PID and DT.	Level D / Modified Level D
≥9 ppm ¹ to 75 ppm	≥0.5 ppm to 5 ppm	<0.5 ppm	≥1.5 mg/m ³		Back off and reassess. If work continues at Level C PPE, continue monitoring with PID and DT.	Level C ³
≥75 ppm ¹	≥5 ppm	≥0.5 ppm	≥15 mg/m ³		Stop work and evacuate area. Notify SHSO.	Level B
				>10% LEL ²	Stop work. Evacuate area. If action levels continue to be exceeded, contact SHSO, consider return with ventilation system and spark proof/intrinsically safe equipment.	Back Off
				<19.5% O ₂ ¹ >23.5% O ₂ ¹	Stop work and evacuate area. Notify SHSO.	Level B

¹ Monitor breathing zone

² Monitor source (e.g., well, cuttings, borehole)

³ Change cartridges daily unless otherwise noted in HASP

14 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The individual PPE required for each task is listed in the AHAs (**Appendix B**) but is generally level D modified PPE. The level of protection may be upgraded or downgraded according to the action guidelines provided in **Table 13-1**. The level of PPE used each day will be indicated in the Field Logbook and/or float plan. When using PPE, workers must adhere to OSHA regulations (29 CFR 1910.120[g] and 29 CFR 1910 Subpart I).

Sampling for investigative activities associated with the Penobscot Estuary Remediation will be conducted outdoors in most situations. Mercury vaporization from site media does not present an exposure pathway based on environmental conditions (i.e., temperature, humidity, aquatic environment) and the low vapor pressure of the mercury. Respirators will generally not be worn based on the lack of an inhalation exposure pathway.

15 PPE DECONTAMINATION

PPE will be decontaminated in accordance with 29 CFR 1910.120(k). The decontamination procedures, equipment, and decontamination solution required for each task are provided in **Appendix C** and the AHA – Decontamination (**Appendix B**).

Reusable safety gear will be decontaminated with a Formula 409™ (or similar) cleaning solution and water prior to re-use or removal from the work zone. Safety gear designated for one-time use will be decontaminated in the same manner and disposed of as non-hazardous solid waste. Decontamination wastewater will be managed in accordance with Section 5.3 of the FSP (WSP, 2023a). WSP will dispose of waste material and disposable safety gear in accordance with all applicable local, state, and federal regulations. If disposal at an appropriately permitted off-site facility is required, information will be provided to Mallinckrodt as needed to support Mallinckrodt's preparation of waste profiles.

16 NON-LIFE-THREATENING MEDICAL CARE

For emergency medical care guidance please see the Emergency Response Plan (ERP) (WSP, 2023a).

Examples of non-life-threatening medical care that may be performed on site include minor cuts, minor bruises, minor abrasion, splinters, and insect bites. In case of a non-life-threatening medical emergency, medical care may be self-administered or administered on site by a qualified person.

If an injury is not a life-threatening medical emergency, but the injured person(s) needs to seek medical attention, the initial care may be administered on site by a qualified person, upon consent. Examples of this include twisted ankles, possible broken bones, and muscle strains. After initial care has been administered, the injured individual will be transported to one of the following clinics for non-emergency medical treatment (route maps located in **Appendix I**):

- 1. Concentra Medical Center**
34 Gilman Road
Bangor, Maine 04401
(207) 941-8300
- 2. Seaport Community Health Center**
53 Schoodic Drive
Belfast, Maine 04915
(207) 338-6900
- 3. Bucksport Regional Health Center**
110 Broadway
Bucksport, Maine 04416
(207) 469-7371

Following admittance to the clinic, Greenfield Program Manager, Lauri Gorton, will be notified via a direct call to cell phone number 414.732.4514.

If the incident involves an injury to a WSP employee, the HSE Coordinator or Site Manager will implement the WSP Early Injury Case Management Program, as follows in the table below:

Non-Emergency Incident
Steps 1 & 2 must be completed before seeking medical attention other than local first aid: 1. Provide first aid as necessary. Report the situation to your immediate supervisor <u>and</u> HSE coordinator (all incidents with the apparent starting event should be reported within 1 hour of occurrence). 2. The injured employee must perform the steps below:
Call TriageNow 24/7 Hotline (877) 311-0038
TriageNow will assess the situation and determine whether the incident requires further medical attention. During this process, TriageNow will perform the following: <ul style="list-style-type: none">• Explain the process to the caller.• Determine the nature of the concern.• Provide appropriate medical advice to the caller.• Determine appropriate path forward with the caller.• Maintain appropriate medical confidentiality.• Help caller to execute path forward, including referral to the appropriate local medical facility.• Send an email notification to the Corporate HSE Department.

Note: table continues on next page

IMMEDIATELY after contacting TriageNow, the SHSO will send a brief email notification and inform verbally (direct contact is required) one of the WSP HSE corporate representatives and contact Greenfield Program Manager, Lauri Gorton, at cell phone number 414.732.4514.

3. Make all other local notifications, as necessary.
4. Local Supervisor, HSE Coordinator, SHSO, and any applicable safety committees must complete the preliminary investigation, along with the initial Incident Report within 24 hours.
5. Corporate Loss Prevention Manager to complete Worker's Compensation Insurance notifications as needed.
6. Corporate HSE to conduct further incident notifications, investigation, include in statistics, classify, and develop lessons-learned materials.

* NOTE: Step 2 is applicable only to the North American operations and to incidents involving WSP personnel. High potential near misses, subcontractors' incidents, regulatory inspections, spills, and property damages above \$1,000 should be reported immediately, following guidance provided by the HSE Coordinator.

For non-WSP contractors and subcontractors, follow the injured person's company workplace injury case management program. If instructed, the SHSO or designee can either transport the injured person to one of the identified clinic or hospitals in the area. If the SHSO is unable to transport the injured person themselves, they will call 911.

For emergency medical care procedures see the ERP (WSP, 2023b).

17 SITE EMERGENCY RESPONSE PLAN

A separate document titled the Emergency Response Plan (ERP) (WSP, 2023b) has been prepared in accordance with Paragraph 13 titled Emergency Response and Reporting and, Paragraph 31(b) titled Emergency Response Plan of the Consent Decree SOW. The primary objective of the ERP is to provide a guidance document for emergency situations that may occur during investigation activities associate with the Project. The ERP contains the following elements:

- Actions required in an accident or emergency during Work activities on the Penobscot River Estuary;
- Persons and entities responsible for responding in an emergency;
- Emergency procedures for potential emergency scenarios including who to notify and when;
- List of emergency care facilities and driving directions (route maps);
- Guidance on community involvement in emergency situations;
- Work area security;
- Spill prevention and countermeasures; and
- Emergency release and response reporting.

18 HAZARD COMMUNICATION

The following procedures shall be followed for all chemicals brought on site (e.g., fuels):

- Chemical containers (primary and secondary) will be labeled correctly and clearly with the name of the chemical (product identifier), signal word, hazard statement, pictogram(s), precautionary statement, and name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.
- If chemicals are transferred to a secondary container, that container will have the same labeling as the original container.
- Workers must have received training on the hazards of these chemicals as indicated in **Table 8-1**.
- A list of chemicals will be included in this HASP (see below) or maintained separately. When new chemicals are brought to the Site, this list of chemicals will be updated and SDSs acquired.
- An SDS for each chemical listed below is included in **Appendix E**.

Formula 409	_____
Gasoline	_____
Diesel Fuel	_____
Motor Oil	_____
_____	_____

When chemicals are used on site, workers must adhere to the OSHA regulation (29 CFR 1910.1200).

19 RECORDKEEPING

At the end of the project, the following items should be maintained in the project file:

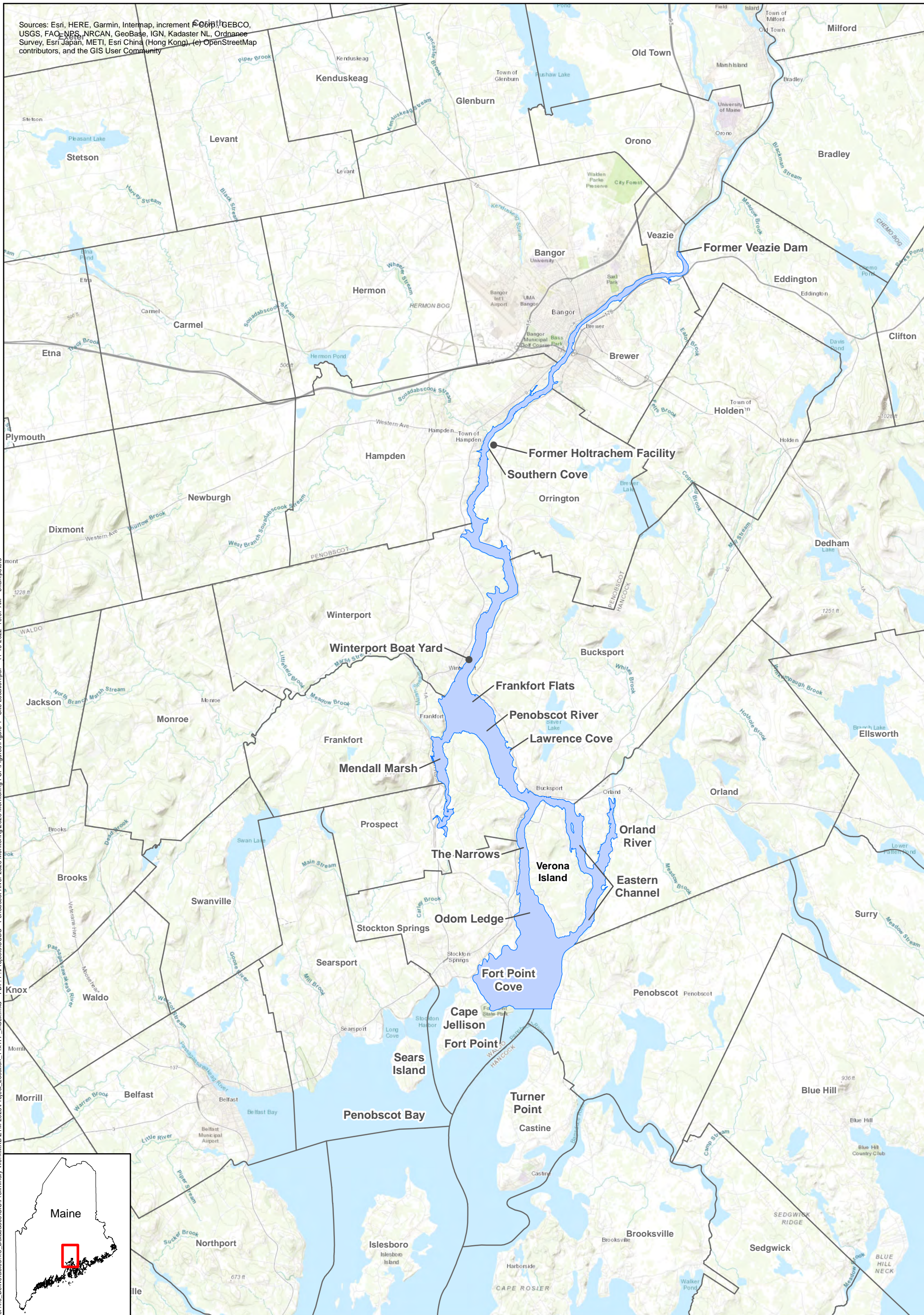
- HASP
- Incident Analysis/Vehicle Incident Forms/Ground Disturbance Report (if applicable)
- Log notebooks

20 REFERENCES


- WSP, 2023a. Field Sampling Plan (FSP), Penobscot Estuary Remediation, Maine. WSP USA Environment & Infrastructure, Inc. March 2023.
- WSP, 2023b. Emergency Response Plan (ERP), Penobscot Estuary Remediation, Maine. WSP USA Environment & Infrastructure, Inc. March 2023.


FIGURES

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, OpenStreetMap contributors, and the GIS User Community



Document: P:\Projects\USDC - Penobscot River\0. Deliverables\4.5_Databases\GIS\Preliminary Work\MDL TM 2023\Project_Location_11x17P_Index.mxd PDF: P:\Projects\USDC - Penobscot River\0. Deliverables\4.5_Databases\GIS\Preliminary Work\FSP\Figures\Figure 1 - Site Location.pdf 11-10-2022 10:07 AM brian.peters

Prepared for:  Greenfield Penobscot Estuary Remediation Trust LCC
Trustee of the Penobscot Estuary Mercury Remediation Trust

Prepared by:  WSP USA Environment & Infrastructure, Inc.



Legend
■ Approximate Limit of Study Area
 Town Boundary

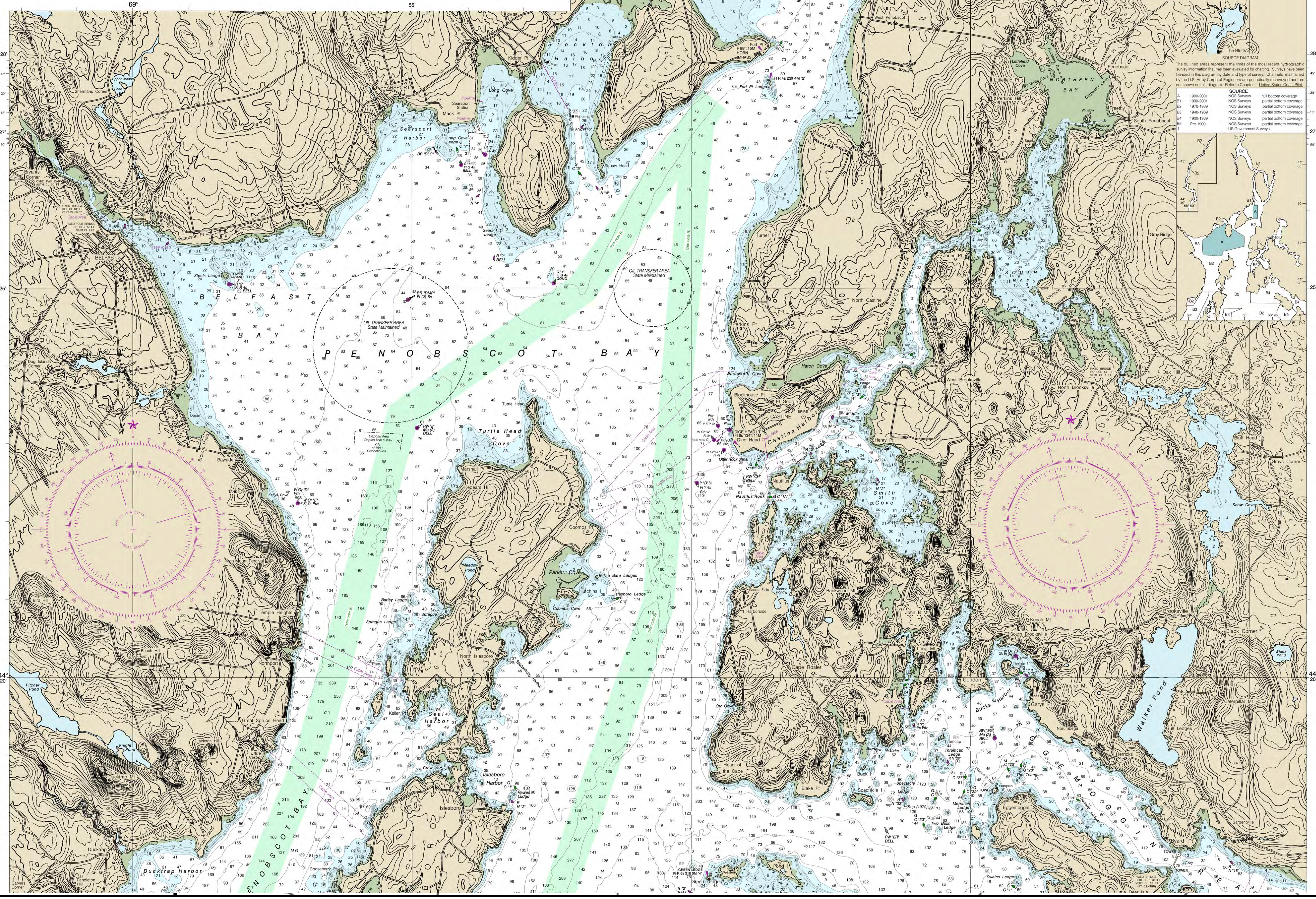
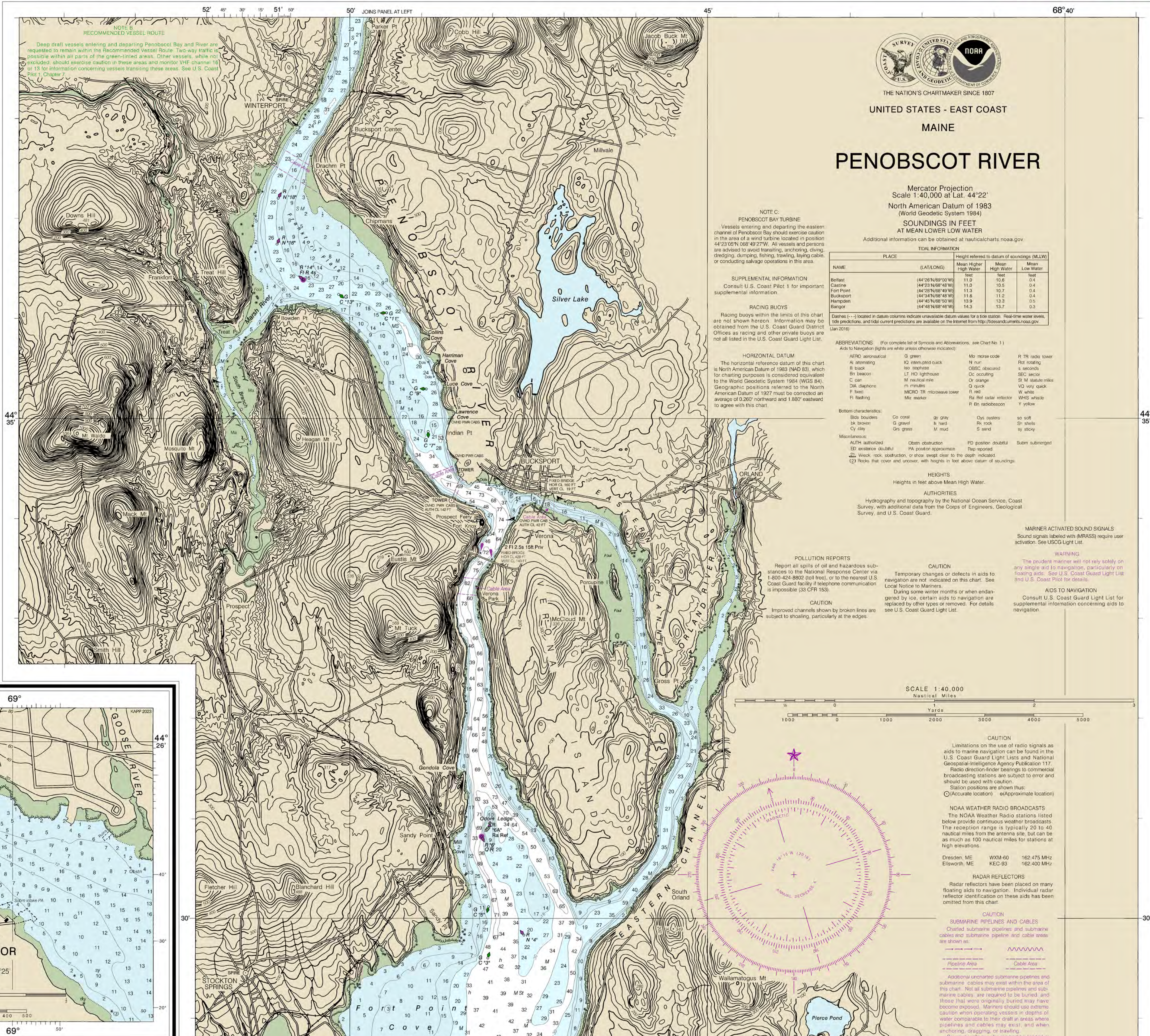
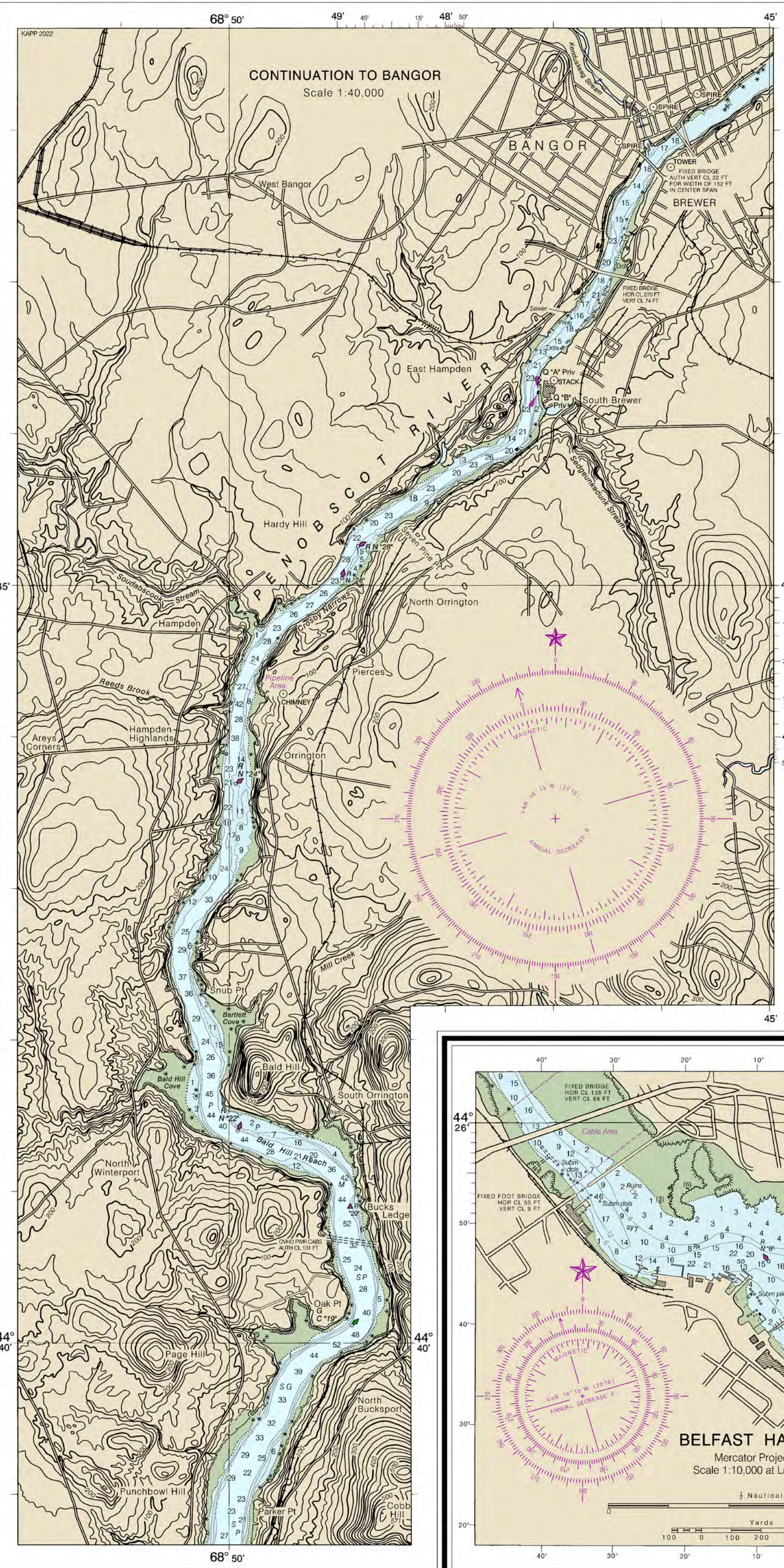
Figure 1-1
Site Location Map

Site-Specific Health & Safety Plan
Penobscot Estuary Remediation

Prepared/Date: BRP 11-10-22 Checked/Date: BPW 11-10-22

13309

13309



Prepared for: Greenfield Penobscot Estuary Remediation Trust LCC
Trustee of the Penobscot Estuary Mercury Remediation Trust

Prepared by: WSP USA Environment & Infrastructure, Inc.

Figure 2-1
NOAA Nautical Chart 13309

Site-Specific Health & Safety Plan
Penobscot Estuary Remediation

Prepared/Date: BRP 03-09-23 | Checked/Date: BPW 03-03-23

TABLES

Table 1-1. Statement of Work Compliance




Statement of Work (SOW) Requirement	HASP Section
¶ 31(a) The Health and Safety Plan (HASP) describes all activities to be performed to protect on-site personnel and area residents from physical, chemical, and all other hazards posed by the Work	 Entire Document
¶ 31(a) The HASP shall be prepared to meet all applicable laws and regulations associated with applicable activities conducted in the performance of Work	 Section 4.1 Section 7
¶ 31(a) Individual HASPs may be developed for different Work Categories	 N/A

Table 1-2. Health and Safety Plan Objectives


Objective	Information/Data Needed	HASP Document Section
The Health and Safety Plan (HASP) must describe all activities to be performed to protect on-site personnel and area residents from physical, chemical, and all other hazards posed by the Work	List of activities to be performed at the Site	Section 11.3 - Activity Hazard Analysis
The HASP shall be prepared to meet all applicable laws and regulations associated with applicable activities conducted in the performance of Work	Applicable laws and regulations governing health and safety	Section 4.1 - Compliance Section 7 - Worker Training & Medical Surveillance

APPENDIX A

Contaminant Fact Sheets

ATTACHMENT A

CONTAMINANT FACT SHEET

 <p style="margin: 0;">CONTAMINANT FACT SHEET</p> <p>Chemical Name: <u>Mercury</u> CAS Number: <u>7439-97-6</u> Synonyms: <u>Mercury metal, quicksilver, elemental mercury, colloidal mercury, metallic memrcury</u></p>					HEALTH HAZARD DATA									
					Color: <u>Silver-white</u>	Physical State: Solid _____ Liquid <u>X</u> Gas _____	Odor: <u>odorless</u>	Odor Threshold: <u>N/A</u>	Vapor Density: <u>N/A</u>	Ionization Potential (IP): <u>Unknown</u>	IDLH: <u>10 mg/m³</u>	Carcinogen: OSHA _____ IARC _____ NTP _____ ACGIH _____ NIOSH _____	Skin absorbable: yes <u>X</u> no _____ Skin corrosive: yes <u>X</u> no _____	Signs/Symptoms of Acute Exposure: <u>Irritates eyes and skin, cough, chest pain, tremors, insomnia, difficult breathing, headache, irritability, weakness, salivation, GI disturbance</u>
							OSHA PELs						0.1 mg/m ³	
							ACGIH TLVs	0.025 mg/m ³ (inorganic)						
							NIOSH RELs	0.05 mg/m ³ (vapor)					0.1 mg/m ³	
AIR MONITORING					PERSONAL PROTECTIVE EQUIPMENT					FIRE/REACTIVITY DATA				
Type	Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level	Recommended Protective Clothing Materials: Suits _____ _____ _____ Gloves <u>Nitrile, Viton, Rubber</u> _____ _____ Boots <u>Rubber</u> _____ _____ _____ Service Limit Concentration (ppm): <u>NA</u> MUC 1/2 Mask APR = TWA x 10 = <u>0.25 mg/m³</u> MUC Full-Face APR = TWA x 10 = <u>0.25 mg/m³</u>					Flash Point: <u>N/A</u> LEL/UEL: <u>N/A / N/A</u> Fire Extinguishing Media: Dry Chemical <u>X</u> Foam <u>X</u> Water Spray <u>X</u> CO ₂ <u>X</u> Incompatibilities: <u>Acetylene, ammonia, chlorine dioxide, azides, calcium, sodium carbide, lithium, rubidium, copper</u>				
Not Applicable		Follow Mfg Instructions	N/A	0.025 mg/m ³										
Checked by: <u>Cindy Sundquist</u>					Date: <u>5/29/2019</u>									

2023 WSP USA Environment & Infrastructure (WSP)

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

CONTAMINANT FACT SHEET

<p style="text-align: center;">CONTAMINANT FACT SHEET</p> <p>Chemical Name: Methyl Mercury</p> <p>CAS Number: 593-74-8, 22967-92-6</p> <p>Synonyms: <u>Dimethylmercury</u></p>					HEALTH HAZARD DATA												
					Color: <u>Colorless</u> Physical State: Solid _____ Liquid <u> X </u> Gas _____ Odor: <u>odorless</u> Odor Threshold: <u>N/A</u> Vapor Density: <u>N/A</u> Vapor Pressure: _____ Ionization Potential (IP): <u>Unknown</u> IDLH: <u>2 mg/m³</u> Routes of Entry: <u>Inh, Ing, Abs, Con</u>					Carcinogen: OSHA _____ IARC _____ NTP _____ ACGIH _____ NIOSH _____ Skin absorbable: yes <u> X </u> no _____ Skin corrosive: yes <u> X </u> no _____ Signs/Symptoms of Acute Exposure: <u>Paresthesia; ataxia, dysarthria; vision, hearing disturbance; spasticity, jerking limbs; dizziness; salivation; lacrimation (discharge of tears); nausea vomiting, diarrhea, constipation; skin burns; emotional disturbance; kidney injury; possible teratogenic effectsin</u>					Source TWA (units) STEL (units) C (units)		OSHA PELs 0.1 mg/m ³
AIR MONITORING					PERSONAL PROTECTIVE EQUIPMENT					FIRE/REACTIVITY DATA							
Type		Brand/Model No.	Calibrations Method/Media	Relative Response or Conversion Factor	Meter Specific Action Level	Recommended Protective Clothing Materials: Suits <u>Dupont Tychem Responder, CSM and TK for toxic and corrosive chemical vapors and heavy liquids</u> Gloves <u>Silver shield, 4H, or other brand laminate-style gloves and outer gloves (heavy duty nitrile or neoprene, with long cuffs).</u> Boots <u>Bootcovers built into chemical protective clothing along with additional boot covers for traction</u> Service Limit Concentration (ppm): <u>NA</u> MUC 1/2 Mask APR = TWA x 10 = <u>NA*</u> MUC Full-Face APR = TWA x 10 = <u>NA*</u> *Level B PPE required					Flash Point: <u>N/A</u> LEL/UEL: <u>N/A / N/A</u> Fire Extinguishing Media: Dry Chemical <u> X </u> Foam <u> X </u> Water Spray <u> X </u> CO ₂ <u> X </u> Incompatibilities: <u>Acetylene, ammonia, chlorine dioxide, azides, calcium, sodium carbide, lithium rubidium, copper</u>						
Mercury Vapor Analyzer			Follow Mfg instructions	NA	0.01 mg/m ³	First Aid: Eye: Irrigate immediately; wash immediately, Breathing: <u>Respiratory support, Swallow: Medical attention immediately</u>											
Checked by: Cindy Sundquist					Date: 2/20/23												

2023 by WSP USA Environment & Infrastructure

Note: The recommended protective clothing materials assumes that potential for direct contact (by splashing, dust inhalation, or other means) with the contaminants exists. Professional judgment and knowledge of on-site hazards should be used in selecting PPE appropriate to the concentration of the contaminant (trace vs percentage) to which the individual is likely to be exposed.

NE = None Established

Abs = Skin Absorption

Inh = Inhalation

DSEN = Dermal Sensitizer

NA = Not Applicable/Not Available

Ing = Ingestion

Con = Skin and/or Eye contact

APPENDIX B

Activity Hazard Analysis (AHA) per Task(s)

Communicable Disease Prevention

Vehicle Travel - Journey Management Plan

Mobilization/Demobilization and Site Preparation

Utility Clearance

Field Work - General

Field Work Oversight

Insect Stings and Bites

Poisonous Plants

Surface Water and Sediment Sampling from a Boat

Winch Operations while Sampling from a Boat

Sediment/Soil Sampling

Sediment/Soil Sampling w/ Hand Auger/Hand Tools

Sediment/Soil Sampling by Slide Hammer

Working in a Muddy Area

Working Over or Near Water

Streams and Wetlands Characterization

Surface Water Sampling

Bird Sample Collection

Black Duck Collection

Fish and Shellfish Collection

Dry Ice Handling (Sample Preservation)

Decontamination - Hg Low-Level Sediment Collection

Managing Contaminated Waste



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

Activity/Work Task:	Boating- Surface water and sediment collection	Overall Risk Assessment Code (RAC) (Use highest code)	M					
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix						
Contract Number:	3617237573.06.A02	Severity	Probability					
Date Prepared:	01/30/2023		Date Accepted:	2/14/23				
Prepared by (Name/Title):	Charles Lyman	Catastrophic	Frequent	Likely	Occasional	Seldom	Unlikely	
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	E	H	H	M	
Notes: (Field Notes, Review Comments, etc.) This AHA involves the following: <ul style="list-style-type: none"> Establishing site specific measures Collecting samples from a boat The Safe Boating Checklist and a Float Plan must be filled out prior to use of a boat See Appendix F of the HASP for the Boating Safety and Personal Floation Device Selection Guide This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Marginal	H	M	M	L	L	
		Negligible	M	L	L	L	L	
		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)						
		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart	
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E = Extremely High Risk	
							H = High Risk	
							M = Moderate Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					L = Low Risk	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) Slips, trips, falls	1A) Slips, trips, falls <ul style="list-style-type: none"> ▪ Familiarize self with site prior to visit. ▪ Complete appropriate training before going on site. ▪ Provide appropriate person in district office your itinerary. ▪ Prepare listing of emergency phone numbers, both on and offsite. ▪ Identify site/activity PPE needs ▪ Ensure that First Aid training is current, and that tetanus booster are current 	L
2. Check and calibrate sampling equipment.	2A) Muscle Strain - lifting, twisting, tugging	2A) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> ▪ Inspect all PPE and equipment and ensure that it is working properly. ▪ Get assistance from a coworker or use mechanical means to move equipment (dolly, cart, etc.) 	
	2B) Slips, trips and falls	2B) Slips, trips, and falls <ul style="list-style-type: none"> ▪ Wear proper footwear ▪ Pay attention to where walking 	
3. Load/carry equipment to the site.	3A) Slips, trips, falls	3A) Slips, trips, falls <ul style="list-style-type: none"> ▪ See AHA for Mobilization / Demobilization and Site Preparation 	M
	3B) Muscle Strain - lifting, twisting, tugging	3B) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> ▪ Proper lifting, posture, ergonomic practices and body mechanics. ▪ Share the load, move items in smaller shifts, or use cart. ▪ Loading the boat: ensure no twisting. ▪ Use a trailer if possible to launch boat. ▪ Empty boat of gear prior to loading or moving boat to/from vehicle. ▪ Ensure boat is properly secured in the vehicle prior to moving. ▪ Tie a red cloth to the furthest point of the boat if overhanging from the vehicle. ▪ Ensure enough able bodies to move and launch the boat to share the load. 	
	3C) Irrate property owners, pets	3C) Irrate property owners, pets <ul style="list-style-type: none"> ▪ Call property owners in advance. ▪ Check in to introduce yourself upon arrival. ▪ Be courteous and diplomatic 	
	3D) Crime	3D) Crime <ul style="list-style-type: none"> ▪ Do not enter areas where threats are present. ▪ Contract security where applicable. Use the buddy system. ▪ Maintain contact with support such as radio or cell phone. 	
	3E) Struck by traffic – launch boat.	3E) Struck by traffic – launch boat. <ul style="list-style-type: none"> ▪ Wear hi visibility safety vest, use buddy system. ▪ Use traffic cones and a lookout. Launch from public boat launch facilities. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	3F) Battery handling – acid exposure	3F) Battery handling – acid exposure <ul style="list-style-type: none"> ▪ Use care when handling batteries. ▪ Wear gloves and protective clothing when caring batteries. ▪ Check for leaks and damage prior to use of batteries. 	
	3G) Launch and load boat: Capsize	3G) Launch and load boat: Capsize <ul style="list-style-type: none"> ▪ Be aware of the boat maximum weight, person capacity, and engine size limit. ▪ Balance the gear and people in the boat. ▪ Personnel must wear approved, properly sized and buckled PFD when on the water. ▪ Ensure lines and body parts are out of the water before operating engine. ▪ Avoid operation within swimming areas. ▪ Provide signal flags and communication to protect the public of your activities. ▪ Test motor prior to shoving away from the pier. ▪ Ensure all appropriate equipment is provided and accessible according to AMEC EH&S Manual – Boating Safety. ▪ Include bailer, anchor, second means of propulsion, line and throwable floatation. 	
	3H) Pinch points – attaching/mounting the motor	3H) Pinch points – attaching/mounting the motor <ul style="list-style-type: none"> ▪ Mind where hands and body parts are when moving and loading equipment. 	
	3I) Fueling – chemical exposure, fumes, environmental spills.	3I) Fueling – chemical exposure, fumes, environmental spills. <ul style="list-style-type: none"> ▪ See AHA Gasoline 	M
	3J) Noise – engine (optional)	3J) Noise – engine (optional) <ul style="list-style-type: none"> ▪ Wear hearing protection. ▪ Provide shielding from noise such as bulkhead, or sound dampening. ▪ Operate with engine box in place to dampen noise 	
4. Field parameters	4A) Falling into water and capsize	4A) Falling into water and capsize <ul style="list-style-type: none"> ▪ Use equipment that facilitates reaching the location from a safe distance (extensions, etc.). ▪ Work using the buddy system. ▪ Wear PFD when working on the water. ▪ Balance equipment and people. ▪ Avoid leaning over the side of the boat. ▪ Anchor or secure the vessel to hold station. ▪ Steer boat to meet waves on the bow. ▪ Stay seated while in boat. ▪ If moving about, keep weight low. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	4B) Slips trips and falls	4B) Slips trips and falls <ul style="list-style-type: none"> ▪ Wear appropriate footwear. ▪ Survey and clear walking area. ▪ Do not walk on slippery surfaces. ▪ Maintain good housekeeping. ▪ Provide walkways, platforms or secure walking surface. ▪ Use the buddy system and maintain communications with support staff. 	
	4C) Vermin, leaches, Insect/animal born disease	4C) Vermin, leaches, Insect/animal born disease <ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear insect netting clothing or apply insect repellent on all exposed skin surfaces as appropriate – consider sample contamination ▪ Wear long sleeve shirt and full length pants ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas if possible ▪ Tuck pants leg into boot ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Do not touch any suspected contaminant without appropriate hand PPE ▪ Wash hands as soon as possible upon completion of task. ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. ▪ Contract vermin relocation, if applicable. ▪ Remain vigilant and respectful of wildlife. (See JHA for Insects, Stings and Bites) ▪ Wear wind impervious outerwear ▪ During warm months – wear a long sleeve cotton/breathable fabric shirt and pants. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	4D) Weather – temperature extremes, hypothermia, sun stroke, heat exhaustion, dehydration, sunburn.	4D) Weather – temperature extremes, hypothermia, sun stroke, heat exhaustion, dehydration, sunburn. <ul style="list-style-type: none"> ▪ Train workers about weather and appropriate precautions. ▪ Heat: Familiarize self with signs of heat related illnesses: cramps, heat rash, dehydration, heat exhaustion, and heat stroke. ▪ Sun: <ul style="list-style-type: none"> ○ Keep body protected ○ Wear sunscreen, wide brimmed hat or hardhat. ○ Drink plenty of fluids to remain hydrated. (Follow WSP guidelines, procedures and training for fluid intake, sunscreen use, proper clothing, work schedule, etc.) ○ Schedule work for cool part of day. ○ Take breaks in the shade. ▪ Wind: <ul style="list-style-type: none"> ○ Wear layered clothing, gloves, hard hat with winter liner, etc. ▪ Cold: <ul style="list-style-type: none"> ○ During cold weather - layer clothing 	
	4E) Weather – inclement and strong winds	4E) Weather – inclement and strong winds <ul style="list-style-type: none"> ▪ Watch for clouds and incoming weather. ▪ Monitor weather forecasts. ▪ Have a float plan and communications when on and off the water. ▪ Return to shore if weather threatens. ▪ Stay close to shore if possible and abandon work until winds subside. ▪ Schedule work when weather is calm (early morning or evening.) ▪ Provide proper lighting if working after dark. 	
	4F) Run aground – shifting or unbalanced vessel - equipment/personnel/slip/fall/overboard	4F) Run aground – shifting or unbalanced vessel - equipment/personnel/slip/fall/overboard <ul style="list-style-type: none"> ▪ Operate at safe speed. ▪ Post a look out for shallow or submerged obstacles. ▪ Remain seated when under way. ▪ Be wary of tides, flooding, flash floods and dam releases. ▪ Use anchor to kedge or pull back toward the way you came and deeper water. ▪ Use a pole or paddle, lighten the vessel to float off. 	L
5. Sample collection	5A) Falling into water and capsizes.	5A) Same as Item #4 above.	
	5B) Bending, pulling, twisting	5B) Bending, pulling, twisting <ul style="list-style-type: none"> ▪ Use a vibrating or wiggling motion on the sample device to break the soil suction. ▪ Proper lifting technique. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	5C) Splash	5C) Splash <ul style="list-style-type: none"> ▪ Wear appropriate safety glasses (tinted for sun). ▪ Be aware if sampling water through a filter, if it becomes plugged with sediment it may unexpectedly “blow off” the hose and splash. ▪ Change filter prior to sedimentation back pressure. ▪ Minimize pouring distance to limit the splash between containers. 	
	5D) Chemical exposure	5D) Chemical exposure <ul style="list-style-type: none"> ▪ Wear PPE including protective gloves, coveralls, safety glasses as appropriate. ▪ Work upwind of the sample location. Minimize exposure using a shovel/spoon or tool to collect the sample. ▪ Review and understand MSDS for all chemicals being handled. ▪ Be careful when handling acids and caustic substances. ▪ Wear adequate PPE and wash hands after completion of task. 	
	5E) Vegetation, sticks, reeds, - cuts and punctures.	5E) Vegetation, sticks, reeds, - cuts and punctures. <ul style="list-style-type: none"> ▪ Clear access to site. ▪ Be familiar with toxic plants such as poison ivy. ▪ Avoid such plants. ▪ Wash thoroughly after accidental contact with toxic materials and plants. 	
6. Vessel Operations	6A) Lack of boating skills, boating incident	6A) Lack of boating skills, boating incident <ul style="list-style-type: none"> ▪ Complete USCG/Power Squadron or other recognized boating course. ▪ All employees must wear PFDs while working on or near the water. ▪ Maintain vessel and proper safety equipment. ▪ Carry cell phone and Marine VHF radio. ▪ File a float plan and work in pairs. 	M
7. Sample preparation.	7A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain	7A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain <ul style="list-style-type: none"> ▪ Use proper ergonomics when lifting heavy objects ▪ Use appropriate mechanical assistance and tools when possible. 	M
	7B) Chemical Exposure	7B) Chemical Exposure <ul style="list-style-type: none"> ▪ Wear PPE including protective gloves, coveralls, safety glasses as appropriate. ▪ Wash/wipe or decontaminate exterior of sample containers and equipment. ▪ Use care handling preservatives (acids/bases.) 	
	7C) Sharps and knives	7C) Sharps and knives <ul style="list-style-type: none"> ▪ Use care handling tape dispensers, knives and sharp objects. ▪ Use guarded dispensers 	
	7D) Extreme cold (ice preservation)	7D) Extreme cold (ice preservation) <ul style="list-style-type: none"> ▪ Minimize exposure to ice. ▪ Use a shovel/spoon or tool to fill bags for preserving samples in coolers. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

8. Site exit and drive home or next site.	8A) Vehicle contamination	8A) Vehicle contamination <ul style="list-style-type: none"> ▪ Wash hands promptly. ▪ Sediment contaminated PPE (Booties, tyvek, latex gloves) should be disposed of prior to demobilizing from a sample location. ▪ Soiled boots and clothing should be decontaminated prior to leaving a sample location. Soiled clothing that cannot be decontaminated shall be removed and placed in a sealed plastic bag, and decontaminated as soon as possible. ▪ Update exposure log. 	M
	8B) Traffic hazards.	8B) Traffic hazards. <ul style="list-style-type: none"> ▪ Follow AHA for Mobilization / Demobilization and Site Preparation 	
		<ul style="list-style-type: none"> • A throwable floatation device (ring) shall also be onboard during boat operation. 	
	8C). Equipment Malfunction	5C). Equipment Malfunction	
		<ul style="list-style-type: none"> • Take a basic tool kit aboard the boat in addition to boat plugs, fire extinguisher, and first aid kit. 	
		<ul style="list-style-type: none"> • Carry extra engine parts and fluids in the event of engine problems. 	
		<ul style="list-style-type: none"> • Be alert and remediate the area of any spilled gas and gas fumes before doing any work on electrical parts that may cause a spark. 	
	8D). Communications	5D) Communications	
		<ul style="list-style-type: none"> • A two-way or marine radio shall be maintained on board the boat at all times. If in a coverage area, a cell phone can be used for a communication device. 	
9. Collecting Samples	9A). Capsizing Boat/Falling Overboard	6). Capsizing Boat/Falling Overboard	M
		<ul style="list-style-type: none"> • Make sure a proper anchor is in the boat to stabilize the boat at the sampling location. 	
		<ul style="list-style-type: none"> • Ensure proper distribution of the load in the boat to avoid tipping and capsizing. Standing in the boat should be minimized. 	
		<ul style="list-style-type: none"> • An appropriate Coast Guard approved personal floatation device shall be worn by each individual on board to protect against drowning. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (work gloves, PFDs, safety glasses, gloves, steel toe work boots, high visibility safety vest) Boating first Aid kit Boating Safety Kit (flares, air horn, marine radio, cell phone, tool kit)	Competent / Qualified Personnel: See HASP (Name – Position/Employer) Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting USCG Boat operator Certificate or equivalent	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Full boat inspection prior to use. Inspect all PPE prior to use

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Activity/Work Task:	General work environment					Overall RAC	L		
Project Location:	Penobscot River	Home Location:		Risk Assessment Code (RAC) Matrix					
Project Number:				Severity	Probability				
Date Prepared:	09 Nov 2022	Date Reviewed:	2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by / for (Name/Title):	Charles Lyman			Catastrophic	H	H	S	S	M
Reviewed by (Name/Title):	Bradley Wolfe			Critical	H	S	S	M	L
				Marginal	S	M	M	L	L
				Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)				Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)					
This AHA involves the following activity: Precautions to be taken for prevention of Communicable Disease at work. A communicable disease is sometimes referred to an infectious or contagious disease and is caused by a wide variety of bacteria, viruses, and fungi. Diseases can be contracted and spread through contact, either directly from person to person, or indirectly through environmental exposures such as air and fluids.				“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
This AHA is not an exhaustive summary of all hazards associated with the Project or activity. Refer to the site HASP for additional requirements.				“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				H = High Risk	
				Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				S = Substantial Risk	
								M = Moderate Risk	
								L = Low Risk	
MANAGEMENT OF CHANGE: If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to work described in this AHA shall require review by a Qualified Person.									
Communciable Disease Prevention behaviours include:									
<ul style="list-style-type: none"> • I assess the risk of infection in my environment • I prevent the spread of infection by following the rules • I protect myself and others by getting vaccinated 									

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Equipment to be Used	Training Requirements / Contact Information	Monitoring / Inspection Requirements
Cellphone. Running water with handwashing soap and/or hand sanitizer. Disinfecting wipes and cleaners. Refer to Minimum PPE Requirements and specify as per risk assessment where required.	See Emergency Contact List posted on safety boards and/or HASPs for additional contacts if needed. Training requirements: <ul style="list-style-type: none"> • Incident reporting • Fit For Duty • Any other trainings required by the site-specific HASP 	Check that worker are fit for duty at the start of the shift. Check in regularly with yourself and other field staff to ensure hands are washed frequently and/or sanitized. Stay home if: <ul style="list-style-type: none"> • Feeling unwell (i.e., fever, chills, coughing, diarrhea, etc.) • Testing positive for a communicable disease • Directed to isolate or quarantine

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
1. Pre-Work Preparation	<ul style="list-style-type: none"> • Failure to prepare. • Failure to identify or report a hazard and subsequent potential or actual illness and subsequent business continuity impacts. • Unfamiliar with current global/local events and client, WSP E&I and/or government directives. • Not prepared to implement face-covering, spacing or sanitation requirements 	M	<ul style="list-style-type: none"> • Monitor communicable disease-related information issued by local public health or government agency, or HSSE Team and follow all directions from medical health officers and local health authority. • WSP E&I team to stay up to date with current WSP E&I directives/procedures • Ensure workers understand scope of work, hazard and incident reporting process, emergency response procedures and location of emergency response equipment. • Keep workforce briefed on situation daily through tailgates, unscheduled HSSE meetings or workplace posters. if needed. • Post signs at entrances stating that workers are not to come to work if feeling unwell or experiencing symptoms of communicable disease • Encourage vaccination and remaining up to date with boosters, and comply with site/client requirements for vaccination, where applicable. • Have adequate supply of face coverings, preferably K95/N95 or a tight fitting covering with a tight weave and minimal gaps between the face and 	L

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
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			mask. Have a supply of hand sanitizers and cleaning supplies. Be aware of space restrictions and avoid close contact if possible.	
3. Symptoms Reporting	<ul style="list-style-type: none"> Failure to identify or report a hazard and subsequent potential or actual illness and subsequent business continuity impacts. 	M	<ul style="list-style-type: none"> Everyone should complete a 'self-check' prior to coming to work Stay home if: <ul style="list-style-type: none"> Feeling unwell (e.g., fever, chills, coughing, diarrhea, etc.) Testing positive for a communicable disease Directed to isolate or quarantine If you develop symptoms of a communicable disease, notify your supervisor and follow applicable local jurisdictional and WSP E&I quarantine and self isolation requirements . Complete required pre-entrance forms, where required. 	L
			<ul style="list-style-type: none"> Support employees who are seeking guidance on self-screening to the local public health guidance to self-evaluate: <u>Canada:</u> AB, BC, MB, NB, NL, NWT/NU, NS, ON, PEI, QC, SK, YK <u>US:</u> CDC COVID-19 Quarantine and Isolation calculator 	L
4. Quarantine and Self-Isolation	<ul style="list-style-type: none"> Failure to isolate and subsequent potential or actual illness and subsequent business continuity impacts. 	M	<ul style="list-style-type: none"> Self-Isolate: Individuals who test positive and/or are symptomatic with COVID -19, must not attend WSP E&I's offices or worksites. 	L
	<ul style="list-style-type: none"> Failure to quarantine and subsequent potential or actual illness and subsequent business continuity impacts. 	M	<ul style="list-style-type: none"> Self-Quarantine: Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then WSP E&I requirements recommend testing on day 2 and 5. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or office. 	L
5. Hygiene Protocols	<ul style="list-style-type: none"> Failure to apply controls measures and prevent spread of 	M	<ul style="list-style-type: none"> Provide running water with handwashing soap and/or hand sanitizer and encourage their use through use of signage, reminders in HSSE 	L

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	communicable disease due to transfer of infectious material from the hands or other parts of the body (eyes, nose and mouth), or transmission of droplets or airborne routes.		meetings, etc. <ul style="list-style-type: none"> • Avoid touching face, especially nose, eyes. • Wash hands frequently; before and after eating; after you have been in a public place; after using the washroom; after coughing and sneezing; after touching surfaces that other people also touch • Use a tissue if experiencing runny nose and dispose. Alternatively cough and/or sneeze into the crook of arm. 	
6. Cleaning	<ul style="list-style-type: none"> • Failure to apply controls measures and prevent spread of communicable disease due to transfer via high touch surfaces 	M	<ul style="list-style-type: none"> • Provide disinfecting wipes/cleaners and encourage their use through use of signage, reminders in HSSE meetings, etc. • Continue to clean high touch surfaces regularly. 	L
7. Ventilation	<ul style="list-style-type: none"> • Failure to apply controls measures and prevent spread of communicable disease due to poor air circulation. 	M	<ul style="list-style-type: none"> • Increase airflow and avoid recirculation by opening windows, purge indoor areas frequently, and increase air filtration (i.e. buildings, vehicles, site trailers, etc.) 	L
8. Physical distancing	<ul style="list-style-type: none"> • Failure to apply control measures and prevent spread of communicable disease due to close contact 	M	<ul style="list-style-type: none"> • Recommend and encourage employees to avoid crowded areas. • Try to maintain 6 feet / 2 meters spacing. Consider installation of barriers if risk level is high or space is limited. • If a crowded area is not avoidable (physical distancing not possible), a face covering is recommended (refer to 'Mask Use'). 	L
9. Mask Use	<ul style="list-style-type: none"> • Failure to apply control measures and prevent spread of communicable disease due to close contact 	M	<ul style="list-style-type: none"> • Mask use is not required except in accordance with any jurisdictional or site requirements. • Mask use is recommended when in enclosed and crowded spaces. • If a close contact within the last 10 days and past minimum quarantine requirements, wear a surgical grade mask or above. 	L
10. Mental Health	Unexpected Reactions <ul style="list-style-type: none"> • Stress • Fear 	M	<ul style="list-style-type: none"> • Understand that all people are individuals and we all react differently to situations of high stress and change to normal routine in our lives. • Watch out for each other's wellbeing. • Don't be a downer affecting morale - keep a good attitude and stay 	L

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
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<ul style="list-style-type: none"> • Anxiety 	<ul style="list-style-type: none"> • Breakdown 		<p>positive to encourage a positive atmosphere at home and work.</p> <ul style="list-style-type: none"> • Think before you speak – don't spread false news or gossip; stick to the facts. • If you are feeling stress/anxiety that overwhelms you, seek out assistance (e.g., Employee Assistance Program (EAP)). • Be prepared for an unexpected reaction to a comment or interaction. • Protect yourself and others but be respectful of peoples choices (e.g., to be vaccinated, etc.) 	
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ACKNOWLEDGEMENT OF PERSON(S) CARRYING OUT WORK

NAME(S): _____ _____ _____ _____ _____ _____	SIGNED: _____ _____ _____ _____ _____	DATE: _____ _____ _____ _____ _____
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Meeting Leader: _____ SIGNED: _____ DATE: _____

The undersigned acknowledge they have read, understood and shall comply with all components of the AHA. This AHA is a living document and should be reviewed and revised during regular meetings with the WSP E&I team.


Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

AHA REVIEW ACKNOWLEDGEMENT

Reviewed by (PM):	Signature:	Date:
Plan Concurrence by (other):	Signature:	Date:

The undersigned acknowledge they have read, understood and shall comply with all components of the AHA. This AHA is a living document and should be reviewed and revised during regular meetings with the WSP E&I team.

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AHA – Dry Ice Handling (Sample Preservation)

Activity/Work Task:	Dry Ice Handling (Sample preservation)	Overall Risk Assessment Code (RAC) (Use highest code)				M			
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix							
Contract Number:	3617237573	Severity	Probability						
Date Prepared:	01/25/2023		Date Accepted:	2/14/23	Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman		Catastrophic	E	E	H	H	M	
Reviewed by (Name/Title):	Bradley Wolfe		Critical	E	H	H	M	L	
			Marginal	H	M	M	L	L	
			Negligible	M	L	L	L	L	
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)							
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures for ‘activity’ Processing fish tissue samples for chemical analysis <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Worker to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart		
		“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E = Extremely High Risk		
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.					H = High Risk		
							M = Moderate Risk		
					L = Low Risk				



AHA – Dry Ice Handling (Sample Preservation)

Job Steps	Hazards	Controls	RAC
1. Transport/Handling dry ice (Solid carbon dioxide)	<ul style="list-style-type: none">• Explosion/laceration• Burns (cold – frost bite)	<ul style="list-style-type: none">• Plan to pick up as close to the time it is needed as possible. (Sublimates 5-10 lbs per 24 hrs)• Carry in insulated vented coolers (if possible, specifically design for dry ice)• Due to expansion of gaseous CO₂, pressure can increase in a tightly closed container. Never store dry ice in a tightly sealed container (plastic or glass).• Wear thermal gloves specifically rated for dry ice, long sleeves and long pants. (Optional wear an insulated thermal apron)• Wear Safety glasses with side shields.	M
	<ul style="list-style-type: none">• Asphyxiation	<ul style="list-style-type: none">• Store in well ventilated location. Dry ice releases Carbon dioxide as it sublimates and can displace oxygen impacting the breathing zone.• Do not stick your head into a deep cooler when dry ice is present.• Periodically monitor of the breathing zone where dry ice is stored and used for oxygen and carbon dioxide concentrations. CO₂ should be below 5000 ppm. O₂ between 19% and 23%.• Do not transport or store dry ice in the passenger cabin of a vehicle.	M
	<ul style="list-style-type: none">• Pinch points	<ul style="list-style-type: none">• Keep fingers and body parts away from pinch points (e.g., pliers, cooler covers, hammer when breaking up ice).	L



AHA – Dry Ice Handling (Sample Preservation)

2. Disposal	<ul style="list-style-type: none">• Extreme temperatures	<ul style="list-style-type: none">• Do not handle dry ice with bare hands, heavy insulated gloves need to be worn when handling dry ice.• CO2 bubbles (gas) in water can also cause burns. Avoid dropping dry ice into water. Wear thermal gloves under nitrile gloves• Once samples are frozen, they should be shipped on ice or ideally delivered directly to analytical laboratory via a courier.	M
	<ul style="list-style-type: none">• Asphyxiation	<ul style="list-style-type: none">• Place unwrapped dry at room temperature to sublimate into a gas. Dry ice must be in well ventilated areas, CO2 given off can displace oxygen in a confined space or enclosed work space.	L
	<ul style="list-style-type: none">• Lifting/ Strain	<ul style="list-style-type: none">• Use small chunks of ice.• Break up larger pieces. Wear safety glasses when breaking up ice. Keep hands clear of hammer or chisel used to break ice. Keep others out of work area.	L
3. Burn treatment	<ul style="list-style-type: none">• Frostbite	<ul style="list-style-type: none">• Treat as with heat burns. See doctor if skin blisters or comes off. Redness will heal in time. Apply antibiotic ointment to prevent infection and bandage only if open broken skin.	M



AHA – Dry Ice Handling (Sample Preservation)

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
<p>PPE (safety glasses, Thermal gloves for cold, steel toe work boots, high visibility safety vest) Refer to Minimum PPE Requirements and specify as per risk assessment where required.</p>	<p>Competent / Qualified Personnel:</p> <p>Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting Department of Transportation (USDOT) shipping requirements – packing/ packages.</p>	<p>Inspect all PPE prior to use</p> <p>Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service.</p> <p>Assess ventilation. Inspect work area for changing conditions (wet, icy, etc.)</p> <p>Inspect packaging and labeling.</p>

- <https://www.safetyinfo.com/guest-library/materials/written-safety-programs/dry-ice-solid-carbon-dioxide-safety-program>
- http://ar.water.usgs.gov/sun/district/jha/Dry_Ice.pdf
- <http://dryiceinfo.com/safe.htm>



AHA – Dry Ice Handling (Sample Preservation)

AHA DAILY RENEWAL

Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		
Date:	Weather:	
Changes noted:		
Site Supervisor (Print & Sign):		
Name(s):		



AHA - Soil Sampling Activity Description

Activity/Work Task:	Soil Sampling	Overall Risk Assessment Code (RAC) (Use highest code)	L					
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix						
Project Number:	3617237573	Severity	Probability					
Date Prepared:	01/24/2023		Date Accepted:	2/14/23				
Prepared by (Name/Title):	Charles Lyman	Catastrophic	Frequent	Likely	Occasional	Seldom	Unlikely	
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	E	H	H	M	
		Marginal	H	M	M	L	L	
		Negligible	M	L	L	L	L	
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures soil sampling by hand (direct push or hand auger). For safety measures associated with drilling for soil sampling, also look at the drilling AHA <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		<p>Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)</p> <p>"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p> <p>"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p> <p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.</p>					<p>RAC Chart</p> <p style="background-color: #FF0000; color: white; padding: 2px;">E = Extremely High Risk</p> <p style="background-color: #FFA500; padding: 2px;">H = High Risk</p> <p style="background-color: #FFFF00; padding: 2px;">M = Moderate Risk</p> <p style="background-color: #90EE90; padding: 2px;">L = Low Risk</p>	

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE: Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, PDF Ponar, Push core, spoon, shovel	Competent / Qualified Personnel: Name – Position/Employer Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect all PPE prior to use

Job Steps	Hazards	Controls	RAC
1. Prepare for sampling event	1A) Chemical exposure	1A) Chemical Exposure <ul style="list-style-type: none"> Read HASP and determine air monitoring and PPE needs. 	L



AHA - Soil Sampling Activity Description

Job Steps	Hazards	Controls	RAC
2. Carrying equipment to site location	2A) Back or muscle strain	2A) Back or muscle strain <ul style="list-style-type: none"> ▪ Use proper lifting techniques when lifting pumps or generators ▪ Use mechanical aids if available ▪ Use 2 person lift for heavy items 	L
	2B) Pinch Points	2B) Secure equipment when transporting	
3. Calibrate monitoring equipment	1A) Exposure to calibration gases	3A) Exposure to calibration gases <ul style="list-style-type: none"> ▪ Review equipment manuals ▪ Calibrate in a clean, well ventilated area 	L
4. Preparing sampling location	4A) Contact with poisonous plants or the oil from poisonous plants	4A) Contact with poisonous plants or the oil from those plants: <ul style="list-style-type: none"> ▪ Look for signs of poisonous plants and avoid. ▪ Wear PPE as described in the HASP. ▪ Do not touch anything part of your body/clothing. ▪ Always wash gloves before removing them. ▪ Discard PPE in accordance with the HASP. 	L
	4B) Contact with biting insects (i.e., spiders, bees, etc.)	4B) Contact with stinging/biting insects <ul style="list-style-type: none"> ▪ Discuss the types of insects expected at the Site and be able to identify them. ▪ Look for signs of insects in and around the well. ▪ Wear Level of PPE as described in the HASP. At a minimum, follow guidelines in the AHA "Insects Stings and Bites." ▪ If necessary, wear protective netting over your head/face. ▪ Avoid contact with the insects if possible. ▪ Inform your supervisor and the Site Health and Safety Supervisor if you have any allergies to insects and insect bites. Make sure you have identification of your allergies with you at all times and appropriate response kits if applicable. ▪ Get medical help immediately if you are bitten by a black widow or brown recluse, or if you have a severe reaction to any spider bite or bee sting. 	L
	4C) Exposure to hazardous Inhalation and contact with hazardous substances (Mercury contaminated sediment)	4C) Exposure to hazardous substances <ul style="list-style-type: none"> ▪ Wear PPE as identified in HASP. ▪ Review hazardous properties of site contaminants with workers before sampling operations begin ▪ Monitor breathing zone air in accordance with HASP to determine levels of contaminants present. ▪ When decontaminating equipment wear additional eye/face protection over the safety glasses such as a face shield. ▪ Remove all sediment on equipment and personnel prior to leaving a sample location. 	L
	4D) Back strain due to lifting or moving equipment to sampling locations	4D) Back strain <ul style="list-style-type: none"> ▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques 	L



AHA - Soil Sampling Activity Description

Job Steps	Hazards	Controls	RAC
	4E) Foot injuries from dropped equipment	4E) Foot Injuries <ul style="list-style-type: none"> ▪ Be aware when moving objects, ensure you have a good grip when lifting and carrying objects. ▪ Do not carry more than you can handle safely ▪ Wear steel toed boots 	L
5. Collecting soil samples	5A) Working around drill rigs	5A) See AHA - Drilling	L
	5B) Encountering underground or overhead utilities	5B) Have all utilities located.	L
	5C) Fire/Explosion/Contamination hazard from refueling generators	5C) Fire/Explosion/Contamination hazard from refueling generators <ul style="list-style-type: none"> ▪ Turn the generator off and let it cool down before refueling ▪ Segregate fuel and other hydrocarbons from samples to minimize contamination potential ▪ Transport fuels in approved safety containers. The use of containers other than those specifically designed to carry fuel is prohibited ▪ See AHA for Gasoline use 	L
	5D) Electrocutation	5D) Electrocutation <ul style="list-style-type: none"> ▪ A ground fault circuit interrupter (GFCI) device must protect all AC electrical circuits. ▪ Use only correctly grounded equipment. Never use three-pronged cords which have had the third prong broken off. ▪ Make sure that the electrical cords from generators and power tools are not allowed to be in contact with water ▪ Do not stand in wet areas while operating power equipment ▪ Always make sure all electrically-powered sampling equipment is in good repair. Report any problems so the equipment can be repaired or replaced. ▪ When unplugging a cord, pull on the plug rather than the cord. ▪ Never do repairs on electrical equipment unless you are both authorized and qualified to do so. 	L
	5E) Exposure to contaminants	5E) Exposure to Contaminants <ul style="list-style-type: none"> ▪ Stand up wind when sampling ▪ Monitor breathing zone with appropriate monitoring equipment (see HASP) ▪ Wear chemical resistant PPE as identified in HASP ▪ See section 4C) under Safe Practices above 	L
	5F) Exposure to preservatives	5F) Exposure to preservatives <ul style="list-style-type: none"> ▪ Work in a well ventilated area, upwind of samples ▪ Wear chemical resistant PPE as identified in HASP ▪ Review MSDSs 	L
	5G) Slips/trips/falls	5G) Slips/trips/falls <ul style="list-style-type: none"> ▪ Ground can become wet/muddy ▪ Wear good slip resistant footwear 	L



AHA - Soil Sampling Activity Description

Job Steps	Hazards	Controls	RAC
	5H) Lifting Injury	5H) Lifting injury <ul style="list-style-type: none"> ▪ Use proper lifting techniques when carrying quantities of samples ▪ Use proper ergonomics when hand digging for samples 	L
	5I) Eye injury	5I) Eye Injury <ul style="list-style-type: none"> ▪ Wear eye protection when using picks or similar devices to loosen soil 	L
	5J) Fire	5J) Fire <ul style="list-style-type: none"> ▪ When using gas powered auger, maintain fire watch whenever fueling or otherwise handling gasoline ▪ See AHA - Gasoline 	L
	5K) Working from a boat	5K) See AHA – Boat Surface Water and Sediment Sampling	
6. Soil sampling using floor corer	6A) Back injury	6A) Back Injury <ul style="list-style-type: none"> ▪ Use proper lifting techniques when moving floor corer and generator ▪ Use mechanical aids if available ▪ Use two person lift for heavy items. 	L
	6B) Electric Shock	6B) Electric Shock <ul style="list-style-type: none"> ▪ Use electric cords free from defects ▪ Keep cords out of water ▪ Ensure all electrical equipment is properly grounded ▪ Use GFCI 	L
	6C) Hearing	6C) Hearing <ul style="list-style-type: none"> ▪ Wear hearing protection 	L
	6D) Fire	6D) Fire <ul style="list-style-type: none"> ▪ When using generator, maintain fire watch whenever refueling or otherwise handling gasoline ▪ See AHA - Gasoline 	L
	6E) Contamination	6E) Contamination <ul style="list-style-type: none"> ▪ Use appropriate PPE for the contaminants of concern (see HASP). ▪ Minimize sample contact ▪ Label sample in accordance with procedures ▪ Monitor breathing zone levels. 	L



AHA - Utility Clearance Activity Description

Activity/Work Task:	Utility Clearance and Survey	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Project Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	04-12-16 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	W. Judge, CM	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures for the locating of utilities before drilling, excavating, or other intrusive activities <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p> <p style="color: red;">Utility clearance will be the responsibility of AMEC but ultimately a team responsibility. There is no anticipated underground UTILITIES anticipated based on project planning. DIG-SAFE will be initiated (72-hours prior) but will require discussion due to marine activities and inability to pre-mark.</p> <p style="color: red;">The USCG Navigational Petty Officer in charge of updating charts for the areas indicated that the utilities located within the navigable waters are required by federal law to identify the specific locations and nature of utility installations. There areas are highlighted on the appendix annotated navigational chart/site map. It is noted that utility crossing may be under sediments, or exposed due to current and shoaling conditions. As an operational directive areas where utilities are identified and other restricted areas as noted above will be completely avoided relative to invasive sampling or line dragging activities.</p>		<p>Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)</p> <p>“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p> <p>“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p> <p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.</p>		<p>RAC Chart</p> <p style="background-color: red; color: white; padding: 2px;">E = Extremely High Risk</p> <p style="background-color: orange; color: white; padding: 2px;">H = High Risk</p> <p style="background-color: yellow; color: black; padding: 2px;">M = Moderate Risk</p> <p style="background-color: green; color: black; padding: 2px;">L = Low Risk</p>			



AHA - Utility Clearance Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest)	Competent / Qualified Personnel: Name – Position/Employer Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

Job Steps	Hazards	Controls	RAC
1. Pre-planning	1a) Property Access <ul style="list-style-type: none"> ▪ Animal bites ▪ Dangerous social areas/ violent neighborhoods ▪ Lost ▪ Electrocutation 	Ensure communications with the property owner. Request pets and animals to be confined during the survey: <ul style="list-style-type: none"> ▪ Maintain communications via two-way radios or cell phones. ▪ Learn animal posturing including how to identify rabid animals. ▪ Contract security as appropriate for safety and equipment theft. ▪ Be prepared with a map and compass as necessary. ▪ Be aware of overhead and underground utilities. Ensure Dig-Safe has been contacted. When working with electrical equipment avoid wet surfaces and exposed connections.	L
	1b) Utilities Not Cleared (damage to utilities, worker injury)	Utilities Not Cleared: <ul style="list-style-type: none"> ▪ Provide sufficient time and budget to ensure that utilities have been adequately located, prior to the start of up of work. ▪ Contact One Call Utility identifier organization at least 6 days prior to the project start date. ▪ Cite or have subcontractor cite a start date of at least 3 working days prior to actual planned start date (provides window to inspect locations prior to job start-up. 	H



AHA - Utility Clearance Activity Description

Job Steps	Hazards	Controls	RAC
		<ul style="list-style-type: none"> ▪ Verify via emails or phone that all utilities have visited the site and marked their respective utilities. ▪ If subcontractor calls One Call organization, require them to forward all e-mail responses from member utilities as they receive them. ▪ If verification cannot be done remotely, send worker to site to inspect ground for markings (cheaper to identify issues prior to mobilization to the site). ▪ Document all phone communications with driller about utility clearance issues and requests (e-mail the conversation highlights or document in a field notebook – it becomes part of the file record) ▪ Call any member utilities that have not responded indicating they have cleared or marked-out utilities. Place the call morning of ticket start date (e.g., 3 days prior to actual start date). Document the phone conversations in notes or e-mails to the file. ▪ If town services (e.g., sanitary sewer, storm sewer, water) aren't listed as a One Call member, contact the town office to schedule mark-out, obtain copies of utility networks, and identify the appropriate town contacts. ▪ If town maps have lateral connections to private lots marked and /or if we are drilling along road right-of way opposite developed properties, identify the locations of the lateral connections. This may mean contacting abutters and asking to look in basements for location of pipes. If possible do this during a site visit prior to field start. If not, it should occur during the first day of work so any issues can be identified and decisions made on the risk of proceeding. ▪ Walk all planned locations with the subcontractor, prior to start of excavation/drilling to identify marked utilities and note any uncertainties. Field Lead should call PM and relay any issues. Document this inspection in the field book and note subcontractor's responses to any AMEC concerns. 	
	1c) Locating Utilities on Private Property	Locating Utilities on Private Property: <ul style="list-style-type: none"> ▪ Hire private utility locater company ▪ Locate underground utilities by ground penetrating radar, 	M



AHA - Utility Clearance Activity Description

Job Steps	Hazards	Controls	RAC
		electromagnetic, deep metal detector, pipe transmitter, vibracator, etc <ul style="list-style-type: none"> ▪ Review locations with property owner, member of operations and maintenance. ▪ Check as built drawings when available. Be aware possible drawing error or construction drawings may not be representative of actual locations. ▪ Use field clues such as manhole covers, repaved areas, depressions, disturbed areas, signs and postings, etc. as indications of access to utilities or recently installed/moved utilities. 	
	1d) Lack of Reliable Data on Utility Locations	Lack of Reliable Data on Utility Locations: <ul style="list-style-type: none"> ▪ If the surveys are not providing reliable data, plan to use non-destructive means to drill/excavate e.g., soil vacuum, water jet, air knife and/or hand tools. ▪ Use caution and proper PPE when using hand tools (hand augers, posthole diggers, shovels, steel rods, etc.). ▪ Involve the Project Manager, Technical Lead and/or Office Manager to make a decision to proceed or move the location 	M
	1e) Working Near Live Utilities	Working Near Live Utilities: <ul style="list-style-type: none"> ▪ If live utilities are known to be present near drilling/excavation location, if possible, move drilling/excavation to another location. ▪ Lockout/Tagout utilities, if possible. ▪ Use non-destructive means to drill/excavate (see # 1D) until safe to proceed. 	M
2. Walking Around Site Identifying Utility Clearances.	2a) Slips/Trips/Falls	Slips/Trips/Falls <ul style="list-style-type: none"> ▪ Keep work area free of excess material and debris ▪ Remove all trip hazards by keeping materials/objects organized and out of walkways ▪ Keep work surfaces dry when possible ▪ Wear appropriate PPE (see HASP) including non-slip rubber boots if working on wet or slick surfaces ▪ Install rough work surface covers where possible 	L



AHA - Utility Clearance Activity Description

Job Steps	Hazards	Controls	RAC
		<ul style="list-style-type: none"> ▪ Stay aware of footing and do not run 	
	2b) Heat/Cold Stress	Heat/Cold Stress: <ul style="list-style-type: none"> ▪ Take breaks if feeling faint or overexerted ▪ Consume adequate food/beverages (water, sports drinks) ▪ If possible, adjust work schedule to avoid temperature extremes 	L
	2c) Biological Hazards: Insects, Snakes, Wildlife, Vegetation	Biological Hazards: Insects, Snakes, Wildlife, Vegetation <ul style="list-style-type: none"> ▪ Inspect work areas when arrive at site to identify hazard(s) ▪ Use insect repellent if observe mosquitoes/gnats ▪ Survey site for presence of biological hazards and maintain safe distance ▪ Wear appropriate PPE including leather gloves, long sleeves and pants, and snake chaps as warranted by site conditions 	L
	2d) Traffic (including pedestrian)	Traffic (including pedestrian): <ul style="list-style-type: none"> ▪ Notify attendant or site owner/manager of work activities and location ▪ Use cones, signs, flags or other traffic control devices ▪ Wear appropriate PPE including high visibility clothing such as reflective vest ▪ Inspect area behind vehicle prior to backing and use spotter 	M
	2e) Back strain due to lifting, pulling or tugging equipment	Back strain: <ul style="list-style-type: none"> ▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques 	L



AHA - Vehicle Travel – Journey Management Plan

Activity/Work Task:	Vehicle Travel – Journey Management Plan	Substantial / High Risks:	Animals in Road, Vehicle Accidents			Highest RAC: (residual)	S
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:		Probability Severity	Almost certain	Likely	Possible	Unlikely	Rare
Date Prepared:	9/18/19 Date Accepted: 2/14/23		Catastrophic	H	H	S	S
Prepared by (Name/Title):	Cindy Sundquist Eastern Group Senior HSE Manager	Critical	H	S	S	M	L
Reviewed by (Name/Title):	Bradley Wolfe Field Operation Manager	Marginal	S	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		<p>Step 1: Review each “Hazard” to identify Probability and Severity (Refer to Project HSE Risk Characterization Form)</p> <ul style="list-style-type: none"> • “Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Almost certain, Likely, Possible, Unlikely, Rare. • “Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal or Negligible <p>Step 2: Identify the RAC-Inherent as H, S, M, or L for each “Hazard” on AHA, <i>before controls are applied.</i></p> <p>Step 3: Identify the RAC-Residual as H, S, M, or L for each “Hazard” on AHA, <i>after controls are applied.</i></p> <p>Step 4: Annotate the overall highest RAC-Residual at the top of AHA.</p>					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> • Establishing site specific measures for the specified activity • BOLD hazards correspond to Substantial or High Risk. <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the project HASP or client information for additional requirements, and emergency procedures.</p> <p>Workers to follow general site safety controls for Hazard Signage/PPE, Housekeeping, Slips Trips and Falls, Biological hazards, Mobile equipment, Confined spaces, Fall hazards, Electrical, and any active operating equipment or construction activities.</p>						Risk Categories	
						H = High Risk	
						S = Substantial Risk	
						M = Moderate Risk	
						L = Low Risk	
MANAGEMENT OF CHANGE: If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to work described in this AHA shall require review by a Qualified Person.							
Check all Life Saving Rules that apply:		<input type="checkbox"/> Bypassing Safety Controls	<input type="checkbox"/> Confined Space	<input checked="" type="checkbox"/> Driving	<input type="checkbox"/> Energy Isolation		
<input type="checkbox"/> Hot Work	<input type="checkbox"/> Line of Fire	<input type="checkbox"/> Work Authorization	<input type="checkbox"/> Safe Mechanical Lifting		<input type="checkbox"/> Working at Height		
Equipment to be Used		Training Requirements/Competent or Qualified Personnel name(s)			Inspection Requirements		
Safe Vehicle		Competent / Qualified Personnel:			Daily inspection of vehicle		



AHA - Vehicle Travel – Journey Management Plan

		Name – _____			
		Training requirements: Valid driver's license, Defensive Driving			
Job Steps	Hazards	RAC Inherent	Controls	RAC Residual	
1. Prepare for travel	Distractions - loss of focus	L	<ul style="list-style-type: none"> ▪ Ensure you have all materials with you necessary to conduct work effort. ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current. ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment). ▪ Determine if trip is considered Non-Routine: <ul style="list-style-type: none"> ○ Driving on business makes up <50% of the driver's daily job; ○ The route is variable and not part of the driver's daily or weekly drive plan; ○ Trips during darkness in excess of 20 miles (32 km); ○ Environmental or visibility hazards require a reduction in vehicle operating speed; ○ The terrain could reasonably be anticipated to impact the shifting of loads and/or require the use of 4-wheel drive; and ○ Security concerns warrant higher level of caution. ▪ If non-routine, complete a Journey Management Plan ▪ Plan route. Adjust based on driving conditions. Consider: <ul style="list-style-type: none"> ○ Communications ○ Other Wood E&IS vehicles on same route ("convoy") ○ Emergency plans ○ Meeting point(s) ○ Fuel / food / rest points ○ Review rules and procedures (driving, remote work, lone worker) ○ Other ▪ If renting vehicle, select best vehicle type for road and travel conditions (e.g., AWD or 4WD if snow/ice, larger vehicle if wildlife encounters are a possibility, etc. 	L	



AHA - Vehicle Travel – Journey Management Plan

			<ul style="list-style-type: none"> ▪ Evaluate weather conditions prior to starting trip. Postpone trip if possible, If travel during bad weather required, adjust route to avoid backroads as much as possible. ▪ Ensure that a copy of the current insurance certificates and incident reporting procedures/forms are available during travel. ▪ If long trip, notify others of your estimated arrival time so they can follow up if you don't arrive on time. 	
	Driver Fatigue	S	<ul style="list-style-type: none"> ▪ Get plenty of rest prior to starting trip ▪ Consider Wood policy on driving and work (duty) hours limitations when planning trip: <ul style="list-style-type: none"> ○ Maximum driving time between breaks – 4.5 hours followed by 30 minute break ○ Maximum duty hours within a rolling 24-hour period – 14 duty hours ○ Maximum driving hours within a single rolling 24-hour period – 10 hours total, excluding commuting time (11 hours including commuting time) ○ Off duty period in a rolling 7-day period - Minimum of a continuous 24 hour break ▪ Comply with the Jurisdictional P&O Work-Week Schedule Procedures and do not exceed the legislated maximum hours of work, rest periods, and/or Agency Approvals for excess hours of work for the specific activity/project. ▪ Comply with the E&IS HSE Fatigue Management Procedures (CAN: HSE-PRO-100387, US Fatigue Management Procedure) ▪ Consider alternatives (e.g., other modes of transportation such as by air, staying over at site location an extra day, breaking up trip by staying at hotel at halfway point, etc.) ▪ Avoid driving after dark 	M
	Vehicle defects	L	<p>Inspect vehicle for defects such as:</p> <ul style="list-style-type: none"> ▪ Inadequate fluids (e.g., fuel, antifreeze, oil, windshield washer) ▪ Worn/flat tires ▪ Windshield wipers loose, worn, or torn ▪ Oil puddles under vehicle ▪ Headlights, brake lights, turn signals not working 	L



AHA - Vehicle Travel – Journey Management Plan

	Insufficient emergency equipment, unsecured loads	M	<ul style="list-style-type: none"> ▪ Exterior or interior damage (e.g., scratches, dents) ▪ Ensure vehicle has first aid kit and that all contents are current (if first aid kits are not provided at the site). ▪ Ensure vehicle is equipped with warning flashers and/or flares and that the warning flashers work. ▪ Cell phones are recommended to call for help in the event of an emergency. ▪ Vehicles carrying tools must have a safety cage in place; all tools must be properly secured. ▪ Valuables shall be removed from the vehicle overnight if possible. ▪ Ensure parking cones are present, if applicable. 	L
2. Operating vehicles	Collisions, unsafe driving conditions	S	<ul style="list-style-type: none"> ▪ Drive defensively! ▪ Each operator shall observe all traffic laws, including established speed limits. ▪ Do not use cruise control during inclement (wet/icy) road conditions. ▪ Do not eat or use tobacco products (e.g. smoking or e-cigarettes) in the vehicle. ▪ Avoid any distracting or potentially distracting activities while operating a vehicle, including but not limited to; the use of any device that requires the use of headphones; reaching for items under the seat, in the back seat or in the glove box. ▪ Pets are prohibited to ride in a company vehicle. ▪ Non-Wood employees are prohibited from operating Company vehicles. ▪ Non-Wood employees are prohibited from riding in E&IS vehicles unless their presence is required for the conduct of business for E&IS or its client; nonwork riders (e.g., hitch hikers, girl friend, mother-in-law) allowed in vehicles, unless authorized on a case-by-case basis. ▪ Seat belts must be used at all times by all occupants when the vehicle is in gear. ▪ Drive at safe speed <u>for road conditions</u>. ▪ Maintain adequate following distance. ▪ Pull over and stop if you have to look at a map or use a cell phone. ▪ Cellular telephones are prohibited from use by the operator while driving or even when stopped at stop lights, including texting, emailing including the use of BlueTooth devices or car microphone/speakers. 	M



AHA - Vehicle Travel – Journey Management Plan

			<ul style="list-style-type: none"> ▪ Mount global positioning satellite (GPS) navigating devices within the vehicle as to not obstruct the driver's view of the roadway and attached so that it will not injure any of the vehicle's occupants in the event of a sudden stop. Window mounting of navigation devices is prohibited. ▪ The use of GPS enabled smartphones is allowed as long as the device is mounted, directions setup prior to driving, has an audio feature, is not adjusted while driving. ▪ Try to park so that you don't have to back up to leave. ▪ If backing is required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary. 	
	Intersections	S	<ul style="list-style-type: none"> ▪ Proceed carefully through intersections ▪ Ensure that cross traffic has stopped before proceeding, especially if the light has just turned green. Look out for drivers running red lights! ▪ When merging into traffic or turning, ensure vehicles in front have merged/turned (and not stopped) prior to proceeding. 	M
	Dusty, winding, narrow roads	S	<ul style="list-style-type: none"> ▪ Go slow around corners, occasionally clearing the windshield. 	M
	Rocky or one-lane roads	S	<ul style="list-style-type: none"> ▪ Stay clear of gullies and trenches, drive slowly over rocks. ▪ Yield right-of-way to oncoming vehicles---find a safe place to pull over. 	M
	Stormy weather	S	<ul style="list-style-type: none"> ▪ Inquire about conditions before leaving the office. ▪ Be aware of oncoming storms. 	M
	When angry or irritated	S	<ul style="list-style-type: none"> ▪ Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive. 	M
	Turning around on narrow roads	S	<ul style="list-style-type: none"> ▪ Safely turn out with as much room as possible. ▪ Know what is ahead and behind the vehicle. ▪ Use a spotter if available. 	M
	Sick or medicated	S	<ul style="list-style-type: none"> ▪ Let others on the crew know you do not feel well. ▪ Let someone else drive. 	L
	On wet or slick roads	S	<ul style="list-style-type: none"> ▪ Drive slow and safe. 	M
	Animals on road	S	<ul style="list-style-type: none"> ▪ Drive slowly, watch for other animals nearby. ▪ Be alert for animals darting out of wooded areas 	S
	Vehicle accident	S	<ul style="list-style-type: none"> ▪ Employees should follow Wood E&IS vehicle operation procedure (HSE-PRO-100316) and be aware of all stationary and mobile vehicles. 	S
3. Parking	Striking other vehicles, objects	S	<ul style="list-style-type: none"> ▪ Choose parking spot that is away from other vehicles, if possible. 	M



AHA - Vehicle Travel – Journey Management Plan

			<ul style="list-style-type: none"> ▪ Choose a spot that will allow the driver to drive forward when leaving the site. ▪ Back into parking spots, or pull through when parking in perpendicular parking spaces (drive forward into angle/herring bone type parking spots). ▪ The vehicle gear must be placed in park and parking brakes engaged, when required. ▪ When two or more occupants are in a Company vehicle, one occupant will act as a spotter and safely stand outside the vehicle, to guide the vehicle into and out of a parking spot to ensure it does not hit another vehicle, pedestrian, barrier or any other object. 	
4. Leaving parking spaces	Striking other vehicles, objects	S	<ul style="list-style-type: none"> ▪ Walk around the vehicle before leaving and identify hazards (low lying objects, location of other vehicles or pedestrians, other vehicles with drivers that may be leaving at the same time, etc. ▪ If backing is unavoidable, use a spotter if a second person is available; if no spotter available, back slowly, checking for other vehicles, pedestrians, etc. ▪ Keep alert! 	M
5. Driving back from the job site	See hazards listed for “Operating vehicles” Key Work Step	S	<ul style="list-style-type: none"> ▪ See safe work practices for “Operating Vehicles” Key Work Step 	M
6. Parking at office	Striking other vehicles, objects	S	<ul style="list-style-type: none"> ▪ See safe work practices for “Striking other vehicles, objects” Hazard/Potential Hazard for “Parking at job site” Key Work Step 	M
7. End travel	Vehicle defects	S	<ul style="list-style-type: none"> ▪ Inspect vehicle. ▪ Repair or initiate repair of all vehicle deficiencies that occurred due to the trip. 	M

FIELD ACKNOWLEDGEMENT OF PERSON(S) CARRYING OUT WORK

<p>NAME(S): _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>SIGNED:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>DATE:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
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AHA - Vehicle Travel – Journey Management Plan

SITE SUPERVISOR: _____

SIGNED: _____

DATE: _____

BY SIGNING – You Acknowledge that:

- I have read and understand all job steps, hazards and controls associated with today’s work.
- Further, I WILL stop any job I think is unsafe.
- I have completed a site-specific HASP Orientation
- I have participated in a daily tailgate safety meeting

For tasks/activities that extend beyond a single day, use DAILY RENEWAL form or [Point of Work Risk Assessment \(PoWRa\)](#).



AHA - Vehicle Travel – Journey Management Plan

Applicable Procedures / Safe Work Practices (SWP) and Forms for Critical Hazards

(Instruction: Complete and append forms, as applicable)

Hazard	Procedure	SWP	Guidance / Form
<u>Driving</u>	Operation of Company Vehicles	SWP-Journey Management Planning	Required for non-routine or high-risk journeys.
<u>Fatigue</u>	E&IS HSE Fatigue Management Procedures (CAN: HSE-PRO-100387)		

Attached Guidance / Forms / Checklists

- [Journey Management Plan Form](#)



AHA - Vehicle Travel – Journey Management Plan

AHA DAILY RENEWAL

Date:	Weather:
-------	----------

Changes noted:

Site Supervisor (Print & Sign):		
Name(s):		

Date:	Weather:
-------	----------

Changes noted:

Site Supervisor (Print & Sign):		
Name(s):		

Date:	Weather:
-------	----------

Changes noted:

Site Supervisor (Print & Sign):		
Name(s):		



AHA - Vehicle Travel – Journey Management Plan



AHA - Winch operations with Ponar and other sample equipment Sampling from a Boat Activity Description

Activity/Work Task:	Winch operations from/on boat (Ponar and other sampling equipment deployment and retrieval)	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/26/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures Collecting samples from a boat The Safe Boating Checklist and a Float Plan must be filled out prior to use of a boat See Appendix F of the HASP for the Boating Safety and Personal Floatation Device Selection Guide <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
						H = High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				M = Moderate Risk	
				L = Low Risk			



AHA - Winch operations with Ponar and other sample equipment

Sampling from a Boat

Activity Description

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) Slips, trips, falls	1A) Slips, trips, falls <ul style="list-style-type: none"> ▪ Familiarize self with site prior to visit. ▪ Complete appropriate training before going on site. ▪ Provide appropriate person in district office your itinerary. ▪ Prepare listing of emergency phone numbers, both on and offsite. ▪ Identify site/activity PPE needs ▪ Ensure that First Aid training is current, and that tetanus booster are current 	L
2. Check/ decontaminate sampling equipment/Test winch	2A) Winch Operation	2A) Winch shall be operated by individuals trained in its operation and safety features. <ul style="list-style-type: none"> • Winch will be inspected prior to use to insure safe operation. • Review winch operations and signals with personnel involved with winch operation, equipment deployment and retrieval. • Keep away from moving parts during operation • Review plan on how to collect samples and decontaminate dredge prior to commencing sampling. 	
	2B) Muscle Strain - lifting, twisting, tugging	2B) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> • Inspect all PPE and equipment and ensure that it is working properly. • Get assistance from a coworker or use mechanical means to move equipment (dolly, cart, etc.) • Ponar is heavy and has moving parts. Be mindful when carrying. 	
	2C) Slips, trips and falls	2A) Slips, trips, and falls <ul style="list-style-type: none"> ▪ Wear proper footwear ▪ Pay attention to where walking 	
	2D) Pinches	2B) The arms and jaws of ponar <ul style="list-style-type: none"> ▪ Mind where hands and body parts are when moving and loading equipment ▪ Ensure pin is locked all the while keeping body parts away from jaws and arms. ▪ If possible carry ponar in a cooler or bucket. 	
	2E) Electrical	2C) Electrical shock <ul style="list-style-type: none"> ▪ Ensure battery connections are sound and clean (observe visually) ▪ Keep power switch in off position when underway and not in use. 	
	2F) Splash, chemical exposure	2D) See AHA - Decontamination	
3. Load/carry equipment to the site.	3A) Slips, trips, falls	3A) Slips, trips, falls <ul style="list-style-type: none"> ▪ See AHA for Mobilization / Demobilization and Site Preparation 	M



AHA - Winch operations with Ponar and other sample equipment

Sampling from a Boat

Activity Description

	3B) Muscle Strain - lifting, twisting, tugging	3B) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> ▪ Proper lifting, posture, ergonomic practices and body mechanics. ▪ Share the load, move items in smaller shifts, or use cart. ▪ Loading the boat: ensure no twisting. ▪ Use a trailer if possible to launch boat. ▪ Empty boat of gear prior to loading or moving boat to/from vehicle. ▪ Ensure boat is properly secured in the vehicle prior to moving. ▪ Tie a red cloth to the furthest point of the boat if overhanging from the vehicle. ▪ Ensure enough able bodies to move and launch the boat to share the load. 	
	3C) Launch and load boat: Capsize	3C) Launch and load boat: Capsize <ul style="list-style-type: none"> ▪ Be aware of the boat maximum weight, person capacity, and engine size limit. ▪ Balance the gear and people in the boat. ▪ Personnel must wear approved, properly sized and buckled PFD when on the water. ▪ Ensure lines and body parts are out of the water before operating engine. ▪ Avoid operation within swimming areas. ▪ Provide signal flags and communication to protect the public of your activities. ▪ Test motor prior to shoving away from the pier. ▪ Ensure all appropriate equipment is provided and accessible according to AMEC EH&S Manual – Boating Safety. ▪ Include bailer, anchor, second means of propulsion, line and throwable floatation. 	
	3D) Pinch points – attaching/mounting the motor	3D) Pinch points – attaching/mounting the motor <ul style="list-style-type: none"> ▪ Mind where hands and body parts are when moving and loading equipment. 	
	3E) Fueling – chemical exposure, fumes, environmental spills.	3E) Fueling – chemical exposure, fumes, environmental spills. <ul style="list-style-type: none"> ▪ See AHA Gasoline 	M
	3F) Noise – engine (optional)	3F) Noise – engine (optional) <ul style="list-style-type: none"> ▪ Wear hearing protection. ▪ Provide shielding from noise such as bulkhead, or sound dampening. ▪ Operate with engine box in place to dampen noise 	



AHA - Winch operations with Ponar and other sample equipment Sampling from a Boat Activity Description

4. Field parameters	4A) Falling into water and capsize	<p>4A) Falling into water and capsize</p> <ul style="list-style-type: none"> ▪ Use equipment that facilitates reaching the location from a safe distance (extensions, etc.). ▪ Work using the buddy system. ▪ Wear PFD when working on the water. ▪ Balance equipment and people. ▪ Avoid leaning over the side of the boat. ▪ Anchor or secure the vessel to hold station. ▪ Steer boat to meet waves on the bow. ▪ Stay seated while in boat. ▪ If moving about, keep weight low. 	
	4B) Slips trips and falls	<p>4B) Slips trips and falls</p> <ul style="list-style-type: none"> ▪ Wear appropriate footwear. ▪ Survey and clear walking area. ▪ Do not walk on slippery surfaces. ▪ Maintain good housekeeping. ▪ Provide walkways, platforms or secure walking surface. ▪ Use the buddy system and maintain communications with support staff. 	
	4C) Vermin, leaches, Insect/animal born disease	<p>4C) Vermin, leaches, Insect/animal born disease</p> <ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear insect netting clothing or apply insect repellent on all exposed skin surfaces as appropriate – consider sample contamination ▪ Wear long sleeve shirt and full-length pants ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas if possible ▪ Tuck pants leg into boot ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Do not touch any suspected contaminant without appropriate hand PPE ▪ Wash hands as soon as possible upon completion of task. ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. ▪ Contract vermin relocation, if applicable. ▪ Remain vigilant and respectful of wildlife. (See JHA for Insects, Stings and Bites) ▪ Wear wind impervious outerwear ▪ During warm months – wear a long sleeve cotton/breathable fabric shirt and pants. 	



AHA - Winch operations with Ponar and other sample equipment

Sampling from a Boat

Activity Description

	<p>4D) Weather – temperature extremes, hypothermia, sun stroke, heat exhaustion, dehydration, sunburn.</p>	<p>4D) Weather – temperature extremes, hypothermia, sun stroke, heat exhaustion, dehydration, sunburn.</p> <ul style="list-style-type: none"> ▪ Train workers about weather and appropriate precautions. ▪ Heat: Familiarize self with signs of heat related illnesses: cramps, heat rash, dehydration, heat exhaustion, and heat stroke. ▪ Sun: <ul style="list-style-type: none"> ○ Keep body protected ○ Wear sunscreen, wide brimmed hat or hardhat. ○ Drink plenty of fluids to remain hydrated. (Follow AMEC guidelines, procedures and training for fluid intake, sunscreen use, proper clothing, work schedule, etc.) ○ Schedule work for cool part of day. ○ Take breaks in the shade. ▪ Wind: <ul style="list-style-type: none"> ○ Wear layered clothing, gloves, hard hat with winter liner, etc. ▪ Cold: <ul style="list-style-type: none"> ○ During cold weather - layer clothing 	
	<p>4E) Weather – inclement and strong winds</p>	<p>4E) Weather – inclement and strong winds</p> <ul style="list-style-type: none"> ▪ Watch for clouds and incoming weather. ▪ Monitor weather forecasts. ▪ Have a float plan and communications when on and off the water. ▪ Return to shore if weather threatens. ▪ Stay close to shore if possible and abandon work until winds subside. ▪ Schedule work when weather is calm (early morning or evening.) ▪ Provide proper lighting if working after dark. 	
	<p>4F) Run aground – shifting or unbalanced vessel - equipment/personnel/slip/fall/overboard</p>	<p>4F) Run aground – shifting or unbalanced vessel - equipment/personnel/slip/fall/overboard</p> <ul style="list-style-type: none"> ▪ Operate at safe speed. ▪ Post a look out for shallow or submerge obstacles. ▪ Remain seated when under way. ▪ Be wary of tides, flooding, flash floods and dam releases. ▪ Use anchor to kedge or pull back toward the way you came and deeper water. ▪ Use a pole or paddle, lighten the vessel to float off. 	<p>L</p>



AHA - Winch operations with Ponar and other sample equipment Sampling from a Boat Activity Description

5. Sample collection	5A) Falling into water and capsize.	5A) Same as Item #4 above. <ul style="list-style-type: none"> ▪ Utilize the railings around the moon pool opening if open. ▪ Use line across open gate when working over the side ▪ Lower equipment, never toss it over the side. ▪ Coil lines into basket or keep away from footing. ▪ Have a knife at hand to cut free from line. ▪ Make sure a proper anchor is in the boat to stabilize the boat at the sampling location ▪ Ensure proper distribution of the load in the boat to avoid tipping and capsizing. Standing in the boat should be minimized. ▪ An appropriate Coast Guard approved personal floatation device shall be worn by each individual on board to protect against drowning 	
	5B) Bending, pulling, twisting	5B) Bending, pulling, twisting <ul style="list-style-type: none"> ▪ Use a vibrating or wiggling motion on the sample device to break the soil suction. ▪ Proper lifting technique. 	
	5C) Splash	5C) Splash <ul style="list-style-type: none"> ▪ Wear appropriate safety glasses (tinted for sun). ▪ Be aware if sampling water through a filter, if it becomes plugged with sediment it may unexpectedly “blow off” the hose and splash. ▪ Change filter prior to sedimentation back pressure. ▪ Minimize pouring distance to limit the splash between containers. 	
	5D) Chemical exposure	5D) Chemical exposure <ul style="list-style-type: none"> ▪ Wear PPE including protective gloves, coveralls, safety glasses as appropriate. ▪ Work upwind of the sample location. Minimize exposure using a shovel/spoon or tool to collect the sample. ▪ Review and understand MSDS for all chemicals being handled. ▪ Be careful when handling acids and caustic substances. ▪ Wear adequate PPE and wash hands after completion of task. 	
	5E) Vegetation, sticks, reeds, - cuts and punctures.	5E) Vegetation, sticks, reeds, - cuts and punctures. <ul style="list-style-type: none"> ▪ Clear access to site. ▪ Be familiar with toxic plants such as poison ivy. ▪ Avoid such plants. ▪ Wash thoroughly after accidental contact with toxic materials and plants. 	



AHA - Winch operations with Ponar and other sample equipment Sampling from a Boat Activity Description

	5F) Equipment damage	5F) Equipment Damage <ul style="list-style-type: none"> ▪ Operator remain focused on single task. ▪ Maintain an eye on the pivot arm. Only pull equipment when line leads 90 or 180 degrees to the pivot arm support. Reposition the boat as necessary ▪ Always operate with one hand on the lift switch. Stop if strain or other issue. ▪ Keep lines clear of propeller. ▪ Monitor depth to avoid running aground. 	
6. Vessel Operations	6A) Lack of boating skills, boating incident	6A) Only those individuals specifically trained and authorized will be allowed to operate a vessel, including launching and towing. 6B) Lack of boating skills, boating incident <ul style="list-style-type: none"> ▪ Complete USCG/Power Squadron or other recognized boating course. ▪ All employees must wear PFDs while underway. ▪ Maintain vessel and proper safety equipment. ▪ Carry cell phone or VHF radio. ▪ File a float plan and work in pairs. 	M
7. Sample preparation.	7A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain	7A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain <ul style="list-style-type: none"> ▪ Use proper ergonomics when lifting heavy objects ▪ Use appropriate mechanical assistance and tools when possible. 	M
	7B) Chemical Exposure	7B) Chemical Exposure <ul style="list-style-type: none"> ▪ Wear PPE including protective gloves, coveralls, safety glasses as appropriate. ▪ Wash/wipe or decontaminate exterior of sample containers and equipment. ▪ Use care handling preservatives (acids/bases.) 	
	7C) Sharps and knives	7C) Sharps and knives <ul style="list-style-type: none"> ▪ Use care handling tape dispensers, knives and sharp objects. ▪ Use guarded dispensers 	
	7D) Extreme cold (ice preservation)	7D) Extreme cold (ice preservation) <ul style="list-style-type: none"> ▪ Minimize exposure to ice. ▪ Use a shovel/spoon or tool to fill bags for preserving samples in coolers. 	
8. Site exit and drive home or next site.	8A) Vehicle, equipment and personnel contamination	8A) Any residual sediment on equipment, vehicles and or personnel will be decontaminated prior to leaving a sample location. <ul style="list-style-type: none"> ▪ Set up decontamination station at each sample location ▪ Wash hands promptly after decontaminating equipment and vehicles. ▪ Contaminated PPE (Booties, tyvek, latex gloves) should be disposed of in a sealable plastic bag and disposed of as IDW. ▪ Remove any residual sediment from boots and soiled clothing prior to leaving a sample location. ▪ Update exposure log. 	M



AHA - Winch operations with Ponar and other sample equipment

Sampling from a Boat

Activity Description

	8B) Traffic hazards.	8B) Traffic hazards. <ul style="list-style-type: none"> ▪ Follow AHA for Mobilization / Demobilization and Site Preparation 	
		<ul style="list-style-type: none"> • A throwable floatation device (ring) shall also be onboard during boat operation. 	
	8C). Equipment Malfunction	5C). Equipment Malfunction	
		<ul style="list-style-type: none"> • Take a basic tool kit aboard the boat including boat plugs, fire extinguisher, and first aid kit. 	
		<ul style="list-style-type: none"> • Carry extra engine parts and fluids in the event of engine problems. 	
		<ul style="list-style-type: none"> • Be alert and rid the area of any spilled gas and gas fumes before doing any work on electrical parts that may cause a spark. 	
	8D). Communications	5D) Communications	
		<ul style="list-style-type: none"> • A two-way or marine radio shall be maintained on board the boat at all times. If in a coverage area, a cell phone can be used for a communication device. 	



AHA - Winch operations with Ponar and other sample equipment

Sampling from a Boat

Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (work gloves, PFDs, safety glasses, gloves, steel toe work boots, high visibility safety vest) Boating first Aid kit Boating Safety Kit (flares, air horn, marine radio, cell phone, tool kit)	Competent / Qualified Personnel: See HASP (Name – Position/Employer) Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting USCG Boat operator Certificate or equivalent	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Full boat inspection prior to use. Inspect all PPE prior to use



AHA – Working in a Muddy Area Activity Description

Activity/Work Task:	Working in a Muddy Area (Tidal Marsh)	Overall Risk Assessment Code (RAC) (Use highest code)	L				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Project Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/26/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures for working in a muddy area and extracting oneself from mud <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		<p>Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)</p> <p>“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p> <p>“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p> <p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.</p>					RAC Chart
							E = Extremely High Risk
							H = High Risk
							M = Moderate Risk
							L = Low Risk

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Walking stick, appropriate boots, and over-boots, waders, snowshoes and geotextile, geocomposite, or plywood for weight distribution.	Competent / Qualified Personnel: Any AMEC employee Training requirements: Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting ow shoes	None

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) See AHA Mobilization/ demobilization/site preparation	1A) See AHA Mobilization/ demobilization/site preparation	L



AHA – Working in a Muddy Area Activity Description

Job Steps	Hazards	Controls	RAC
2. Traveling/working in tidal mud flats	2A) Contaminated sediment	2A) Contaminated sediment. <ul style="list-style-type: none"> ▪ Limit exposure (i.e., skin contact) to sediment, wear tyvek under chest waders. ▪ Upgrade eye protection with a shield when sampling, as required to protect from splashing sediment. ▪ Wear heavy nitrile gloves with thin nitrile glove as a liner. ▪ Set up decontamination station at site ingress and egress to manage cleaning off residual sediment contamination. ▪ Remove any residual sediment on personnel, sampling equipment and boats prior to leaving a sample location. ▪ Do not allow aqueous sediment to dry on personnel, sampling equipment and boats; rinse and decontaminate. ▪ Provide a walkway or elevated surface (i.e., ½ inch x 2 ft wide x 8 ft long plywood planks). ▪ Use snowshoes or other type of equipment to disperse weight on mud flats. ▪ Use a skating motion and keep moving until on location. ▪ Use a platform to stand on for sampling (plywood). 	L
	2B) Poor footing – Slip, suction, entrapment or fall.	2C) Poor footing –slip, suction, entrapment, or fall <ul style="list-style-type: none"> • Use a walking stick or probe to check footing and mud density before entering a area. • Wear chest waders with a belt. • Use three person teams when sampling mud flats. • Maintain communication with FOL, phone or VHF radio. Notify when on and off sample location. • Be prepared with rescue equipment and personnel including a throwable rescue rope, plywood, shovel, poles, etc. to help extricate stuck individuals. • Utilize snowshoes or other type of equipment to disperse weight on mud flats. 	
	3A) Allergic reactions, painful stings, bug bites.	3A) Allergic reactions, painful stings <ul style="list-style-type: none"> ▪ Be alert to hives in brush or in hollow logs. Watch for insects travelling in and out of one location. ▪ Wear bug jacket, long sleeves and long pants. ▪ See AHA – Insect bites and stings. 	L



AHA – Working Over or Near Water

Activity/Work Task:	Working Over/ Near Water	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01-26-2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title):	Bradley Wolfe	Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) <ul style="list-style-type: none"> A float/activity plan shall be filled out prior to working on or over water, either from a boat or from the shore. This AHA involves the following: <ul style="list-style-type: none"> Establishing site specific measures when working over/near water This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
		“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
						H = High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				M = Moderate Risk	
				L = Low Risk			



AHA – Working Over or Near Water

Job Steps	Hazards	Controls	RAC
1. Field Work Over/ Near Water	1A) Slips, trips, falls	1A) Familiarize self with site and tasks prior to conducting work. <ul style="list-style-type: none"> ▪ Be aware of footing and surroundings including weather conditions always when working on or near water. ▪ Maintain a clean and uncluttered working areas. ▪ Work at an unhurried pace. ▪ Have on hand listing of emergency phone numbers, both on and offsite. ▪ Ensure that First Aid training is current, and that tetanus booster is current. ▪ Fall protection installed (warning lines, barriers, ropes, etc.) 	L
	1B) Falling into water/Man over board (MOB)	1B) Falling into water <ul style="list-style-type: none"> ▪ File a float/activity plan when working on or above water, which shall contain a contingency plan in the event of a MOB situation. ▪ Work in teams of three at a minimum when working on or above water. ▪ Use equipment that facilitates reaching the location from a safe distance (extensions, etc.). ▪ When working on or near water have, throw rope and or ring buoys will lines attached available for rescue. ▪ Work using the buddy system at a minimum. ▪ Wear PFD when working on or near the water. ▪ Maintain access to a boat when working over or near water. ▪ Avoid leaning over edge of land to water. ▪ Anchor our secure yourself to a permanent and secure structure when working on or near water. 	M



AHA – Working Over or Near Water

	<p>1C) Vermin, leaches, Insect/animal born disease</p>	<p>1C) Vermin, leaches, Insect/animal born disease</p> <ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear insect netting clothing or apply insect repellent on all exposed skin surfaces as appropriate – consider sample contamination. ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas along shoreline if possible. ▪ Tuck pants leg into boot. ▪ Do not put hand/arm into/under an area that you can not see into/under clearly. ▪ Do not touch any suspected contaminant without appropriate hand PPE. ▪ Wash hands as soon as possible upon completion of task. ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. ▪ Contract vermin relocation, if applicable. ▪ Remain vigilant and respectful of wildlife. (See AHA for Insects, Stings and Bites, and AHA for Dog – Wildlife Safety. ▪ Wear wind impervious outerwear ▪ During warm months – wear a long sleeve cotton/breathable fabric shirt and pants. 	<p>L</p>
	<p>1D) Bending, pulling, twisting</p>	<p>1D) Bending, pulling, twisting</p> <ul style="list-style-type: none"> ▪ Balance weight in the boat with other personnel and equipment. ▪ Use a vibrating or wiggling motion on the sample device to break the sediment suction. ▪ Attach recovery line to sample equipment prior to deploying equipment. ▪ Proper lifting technique. ▪ Do not lean outside the boat or over water 	<p>L</p>



AHA – Working Over or Near Water

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection, PFD)	Competent / Qualified Personnel: Name – Position/Employer Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect all PPE, rescue, and fall protection equipment prior to use



AHA - DECONTAMINATION Hg Low Level Sediment Collection

Activity/Work Task:	Decontamination	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/26/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title):	Bradley Wolfe	Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures See PPE Decontamination Procedures below No chemical or exotic agents are anticipated for decontamination needs either personnel or analytical. <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements and coordinate with the program Work Plan, QAPP for operational needs. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		<p>"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p>				RAC Chart	
		<p>"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p>				E = Extremely High Risk	
		<p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.</p>				H = High Risk	
						M = Moderate Risk	
				L = Low Risk			
Job Steps	Hazards	Controls					RAC
1. Establish Decontamination Station	1A) Materials Handling	1A) Materials Handling <ul style="list-style-type: none"> Use proper lifting techniques Use mechanical aids, if available, to move heavy items. 					L
2. Decontamination / Steam cleaning.	2A) Struck by steam/hot water/pressure washing	2A) Struck by steam/hot water <ul style="list-style-type: none"> Workers not directly engaged in steam cleaning operations must stay clear. Only those workers trained on operation and safety devices/procedures following the owners/operators manual are allowed to use steam cleaning equipment. Use face shield and safety glasses or goggles, if steam cleaning. Stay out of the splash/steam radius. Pressure washer must have dead man switch. Do not direct steam at anyone. Do not hold objects with your feet or hands. Ensure that direction of spray minimizes spread of contaminants of concern. Use shielding as necessary. 					M



AHA - DECONTAMINATION Hg Low Level Sediment Collection

	2B) Exposure to contaminants	2B) Exposure to contaminants <ul style="list-style-type: none"> ▪ Conduct air monitoring (see HASP). ▪ Wear proper PPE (see HASP). ▪ See MSDSs for hazards associated with the deconn. solutions and contaminants of concern. 	L
	2C) Slips/Trips/Falls	2C) Slips/Trips/Falls <ul style="list-style-type: none"> ▪ Be cautious as ground/plastic can become slippery ▪ Use boots or boot covers with good traction 	L
3. Vehicle Decontamination (Boats)	3A) Sample Location ingress and egress.	3A) Trailered Boat <ul style="list-style-type: none"> ▪ Always wear a hard hat, steel toe boots, and a high visibility vest (unless Tyveks are used and are high visibility). ▪ Vehicle drivers are not to exit the vehicle in the CRZ. ▪ Identify an individual to communicate with vehicle drivers and maintain order ▪ Trucks will be lined with plastic and kept out of direct contact with any contaminated materials during loading. Wear PPE when removing plastic lining from truck beds. ▪ If not in the vehicle, obtain eye contact with the driver, so he is aware of your presence and location in the CRZ. ▪ If you are driving the vehicle, be aware of personnel in the CRZ and maintain communication with the identified personnel. 	L
	3B) Exposure to contaminants	3A) Exposure to contaminants <ul style="list-style-type: none"> ▪ Use safety glasses or goggles, Polycoated Tyvek (if level of contamination poses dermal hazard or to keep work clothes dry), high visibility vest (if high visibility Tyveks are not used) hard hats, steel toe boots, and gloves while cleaning contaminated materials. ▪ Do not doff PPE until decontamination of the vehicle is complete and a decontamination certificate has been issued by the HSO. ▪ Conduct air monitoring (see HASP). ▪ See MSDSs for hazards associated with the decon solutions (if other than water alone is used). 	L
	3C) Slips/Trips/Falls	3B) Slips/Trips/Falls <ul style="list-style-type: none"> ▪ Be cautious as ground/plastic/decks can become extremely slippery ▪ Keep surfaces clean and ship-shape, organized. ▪ Wash down sediment and pump into container for IDEW Disposal as necessary ▪ Use boots or boot covers with good traction 	L
4. Equipment and Sample Decontamination	4A) Chemical exposure when handling contaminated sample jars and equipment	4A) Chemical exposure <ul style="list-style-type: none"> ▪ Wear PPE as outlined in the HASP. ▪ Refer to MSDS for specific hazards associated with decon solutions ▪ Monitor breathing zone for contaminants ▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.) if appropriate (see HASP) 	M



AHA - DECONTAMINATION Hg Low Level Sediment Collection

	4B) Materials Handling related injuries	4B) Materials Handling related injuries <ul style="list-style-type: none"> ▪ Use proper lifting techniques when lifting heavy equipment ▪ Use two person lift for heavy coolers 	L
5. Personal Decontamination	4C) Exposure to contaminants	4C) Exposure to contaminants <ul style="list-style-type: none"> ▪ Avoid bringing contaminated materials via shoes and clothing into the CRZ by examining such prior to exiting the EZ. ▪ Removal of PPE will be performed by the following tasks in the listed order: <ul style="list-style-type: none"> ▪ Gross boot wash and rinse and removal ▪ Outer glove removal ▪ Suit removal ▪ Respirator removal (if worn). ▪ Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Respirators will be removed and decontaminated at a specified location within the CRZ by a designated technician, then placed in storage bag. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials. ▪ See MSDSs for hazards associated with the decontamination solutions used. ▪ Decon solutions will be disposed of according to the work plan. 	M



AHA - DECONTAMINATION Hg Low Level Sediment Collection

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Safety glasses, gloves (HASP), steel toe work boots, high visibility safety vest, hearing protection.)	Competent / Qualified Personnel: See HASP - Name – Position/Employer Training requirements: Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

APPENDIX DECONTAMINATION PROCEDURES & EQUIPMENT Decontamination Solution: Detergent and Water

LEVEL D		
Station 1:	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths as appropriate. Segregation at the drop reduces the probability of cross contamination.
Station 2:	Outer Boots, and Gloves Wash and Rinse (if worn)	Scrub outer boots, and outer gloves decon solution or detergent water. Rinse off using potable water.
Station 3:	Outer Boot and Glove Removal (if worn)	Remove outer boots and gloves. Deposit in plastic bag.
Station 4:	Inner glove removal	Remove inner gloves and place in plastic bag.
Station 5:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.



AHA - DECONTAMINATION Hg Low Level Sediment Collection

APPENDIX DECONTAMINATION PROCEDURES & EQUIPMENT Decontamination Solution: Detergent and Water

MODIFIED LEVEL D & LEVEL C

Station 1:	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4: (Level C only)	Canister or Mask Change	If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5:	Boot, Gloves and Outer Garment Removal	Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic.
Station 6: (Level C only)	Face Piece Removal	Face piece is removed. Avoid touching face with fingers. Face piece is deposited on plastic sheet.
Station 7:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.



AHA – Field Work Oversight

Activity/Work Task:	Field Work - Oversight	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
This AHA involves the following:		“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
<ul style="list-style-type: none"> • Establishing site specific oversight tasks, hazards, and controls. • 		“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) N/A	<ul style="list-style-type: none"> ▪ Obtain and review Field Sampling Plan and HASP prior to site visit, if possible ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots, Hi-Vis Vest, and Safety Glasses) ▪ Develop a Journey Management Plan to address travel to and from site and share with sampling team. ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ First aid kits shall be available at the work site and in each transport vehicle. ▪ Familiarize yourself with route to the site. ▪ Check the weather forecast routinely. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions ▪ Verify that subsurface utilities have been identified. 	L



AHA – Field Work Oversight

2. Traveling to the site by vehicle.	2A) See JHA for Mobilization, Demobilization and Site Preparation	7A) See JHA for Mobilization, Demobilization and Site Preparation	M
3. Initial Arrival –Assess Site Conditions	3A) Communication	<ul style="list-style-type: none"> ▪ Conduct routine daily safety/job briefing meetings. ▪ Talk to each other. Develop communication methods (agree on hand signals, warning alarms) ▪ Log all workers and visitors on and off the site. ▪ Notify the entire crew when a hazard has been identified. ▪ Avoid working near known hazards. ▪ Always know the whereabouts of fellow crewmembers. ▪ Carry a radio and spare batteries and/or cell phone 	L
	3A) Insect Bites and Stings	<ul style="list-style-type: none"> ▪ Discuss the types of insects expected at the Site and be able to identify them. ▪ Look for signs of insects. ▪ Inform crew members if they are allergic to insects and what to do if you need assistance. ▪ Avoid wearing heavy fragrances. ▪ Carry first-aid and sting relief kits. ▪ Carry identification of known allergies and necessary emergency medication. ▪ Spray clothing with insect repellent as a barrier. ▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist. ▪ Cover trouser legs with high socks or boots. ▪ Tuck in shirt tails. 	L
	3B) Poisonous plants	<ul style="list-style-type: none"> ▪ Wear long sleeves, long pants and boots ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Look for signs of poisonous plants and demark area to aid in avoiding plant. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate. 	M
	3C) Vermin, leaches, animal borne disease	<ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Wear long sleeve shirt and full-length pants 	L
	3D) Chemical Hazards	<ul style="list-style-type: none"> ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled 	M



AHA – Field Work Oversight

	3E) Overhead Power Lines	<ul style="list-style-type: none"> ▪ Identify the location of all overhead power lines at the site. ▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) ▪ Re-locate work so it is not close to power lines ▪ Avoid storing materials under overhead power lines 	M
	3F) Underground Utilities	<ul style="list-style-type: none"> ▪ All utilities will be marked prior to excavation activities. ▪ For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet and around buried underground utilities. ▪ Work at adequate offsets from utility locations ▪ Immediately cease work if unknown utilities are discovered. 	M
	3G) Cold Stress	<ul style="list-style-type: none"> ▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g., cotton) and a weatherproof slicker. A wool outer garment is recommended. ▪ Take layers off as you heat up; put them on as you cool down. ▪ Wear head protection that provides adequate insulation and protects the ears. ▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia. ▪ Acclimate to the cold climate to minimize discomfort. ▪ Maintain adequate water/fluid intake to avoid dehydration. ▪ Be aware of signs of hypothermia, its prevention, detection and treatment. ▪ Have extra protection available, in case of an emergency such as blankets and heating devices. ▪ Don't work under extremely adverse weather conditions ▪ Stay in tune to current weather and extended forecasts. 	L



AHA – Field Work Oversight

	3H) Heat Stress	<ul style="list-style-type: none"> ▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load. ▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action. ▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). ▪ Lessen workload and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization. ▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement. 	L
	3I) Lightning and Thunder/Sever Weather	<ul style="list-style-type: none"> ▪ Monitor weather channels to determine if thunder storms are forecasted. ▪ Identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.) ▪ Suspend all field work at the first sound of thunder. You should be in a safe place when the time between lightning and thunder is less than 30 seconds. ▪ All field operations should stand down for a period of 20 minutes, following hearing thunder or observing lightning. 	L
	3J) Sun	<ul style="list-style-type: none"> ▪ Keep body protected ▪ Wear sunscreen, wide-brimmed hat or hardhat. ▪ Schedule work for cool part of day. ▪ Take breaks in the shade. 	L
	3K) High Crime Areas	<ul style="list-style-type: none"> ▪ Do not enter areas where threats are present. ▪ Contract security where applicable. Use the buddy system. ▪ Maintain contact with support such as radio and/or cell phone ▪ Do not work after dark. 	L
	3L) Operations conducted at an active facility	<ul style="list-style-type: none"> ▪ Stay well clear of operations being conducted at the facility ▪ Keep alert for moving materials, equipment or vehicles ▪ Determine client specific PPE needs prior to arriving at the site ▪ Determine client specific emergency response procedures and follow as appropriate ▪ Participate in client required safety training ▪ Get copies of Clients MSDSs for any client chemicals that workers may be exposed to. ▪ Provide MSDSs to client for all chemicals brought to the site. 	M



AHA – Field Work Oversight

	3M) Remote Locations	<ul style="list-style-type: none"> ▪ Maintain communication with a two-way radio and/or cell phone. ▪ Work in teams. ▪ Make sure all field personnel are trained in CPR and First-Aid. ▪ Carry a first aid kit. ▪ Have a plan for self-rescue 	M
	3N) Set up Decon Station	<ul style="list-style-type: none"> ▪ Refer to MSDS for specific hazards associated with decon solutions ▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.), if appropriate (see HASP) ▪ Removal of PPE will be performed by the following tasks in the listed order: <ul style="list-style-type: none"> ○ Gross boot wash and rinse and removal ○ Outer glove removal ○ Suit removal ○ Respirator removal (if worn). ○ Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials. ▪ Decontamination solutions will be disposed of according to the work plan. 	L
4. Walk around the Site	4A) Poisonous plants	<ul style="list-style-type: none"> ▪ Wear long sleeves, long pants and boots. ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate. 	M
	4B) Vermin, leaches, animal borne disease	<ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear long sleeve shirt and full-length pants ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas if possible ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. 	L



AHA – Field Work Oversight

	4C) Chemical Hazards	<ul style="list-style-type: none"> ▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled 	L
	4D) Slips/Trips/Falls	<ul style="list-style-type: none"> ▪ Wear slip resistant footwear ▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Site SHSO will inspect the entire work area to identify and mark hazards. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved; ▪ Use caution when walking around excavated areas ▪ Use caution when walking on or around loose soil. 	M
5. Oversight during drilling, or construction operations	5A) Heavy Equipment/ Vehicles	<ul style="list-style-type: none"> ▪ Spotters will be used when backing up trucks and heavy equipment and when moving equipment. ▪ Ground personnel in the vicinity of vehicles or heavy equipment under operation will be always within the view of the operator. ▪ Ground personnel will be aware of the swing radius and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. ▪ Personnel are prohibited from riding on equipment, except for designated seats with proper seat belts and operator permission. ▪ Only lifts specifically designed to carry workers will be used, by certified operators. ▪ Ground personnel will stay clear of all suspended loads. ▪ Ground personnel will wear high visibility vests, hard hats and safety glasses. ▪ Eye contact with operators will be made before approaching equipment. 	M
	5B) Eye Injury	<ul style="list-style-type: none"> ▪ Wear appropriate safety glasses (tinted for sun). ▪ Watch where you walk, especially around trees and brush with protruding limbs. 	L
	5C) Foot Injury	<ul style="list-style-type: none"> ▪ Wear steel toed boots ▪ Wear insulated steel toed boots during winter ▪ Ensure shoes/boots have good traction ▪ Pay attention to where you place your feet, especially when walking on uneven terrain 	L



AHA – Field Work Oversight

	5D) Head Injury	<ul style="list-style-type: none"> ▪ Wear hardhat ▪ Do not walk or work under scaffolding or other elevated work unless there are guardrails and toeboards in place ▪ Flag or mark protruding objects at head level 	L
	5E) Chemical Hazards	<ul style="list-style-type: none"> ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled ▪ Wash hands and face prior to consumption of food, beverage or tobacco. 	M
	5F) Dust - particulates (respiratory)	<ul style="list-style-type: none"> ▪ Use dust suppression methods ▪ Stand upwind of point of dust generation ▪ Wear an appropriate N-95 dust mask to prevent dust exposure. 	L
	5G) Overhead Power Lines	<ul style="list-style-type: none"> ▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) 	M
	5H) Underground Utilities	<ul style="list-style-type: none"> ▪ All utilities will be marked prior to excavation activities. ▪ Work at adequate offsets from utility locations ▪ Immediately cease work if unknown utility markings are discovered. 	M
	5I) Standing/Static Posture	<ul style="list-style-type: none"> ▪ Change posture on a frequent basis ▪ Stretch prior to any physical activity 	
	5J) Slips/ Trips/Falls	<ul style="list-style-type: none"> ▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Wear laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved. ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil. ▪ Be aware of surroundings. Avoid muddy areas if possible. 	L



AHA – Field Work Oversight

6. Sampling Oversight	6A) Chemical Hazards	<ul style="list-style-type: none"> ▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Be familiar with hazards associated with site contaminants. ▪ Wash hands and face prior to consumption of food, beverage or tobacco. ▪ Calibrate meters in a clean, well-ventilated area ▪ Store calibration gases in well vented area. Ensure chemical labels and warnings are legible. 	M
	6B) Decontamination	<ul style="list-style-type: none"> ▪ Refer to MSDS for specific hazards associated with decon solutions ▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.), if appropriate (see HASP) ▪ Removal of PPE will be performed by the following tasks in the listed order: <ul style="list-style-type: none"> ○ Gross boot wash and rinse and removal ○ Outer glove removal ○ Suit removal ○ Respirator removal (if worn). ○ Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials. ▪ Decontamination solutions will be disposed of according to the work plan. 	M
	6C) Lifting	<ul style="list-style-type: none"> ▪ Good lifting techniques (lift with legs not back) ▪ Mechanical devices (e.g., hand truck, cart, forklift, etc.) should be used to reduce manual handling of materials. ▪ Team lifting should be utilized if mechanical devices are not available. (mandatory for items over 50 lbs) ▪ Split heavy loads into smaller loads ▪ Make sure that path is clear prior to lift. ▪ Redesign work area to avoid low lifts ▪ Stretch prior to lifting ▪ Maintain a healthy life style and level of physical fitness. 	M



AHA – Field Work Oversight

	6D) Hand Tools	<ul style="list-style-type: none">▪ Cut resistant work gloves will be worn when dealing with sharp objects.▪ All hand and power tools will be maintained in safe condition.▪ Do not drop or throw tools. Tools shall be placed on the ground or work surface or handed to another employee in a safe manner.▪ Guards will be kept in place while using hand and power tools.▪ Daily inspections will be performed.▪ Remove broken or damaged tools from service and tag out as defective▪ No tampering with electrical equipment is allowed (e.g., splicing cords, cutting the grounding prong off plug, etc.)▪ Do not use excessive force or impact▪ Do not use tools improperly. Ensure all workers are trained	L
	6E) Slips/Trips/ Falls	<ul style="list-style-type: none">▪ Pay attention to where you place your feet▪ Slow down and use extra caution around logs, rocks, and animal holes.▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route.▪ Wear laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction.▪ Clear area of trip hazards; mark or barricade those that cannot be moved;▪ Use caution when walking around excavated areas▪ Stay back at least 5 feet from excavated areas▪ Use caution when walking on or around loose soil.▪ Be aware of surroundings. Avoid muddy areas if possible.	L



AHA – Field Work Oversight

	6F) Struck by Vehicle	<ul style="list-style-type: none"> ▪ Ground personnel in the vicinity of vehicles or heavy equipment under operation will be always within the view of the operator. ▪ Ground personnel will not stand directly behind vehicles when it is in operation. ▪ Operators are responsible for maintaining visual contact with support staff. ▪ High visibility vests will be worn at all times while on site. ▪ Try to park so that you don't have to back up to leave. ▪ When backing up a vehicle, complete a walk-around to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter as necessary. ▪ Place cones in the front and behind vehicle when parked in area where traffic is a factor. ▪ Prior to driving off, walk around vehicle to collect cones and identify any hazards - especially low level hazards that may be difficult to see when in the vehicle. ▪ Set up "Workers in the Road" or similar warning signs and cones to alert traffic. ▪ Use emergency flashers and a yellow roof top flashing light (recommended) when traffic is a factor. ▪ Remain alert at all times to the traffic outside the vehicle. Step to the side of the road when distracted by by-standers. Keep unofficial personnel out of the work area. ▪ Exit vehicle with caution. ▪ Utilize vehicle as a shield from oncoming traffic, as practical 	L
7. IDW pickup oversight	7B) Foot Injury	<ul style="list-style-type: none"> ▪ Wear steel toed boots ▪ Pay attention to where you place your feet, especially when walking on uneven terrain 	
	7C) Chemical Hazards	<ul style="list-style-type: none"> ▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Be familiar with hazards associated with site contaminants. ▪ Wash hands and face prior to consumption of food, beverage or tobacco. 	L
	7D) Lifting	<ul style="list-style-type: none"> ▪ Good lifting techniques (lift with legs not back) ▪ Use mechanical devices (e.g., hand truck, cart, forklift, etc.) to move drums. ▪ Team lifting should be utilized if mechanical devices are not available. (mandatory for items over 50 lbs) 	M



AHA – Field Work Oversight

	7E) Slips/Trips/ Falls	<ul style="list-style-type: none">▪ Pay attention to where you place your feet▪ Slow down and use extra caution around logs, rocks, and animal holes.▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route.▪ Clear area of trip hazards; mark or barricade those that cannot be moved;▪ Use caution when walking around excavated areas▪ Stay back at least 5 feet from excavated areas▪ Use caution when walking on or around loose soil.▪ Be aware of surroundings. Avoid muddy areas if possible.	L
8. Return to office/ home	8A) See Mobilization/ Demobilization and Site Preparation JHA	See Mobilization/ Demobilization and Site Preparation JHA	L



AHA – Field Work Oversight

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (N-95 Dust Mask, Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection, Personal Floatation device, chest-waders)	Competent / Qualified Personnel: Name – Position/Employer – See HASP Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use



AHA - Insect Stings and Bites

Activity/Work Task:	Insect Stings and Bites			Overall Risk Assessment Code (RAC) (Use highest code)					L
Project Location:	Penobscot River			Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02			Severity	Probability				
Date Prepared:	8-15-12	Date Accepted:	2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Kendra Bavor			Catastrophic	E	E	H	H	M
				Critical	E	H	H	M	L
Reviewed by (Name/Title):	Bradley Wolfe			Marginal	H	M	M	L	L
				Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)				Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
This AHA involves the following:				"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
<ul style="list-style-type: none"> Establishing site specific measures 				"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.				Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
								M = Moderate Risk	
								L = Low Risk	
Job Steps		Hazards		Controls					RAC



AHA - Insect Stings and Bites

<p>1. Traveling/working in areas with potential Tick Bites –Example outdoor wooded areas or fields.</p>	<p>1. Lyme Disease, Rocky Mountain Spotted Fever, etc.</p>	<ul style="list-style-type: none"> ▪ Spray clothing with insect repellent as a barrier. ▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist. ▪ Each outer garment should overlap the one above it. ▪ Cover trouser legs with high socks or boots. ▪ Tuck in shirt tails. ▪ Search the body on a regular basis, especially hair and clothing; ticks generally do not attach for the first couple of hours. ▪ If a tick becomes attached, pull it by grasping it as close as possible to the point of attachment and pull straight out with gentle pressure. Wash skin with soap and water then cleanse with rubbing alcohol. Place the tick in an empty container for later identification, if the victim should have a reaction. Record dates of exposure and removal. ▪ Do not try to remove the tick by burning with a match or covering it with chemical agents. ▪ If you can not remove the tick, or the head detaches, seek prompt medical help. ▪ Watch for warning signs of illness: a large red spot on the bite area; fever, chills, headache, joint and muscle ache, significant fatigue, and facial paralysis are reactions that may appear within two weeks of the attack. Symptoms specific to Lyme disease include: confusion, short-term memory loss, and disorientation. 	<p>L</p>
<p>2. Working/traveling in areas with potential bee and wasp nests (I.e., wooded areas and fields)</p>	<p>2. Allergic reactions, painful stings</p>	<ul style="list-style-type: none"> ▪ Be alert to hives in brush or in hollow logs. Watch for insects travelling in and out of one location. ▪ If you or anyone you are working with is known to have allergic reactions to bee stings, tell the rest of the crew and your supervisor. Make sure you carry emergency medication with you at all times. ▪ Wear long sleeve shirts and trousers; tuck in shirt.. Bright colors and metal objects may attract bees. ▪ If you are stung, cold compresses may bring relief. ▪ If a stinger is left behind, scrape it off the skin. Do not use a tweezers as this squeezes the venom sack, worsening the injury. ▪ If the victim develops hives, asthmatic breathing, tissue swelling, or a drop in blood pressure, seek medical help immediately. Give victim antihistime, (Benadryl, chlo-amine tabs). 	<p>L</p>
<p>3. Traveling/working in areas with prevalent mosquitos, black flies and biting midge (I.e., woods, fields, swamps, near bodies of water, etc.)</p>	<p>3. Skin irritation, encephalitis</p>	<ul style="list-style-type: none"> ▪ Wear long sleeves and trousers. ▪ Avoid heavy scents. ▪ Use insect repellants. If using DEET, do not apply directly to skin, apply to clothing only. ▪ Carry after-bite medication to reduce skin irritation. 	<p>L</p>



AHA - Insect Stings and Bites



Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Safety glasses, gloves (HASP), steel toe work boots, high visibility safety vest, Long-sleeved light colored shirt, and long light colored pants.)	Competent / Qualified Personnel: See HASP - Name – Position/Employer Training requirements: Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	<ul style="list-style-type: none">• Inspect lower legs and shoes on routine basis when traveling in field, forest and swamp for ticks.• Do a thorough tick check on yourself at the end of the day.





AHA – Poisonous Plants

Activity/Work Task:	<u>Poisonous Plants</u>	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06A02	Severity	Probability				
Date Prepared:	3-7-13 Date Accepted: 2/214/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Kendra Bavor, CSP	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)					
This AHA involves the following:		“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
<ul style="list-style-type: none"> Establishing site specific measures 		“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	
Job Steps	Hazards	Controls					RAC
1) Mobilization	1A) See JHA Mobilization/ Demobilization/ Site Preparation	1A) See JHA Mobilization/ Demobilization/ Site Preparation					M

AHA – Poisonous Plants

<p>2) Preparation</p>	<p>2A) Training – Identifying Poisonous Plants</p>	<p>2A) Provide training on identifying the specific poisonous plants that could be present at the site</p>	<p style="text-align: center;">M</p>
		 <p style="text-align: center;"> POISON IVY <i>(Rhus toxicodendron L.)</i> </p> <p style="text-align: center;"> POISON OAK <i>(Rhus diversiloba)</i> </p> <p style="text-align: center;"> POISON SUMAC <i>(Rhus toxicodendron vernix)</i> </p>	<p style="text-align: center;">M</p>
	<p>2B) Poison Ivy</p> 	<p>2B) Poison Ivy:</p> <ul style="list-style-type: none"> ▪ Grows everywhere in United States except Hawaii and Alaska. ▪ In the East, Midwest, and the South, it grows as a vine. ▪ In the Northern and Western United States, it grows as a shrub. ▪ Each leaf has three leaflets. ▪ Leaves are green in the summer and red in the fall. <p>1. In the late summer and fall, white berries may grow from the stems.</p>	<p style="text-align: center;">M</p>

AHA – Poisonous Plants

	<p>2C) Poison Oak</p> 	<p>2C) Poison Oak:</p> <ul style="list-style-type: none"> ▪ Oak-like fuzzy leaves in clusters of three. ▪ It has two distinct kinds: ▪ Eastern poison oak (New Jersey to Texas) grows as a low shrub. ▪ Western poison oak (Pacific Coast) grows to six-foot-tall clumps or vines up to 30 feet long. It may have clusters of yellow berries. 	<p>M</p>
	<p>2D) Poison Sumac</p> 	<p>2D) Poison Sumac</p> <ul style="list-style-type: none"> ▪ Grows in standing water in peat bogs in the Northeast and Midwest and in swampy areas in parts of the Southeast. ▪ Each leaf has clusters of seven to 13 smooth-edged leaflets. ▪ The plants can grow up to 15 feet tall. ▪ The leaves are orange in spring, green in summer and red, and orange or yellow in fall. ▪ There may be clumps of pale yellow or cream-colored berries. 	<p>M</p>

2E) Giant Hogweed



Giant Hogweed



Giant Hogweed Flower (clusters may reach up to 2.5 feet across)



Giant Hogweed Flower Leaves



Giant Hogweed Stem
Thick stem with coarse hairs, Blistery dark purple splotches.

2E) Giant Hogweed

- Hogweed is a public health hazard. It's clear, watery sap has toxins that cause photo-dermatitis. Skin contact followed by exposure to sunlight produces painful, burning blisters that may develop into purplish or blackened scars. Contact with the eyes can cause temporary or permanent blindness.
- Since its introduction into North America, this plant has become established in rich moist soils along roadsides, stream banks and waste ground. In the eastern US, it is known to occur in Maine, New York, Pennsylvania, Connecticut, and now Massachusetts.
- A biennial or perennial herb growing 8 to 15 feet tall, giant hogweed usually has a taproot or occasionally fibrous root. The hollow stems are 2 to 4 inches in diameter with dark reddish-purple splotches and coarse white hairs.
- The deeply incised compound leaves grow up to 5 feet in width. Hairs on the underside of the leaf are stiff, dense and stubby.
- The large umbrella-shaped flower heads are up to 2 1/2 feet in diameter across a flat top with numerous small flowers produced in mid-May through July.
- Some plants die after flowering; others flower for several years. The plant produces flattened, 3/8 inch long, oval dry fruits that have a broadly rounded base and broad marginal ridges. Plants sprout in the early spring (or late winter in mild years) from the roots or from seed.
- Grows in standing water in peat bogs in the Northeast and Midwest and in swampy areas in parts of the Southeast.
- Each leaf has clusters of seven to 13 smooth-edged leaflets.
- The plants can grow up to 15 feet tall.
- The leaves are orange in spring, green in summer and red, and orange or yellow in fall.
- There may be clumps of pale yellow or cream-colored berries.

M



AHA – Poisonous Plants

3A) Contact with poisonous plants	3A) Hand Contact	<p>3A) Hand Contact</p> <ul style="list-style-type: none"> ▪ Apply IvyX (or similar product) to hands, forearms and other potentially exposed parts of the body, prior to starting work in the morning and again right after lunch. ▪ Leather Gloves must be worn at all times when digging, screening or carrying field equipment. ▪ Leather gloves should be of sufficient length to cover the entire wrist and cuff of the shirt. ▪ Carefully remove gloves, without touching the exterior surface, when taking notes and prior to lunch or restroom breaks. ▪ Gloves that become worn should be replaced immediately. ▪ Do not scratch or rub the face or other exposed skin while wearing gloves. ▪ Workers will apply Tecnu (or similar product) to the hands and forearms immediately after removing their gloves, prior to lunch and again at the end of the day. Tecnu will help cleanse the urushiol oil from the skin before it can be absorbed. Sensitive individuals can also apply prior to showering in the evening. 	M
	3B) Arm Contact	<p>3B) Arm Contact</p> <ul style="list-style-type: none"> ▪ Apply IvyX (or similar product) to hands, forearms and other potentially exposed parts of the body, prior to starting work in the morning and again right after lunch. ▪ Wear light weight, long sleeved shirts as the sleeves will provide a physical barrier between the skin and any urushiol oil encountered. Disposable gauntlets may we worn over arms to keep oil from clothing as well. ▪ Have the sleeves pulled down to the base of the hand, covering the forearm and wrist (all exposed skin). ▪ Workers will apply Tecnu (or similar product) to the hands and forearms immediately after removing their gloves, prior to lunch and again at the end of the day. Tecnu will help cleanse the urushiol oil from the skin before it can be absorbed. Sensitive individuals can also apply prior to showering in the evening. 	M
	3C) Leg Contact	<p>3C) Leg Contact</p> <ul style="list-style-type: none"> ▪ Wear long pants and boots. ▪ Assume boots are contaminated with the urushiol oil and only handle with gloved hands. 	M
4) Handling Contaminated Equipment and Clothing	4A) Exposure from Handling Contaminated Equipment	<p>4A) Exposure from Handling Contaminated Equipment</p> <ul style="list-style-type: none"> ▪ Do not handle any field equipment that may have come in contact with poison ivy/oak/sumac without gloves. ▪ Decontaminate all equipment at the end of each workday with a solution of water and dish soap. ▪ Scrub all surfaces of the screens and shovels with a brush. ▪ Rinse with cool water using a portable garden sprayer. 	M



AHA – Poisonous Plants

	4B) Exposure from Handling Contaminated Clothing	4B) Exposure from Handling Contaminated Clothing <ul style="list-style-type: none">▪ Wash clothing potentially contaminated with urushiol oil prior to wearing again.▪ Handle contaminated clothing with gloves as the oil can remain on environmental surfaces for up to 5 years.	M
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AHA – Poisonous Plants

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
<p>PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest)</p> <p>IvyX lotion (or similar product for precontact)</p> <p>Soap and Water after contact (Technu or similar product)</p>	<p>Competent / Qualified Personnel: Name – See HASP</p> <p>Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting</p>	<ul style="list-style-type: none">• Remove any outer clothing that has been exposed to poisonous plants and launder separately. (Use soaps specifically designed to remove residual oils.)• Decontaminate all tools and clothing to avoid contact with residual oils.



AHA – Soil Sampling w/ Hand Auger/Hand Tools

Activity/Work Task:	Soil Sampling w/ Hand Auger/Hand Tools	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific hand auger sampling tasks, hazards and controls <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	



AHA – Soil Sampling w/ Hand Auger/Hand Tools

Job Steps	Hazards	Controls	RAC
1. Mobilizing to the work site.	1A) Mobilization / Demobilization and Site Preparation	1A) See AHA – Mobilization - Demobilization and Site Preparation	H



AHA – Soil Sampling w/ Hand Auger/Hand Tools

<p>2. Working at the site</p>	<p>2A) General Field Work – Walking and working in the field, Environmental conditions, communication</p>	<p>2A) See AHA - General Field Work</p>	<p>L</p>
	<p>2B) Working Near Utilities</p>	<p>2B) Working Near Utilities</p> <ul style="list-style-type: none"> • See AHA - Utility Clearance • See AHA - Field Work - Oversight • On private property/active facility, walk all planned locations with the appropriate representative prior to start of exploration to identify the location of marked/unmarked utilities (underground/overhead) and note any uncertainties. Field Lead should call PM and relay any issues. Document this inspection in the field book and note subcontractor’s responses to our concerns. • Coordinate with facility representatives to gain access to restricted areas. • For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet, and around buried exposed utilities. • Wear appropriate PPE • If working near live utilities (i.e., transformers), do not tamper with the units in any way and maintain safe working distance based on voltage. • If working alone, always notify other crewmembers/project team members/facility personnel of your whereabouts. • Carry a radio and spare batteries and/or cell phone. • Let other crew members know when you see a hazard. 	<p>M</p>
<p>3. Preparing sample location</p>	<p>3A) Contact with poisonous plants or the oil from poisonous plants</p>	<p>3A) Contact with Poisonous plants or oil from poisonous plants</p> <ul style="list-style-type: none"> ▪ Look for signs of poisonous plants and avoid. ▪ Wear PPE as described in the HASP. ▪ Do not touch any part of your body/clothing if exposed to poisonous plants. ▪ Discard PPE in accordance with the HASP 	<p>M</p>



AHA – Soil Sampling w/ Hand Auger/Hand Tools

	3B) Contact with biting insects (i.e., spiders, bees, etc.)	<p>3B) Contact with biting insects</p> <ul style="list-style-type: none"> ▪ Discuss the types of insects expected at the Site and be able to identify them. ▪ Look for signs of insects in sample areas. ▪ Wear Level of PPE as described in the HASP. At a minimum, follow guidelines in the AHA - Insects Stings and Bites. ▪ If necessary, wear protective netting over your head/face. ▪ Avoid contact with insects if possible. ▪ Inform your supervisor and the Site Health and Safety Supervisor if you have any allergies to insects and insect bites. Make sure you always have identification of your allergies with you and appropriate response kits if applicable. ▪ Get medical help immediately if you are bitten by a black widow or brown recluse, or if you have a severe reaction to any spider bite or bee sting. 	M
	3C) Encounter wild/ dangerous animal	<p>3C) Encounter wild/ dangerous animal</p> <ul style="list-style-type: none"> • If encountered, make every effort to maintain distance from wild or dangerous animals. • Report encounters with wild or dangerous animals to the FOL and field sampling team. • Leave and avoid areas where wildlife encounters occur. 	L
	3D) Back strain due to lifting or moving equipment to sampling locations	<p>3D) Back strain due to lifting or moving equipment to sampling locations</p> <ul style="list-style-type: none"> ▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques ▪ Split up heavy loads into smaller loads 	M
	3E) Foot injuries	<p>3E) Foot injuries</p> <ul style="list-style-type: none"> ▪ Be aware when moving objects, ensure you have a good grip when lifting and carrying objects. ▪ Do not carry more than you can handle safely ▪ Wear steel toed boots with high tops ▪ Be observant of surroundings. Be mindful of holes and uneven terrain. Surfaces may be wet and muddy. Avoid puddles. 	L



AHA – Soil Sampling w/ Hand Auger/Hand Tools

4. Hand Auguring/ Shoveling Test Holes	4A) Back injury from lifting and twisting equipment	4A) Back injury from lifting and twisting equipment <ul style="list-style-type: none"> • Use proper lifting and bending techniques. • Use 2 people for lifting heavy, bulky items over 50 lbs. • Use Mechanical means if available (e.g. auger jacks etc.) • Wobble auger or shovel to break suction of wet soils. 	M
	4B) Injuries from transporting equipment to site (i.e. stumbling or falling)	4B) Injuries from transporting equipment to site i.e. stumbling or falling <ul style="list-style-type: none"> • Ensure surroundings are clear of personnel and obstacles as you approach the test site. • Transport equipment in sections, beginning with equipment nearest tailgate of truck. • Use 2 person lift for heavy items • Assure pathway is clear 	M
	4C) Injuries while adding extensions	4C) Injuries while adding extensions <ul style="list-style-type: none"> • Ensure that PPE is used. • Lift and connect extension with care. • Use proper lifting procedures. 	L
	4D) Hit utilities or geo-textile membrane and contamination	4D) Hit utilities or geo-textile membrane and contamination <ul style="list-style-type: none"> • Locate utilities and mark. Sample in cleared area. • Use of hand tools. Be observant. Do not use excessive force. • Follow sampling work plan for location and depth. 	L
	4E) Injury to others as equipment is removed	4E) Injury to others as equipment is removed <ul style="list-style-type: none"> • Assure that others are standing at a safety distance before removing equipment 	L
	4F) Fingers injuries	4F) Fingers injuries <ul style="list-style-type: none"> • Assure fingers are clear as equipment is extracted - Wear PPE (gloves, eye protection, etc). • Be aware of the type of material being removed from test hole and handle appropriately 	M



AHA – Soil Sampling w/ Hand Auger/Hand Tools

	4G) Electrocutation	<p>4G) Electrocutation</p> <ul style="list-style-type: none"> • A ground fault circuit interrupter (GFCI) device must protect all AC electrical circuits. • Use only correctly grounded equipment. Never use three-pronged cords which have had the third prong broken off. • Make sure that the electrical cords from generators and power tools are not allowed to be in contact with water • Do not stand in wet areas while operating power equipment • Always make sure all electrically-powered sampling equipment is in good repair. Report any problems so the equipment can be repaired or replaced. • When unplugging a cord, pull on the plug rather than the cord. • Never do repairs on electrical equipment unless you are both authorized and qualified to do so. 	M
5. Sample Collection	5A) Exposure to contaminants	<p>5A) Exposure to Contaminants</p> <ul style="list-style-type: none"> ▪ Stand up wind when sampling and do not breathe dust (if conditions are dusty) ▪ Monitor breathing zone with appropriate monitoring equipment (see HASP) ▪ Continually monitor soil samples for low level radiation. ▪ Wear chemical resistant PPE as identified in HASP / JHA ▪ Minimize sample contact ▪ Label sample in accordance with procedures 	H
	5B) Exposure to preservatives	<p>5B) Exposure to preservatives</p> <ul style="list-style-type: none"> ▪ Work in a well ventilated area, upwind of samples ▪ Wear chemical resistant PPE as identified in HASP / JHA. ▪ Review MSDSs 	H
	5C) Slips/trips/falls	<p>5C) Slips/trips/falls</p> <ul style="list-style-type: none"> ▪ Ground can become wet/muddy ▪ Wear good slip resistant footwear 	H
	5D) Vapors and Airborne Particulates	<p>5D) Vapors and Airborne Particulates</p> <ul style="list-style-type: none"> ▪ Monitor air concentrations using direct-reading, real-time instruments (See HASP for required monitoring instruments and action limits) ▪ If hazardous conditions are identified, stop work until precautions are taken ▪ Wear appropriate PPE including safety glasses with side shields, dust masks and respirators (See HASP) 	M



AHA – Soil Sampling w/ Hand Auger/Hand Tools

	5E) Lifting Injury	5E) Lifting injury <ul style="list-style-type: none"> ▪ Use proper lifting techniques when carrying quantities of samples ▪ Use proper ergonomics when hand digging for samples 	M
	5F) Eye injury	5F) Eye Injury <ul style="list-style-type: none"> ▪ Wear eye protection during operation of Geoprobe or if misc. debris may harm your eyes. 	L
	5G) Fire	5G) Have an A-B-C rated fire extinguisher on hand in case of small equipment fires. Only individuals trained in fire extinguisher use should use a fire extinguisher.	L
	5H) Sharp Sampling Tools	5H) Sharp Sampling Tools <ul style="list-style-type: none"> • Use correct tools for opening sleeves • When opening sleeve, cut away from body • Place soil core on sturdy surface prior to cutting 	L
	5I) Sample Cross Contamination	5I) Sample Cross Contamination <ul style="list-style-type: none"> ▪ Decontaminate or dispose of sampling equipment between sampling locations ▪ Double-check sample labels to ensure accuracy and adhesion to containers 	M
6. Disposal of leftover soil	6A) Contamination from impacted soil	6A) Properly dispose of any leftover soil sample <ul style="list-style-type: none"> ▪ Consult the Project Manager for proper disposal of soil. ▪ Don proper PPE when handling sample cores and disposing of soils. ▪ If soils are placed in a container (i.e. drum) properly label the drum. 	L
7. Backfill Borehole.	7A) Contamination from impacted soil and/or groundwater	7A) Minimize contact with potentially impacted soil and/or groundwater <ul style="list-style-type: none"> ▪ Don proper PPE when backfilling the borehole. ▪ If the borehole is located in a paved area (i.e. asphalt/concrete), carefully patch the borehole using proper patching materials. 	L
8. Solid/Liquid Waste Management/ Disposal	8A) Contaminated Materials and Container Pinch Points	8A) Contaminated Materials and Container Pinch Points <ul style="list-style-type: none"> ▪ Wear appropriate PPE including Nitrile and leather gloves (See HASP) ▪ Position hands/fingers to avoid pinching/smashing/crushing when closing drum rings 	L



AHA – Soil Sampling w/ Hand Auger/Hand Tools

	8B) Heavy Materials and Containers Lifting/ Moving	8B) Contaminated Materials and Container Pinch Points <ul style="list-style-type: none">▪ Do not lift or move heavy containers without assistance▪ Use proper bending/lifting techniques by lifting with arms and legs and not with back▪ If possible, use powered lift truck, drum cart, or other mechanical means Take breaks if feeling faint or overexerted▪ Spot drums in storage area prior to filling▪ Wear appropriate PPE including leather gloves and steel-toed boots	M
9. Demobilize	9A) See Mobilization/ Demobilization and Site Preparation JHA	9A) See Mobilization/ Demobilization and Site Preparation JHA	H



AHA – Soil Sampling w/ Hand Auger/Hand Tools

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	Competent / Qualified Personnel: Name – Position/Employer Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use



AHA – Stream and Wetlands

Activity/Work Task:	Accessing Wetlands and Tidal Marsh			Overall Risk Assessment Code (RAC) (Use highest code)					M							
Project Location:	Penobscot River			Risk Assessment Code (RAC) Matrix												
Contract Number:	3617237573.06.A02			Severity	Probability											
Date Prepared:	01/30/2023	Date Accepted:	2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely							
Prepared by (Name/Title):	Charles Lyman			Catastrophic	E	E	H	H	M							
Reviewed by (Name/Title):	Bradley Wolfe			Critical	E	H	H	M	L							
				Marginal	H	M	M	L	L							
				Negligible	M	L	L	L	L							
Notes: (Field Notes, Review Comments, etc.)				Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)												
This AHA involves the following:				<table border="1"> <tr> <td>“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</td> <td rowspan="4">RAC Chart</td> </tr> <tr> <td>“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> </table>					“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart	“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					
“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.	RAC Chart															
“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible																
<ul style="list-style-type: none"> Establishing site specific tasks, hazards and controls when accessing wetlands 																
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.				<table border="1"> <tr> <td>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.</td> <td>E = Extremely High Risk</td> </tr> <tr> <td></td> <td>H = High Risk</td> </tr> <tr> <td></td> <td>M = Moderate Risk</td> </tr> <tr> <td></td> <td>L = Low Risk</td> </tr> </table>					Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.	E = Extremely High Risk		H = High Risk		M = Moderate Risk		L = Low Risk
Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.	E = Extremely High Risk															
	H = High Risk															
	M = Moderate Risk															
	L = Low Risk															



AHA – Stream and Wetlands

Job Steps	Hazards	Controls	RAC
1. Traversing Wetlands (I.e., Tidal Marsh, freshwater marsh, scrub shrub wetlands, mud flats)	1A) Insect bites/stings	1A) See AHA – Insects Bites and Stings	M
	1B) Contact with poisonous plants or the oil from those plants:	1B) See AHA – Poisonous Plants	M
	1C) Slips and falls	1C) Slips and falls <ul style="list-style-type: none"> ▪ See AHA – Working in Muddy Areas ▪ See AHA - Working Over or Near Water ▪ Use traction devices (I.e, snowshoes) to travers mud flats. ▪ Wear appropriate PPE, including chest waders and knee boots when reaversing wetlands and tidal marsh. ▪ Be aware of ditching in tidal marsh habtiat. ▪ Move slowly, take your time. ▪ Use a walking staff to provide a three point support. 	M
	1D) Eye injuries	1D) Eye injuries <ul style="list-style-type: none"> ▪ Travel with care through heavy brush. ▪ Use eye protection at all times when on site. 	M
	1E) Scrapes and punctures	1E) Scrapes and punctures <ul style="list-style-type: none"> ▪ Wear proper clothing, long sleeved shirts and pants. 	M
	1F) Cuts/Lacerations	1F) Cuts/Lacerations from equipment <ul style="list-style-type: none"> ▪ Us a swedish brush axe to clear brush, avoid using machetes. ▪ Cut away from the body. ▪ Ensure cutting blades are sharp. 	M
	1G) Blow-down / heavy debris	1G) Blow-down / heavy debris <ul style="list-style-type: none"> ▪ Be aware of your surroundings, including hanging or leaning debris that may be dislodged and fall. 	M
	1H) Animal encounters	1H) Animal encounters <ul style="list-style-type: none"> ▪ See JHA Dog and Wildlife Safety ▪ Moose: <ol style="list-style-type: none"> a. Make noise to avoid encounter. b. If you do encounter a moose, put a lot of room between you and the animal by walking around him/her if necessary. c. Do not look it in the eye. d. If charged, run away or climb a tree. e. Throwing something or shouting may deter an attack. 	M



AHA – Stream and Wetlands

	1I) Severe injury in remote locations	<p>1I) Severe injury in remote locations</p> <ul style="list-style-type: none"> ▪ Carry a two-way radio and know how to use it. ▪ Work in teams. ▪ Make sure someone on crew is certified in first aid. ▪ Carry a first aid kit. 	M
	1J) Hypothermia	<p>1J) Hypothermia</p> <ul style="list-style-type: none"> • Work in teams of two. • Have warming devices available. • Wear proper equipment that is in good condition. • Be aware of signs of hypothermia, it's prevention, detection and treatment. • Stay in tune to current weather and extended forecasts. • See AHA Field Work - General 	M
	2A) 1K) Sand or Mud – knee or ankle injury	<p>1K) Sand or Mud</p> <ul style="list-style-type: none"> • Use shorter steps • Use walking sticks to check firmness of soils • Use buddy system • Snowshoes that dissipate weight may be effective • If leg gets caught, use slight back and forth motion to soften mud and remove slowly. Don't try to pull leg out with twisting or jerking motion. If possible, aeriate or bubble the mud to help release suction 	M



AHA – Stream and Wetlands

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, Waders, traction devices on shoes, weight distribution devices snow shoes, geotextiles.)	Competent / Qualified Personnel: Name – Position/Employer See HASP. Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use



AHA - Surface Water Sampling

Activity/Work Task:	Surface Water Sampling	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023		Date Accepted:	2/14/23			
Prepared by (Name/Title):	Charles Lyman	Catastrophic	Frequent	Likely	Occasional	Seldom	Unlikely
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	E	H	H	M
		Marginal	E	H	H	M	L
		Negligible	H	M	M	L	L
			M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
This AHA involves the following:		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
<ul style="list-style-type: none"> Establishing site specific measures related to tasks, hazards and controls when surface water sampling 		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) Slips, trips, falls	1A) Familiarize self with the Site prior to visit. <ul style="list-style-type: none"> Complete appropriate training before going on site. Provide FOL with daily sampling itinerary. Prepare list of emergency phone numbers, both on and offsite (see H&SP). Identify site/activity PPE needs. Ensure that First Aid training is current. 	M
2. Check and calibrate sampling equipment.	2A) Muscle Strain - lifting, twisting, tugging	2A) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> Inspect all PPE and equipment and ensure that it is working properly. Get assistance from a coworker or use mechanical means to move equipment (dolly, cart, etc.) 	L
	2B) Slips, trips, falls, strain	2B) Slips, trips, and falls <ul style="list-style-type: none"> Wear proper footwear. Pay attention to where you are walking. Collect field parameters from the upper 12" of the water column. 	M



AHA - Surface Water Sampling

3. Load/carry equipment to the site.	3A) Slips, trips, falls,	3A) Slips, trips, falls <ul style="list-style-type: none"> ▪ See JHA for Mobilization / Demobilization and Site Preparation ▪ Survey and clear the pathway. See JHA for Clearing Brush and Trees 	M
	3B) Muscle Strain - lifting, twisting, tugging	3B) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> ▪ Utilize proper lifting, ergonomic practices, and body mechanics. ▪ Share the load, move items in smaller lifts, or use a piece of equipment. 	L
	3C) Irrate property owners, pets	3C) Irrate property owners, pets <ul style="list-style-type: none"> ▪ Call property owners in advance. ▪ Check in to introduce yourself upon arrival. ▪ Be courteous and diplomatic 	L
	3D) Crime	3D) Crime <ul style="list-style-type: none"> ▪ Do not enter areas where threats are present. ▪ Contract security where applicable. ▪ Use the buddy system. ▪ Maintain contact with support such as radio and/or cell phone. 	L
	3E) Struck by traffic - sampling from a bridge or roadway.	3E) Struck by traffic - sampling from a bridge or roadway. <ul style="list-style-type: none"> ▪ Wear orange/yellow safety vest ▪ Use buddy system. ▪ Use traffic cones and a lookout. ▪ Attempt to sample away from the bridge if possible 	L
4. Field parameters	4A) Falling into water	4A) Falling into water <ul style="list-style-type: none"> ▪ Limit access to water. ▪ Use equipment that facilitates reaching the location from a safe distance. ▪ Work using the buddy system. ▪ Wear PFD if working over or adjacent to water. 	M
	4B) Slips trips and falls	4B) Slips trips and falls <ul style="list-style-type: none"> ▪ Wear appropriate footwear. ▪ Survey and clear walking area. ▪ Do not walk on slippery surfaces. ▪ Housekeeping. 	M
	4C) Stuck in the mud or sand	4C) Stuck in the mud or sand <ul style="list-style-type: none"> ▪ Ensure secure footing. ▪ Provide walkways, platforms or secure walking surface. ▪ Use the buddy system and maintain communications with support staff. ▪ See AHA – Working in Muddy Areas 	M



AHA - Surface Water Sampling

	<p>4D) Vermin, leaches, Insect/animal born disease</p>	<p>4D) Vermin, leaches, Insect/animal born disease</p> <ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear insect netting clothing or apply insect repellent on all exposed skin surfaces as appropriate – consider sample contamination ▪ Wear long sleeve shirt and full-length pants ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas if possible ▪ Tuck pants leg into boot ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Do not touch any suspected contaminant without appropriate hand PPE ▪ Wash hands as soon as possible upon completion of task. ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. ▪ Contract vermin relocation, if applicable. ▪ Remain vigilant and respectful of wildlife. ▪ See JHA for Insects, Stings and Bites ▪ See JHA for Dog – Wildlife Safety. 	<p>L</p>
	<p>4E) Weather – temperature extremes</p>	<p>4E) Weather – temperature extremes</p> <ul style="list-style-type: none"> ▪ Train workers about weather and appropriate precautions. ▪ Heat: <ul style="list-style-type: none"> ○ Familiarize self with signs of heat related illnesses: cramps, heat rash, dehydration, heat exhaustion, and heat stroke. ▪ Sun: <ul style="list-style-type: none"> ○ Keep body protected ○ Wear sunscreen, wide-brimmed hat or hardhat. ○ Drink plenty of fluids to remain hydrated. ○ Schedule work for cool part of day. ○ Take breaks in the shade. ▪ Wind: <ul style="list-style-type: none"> ○ Wear layered clothing, gloves, hard hat with winter liner, etc. ▪ Cold: <ul style="list-style-type: none"> ○ During cold weather - layer clothing and wear wind impervious outerwear ○ During warm months – wear a long sleeve cotton/breathable fabric shirt and pant. 	<p>M</p>
<p>5. Sample collection</p>	<p>5A) Same as Item #4 above.</p>	<p>5A) Same as Item #4 above.</p>	



AHA - Surface Water Sampling

	5B) Bending, pulling, twisting	5B) Bending, pulling, twisting <ul style="list-style-type: none"> Use a vibrating or wiggling motion on the sample device to break the soil suction. Proper lifting technique. 	M
	5C) Splash	5C) Splash <ul style="list-style-type: none"> Wear appropriate safety glasses (tinted for sun). Be aware if sampling water through a filter, if it becomes plugged with sediment it may unexpectedly “blow off” the hose and splash. Change filter prior to sedimentation back pressure. 	L
	5D) Chemical exposure	5D) Chemical exposure <ul style="list-style-type: none"> Wear PPE including protective gloves, coveralls, safety glasses as appropriate. Work upwind of the sample location. Minimize exposure using a shovel/spoon or tool to collect the sample. Review and understand MSDS for all chemicals being handled. Be careful when handling acids and caustic substances. Wear adequate PPE and wash hands after completion of task. 	L
	5E) Vegetation, sticks, reeds, - cuts and punctures	5E) Vegetation, sticks, reeds, - cuts and punctures <ul style="list-style-type: none"> Clear access to site. Be familiar with toxic plants such as poison ivy. Avoid such plants. Wash thoroughly after accidental contact with toxic materials and plants. 	M
6. Sample preparation.	6A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain	6A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain <ul style="list-style-type: none"> Use proper ergonomics when lifting heavy objects Use appropriate mechanical assistance and tools when possible. 	M
	6B) Chemical Exposure	6B) Chemical Exposure <ul style="list-style-type: none"> Wear PPE including protective gloves, coveralls, safety glasses as appropriate. Wash/wipe or decontaminate exterior of sample containers and equipment. Use care handling preservatives (acids/bases.) 	L
	6C) Sharps and knives	6C) Sharps and knives <ul style="list-style-type: none"> Use care handling tape dispensers, knives and sharp objects. 	L
	6D) Extreme cold (ice preservation)	6D) Extreme cold (ice preservation) <ul style="list-style-type: none"> Minimize exposure to ice. Use a shovel/spoon or tool to fill bags for preserving samples in coolers. 	M
7. Site exit and drive home or next site.	7A) Vehicle contamination	7A) Vehicle contamination <ul style="list-style-type: none"> Wash hands promptly. Contaminated PPE (booties, Tyvek, nitrile gloves) should be disposed on-site. Remove boots and soiled clothing for secure storage in trunk; decontaminate as soon as possible. Update exposure log. 	L



AHA - Surface Water Sampling

	7B) Traffic hazards.	7B) Traffic hazards. ▪ See JHA for Mobilization / Demobilization and Site Preparation.	H



AHA - Surface Water Sampling

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection, PFD-See specific project HASP)	Competent / Qualified Personnel: See HASP (Name – Position/Employer) Training requirements: HAZCOM Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use



AHA - Field Work - General

Activity/Work Task:	Field Work - General	Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023		Date Accepted:				
	2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title):	Bradley Wolfe	Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
This AHA involves the following:		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
<ul style="list-style-type: none"> • Establishing site specific measures for general fieldwork. 		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	






AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
1. Prepare for Site Visit	N/A	<ul style="list-style-type: none"> ▪ Obtain and review HASP prior to site visit. ▪ Determine PPE needs – bring required PPE to the site, if not otherwise provided at the site (e.g., steel toed boots, eye protection, Hi-Vis vest and hardhat). ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current. ▪ Complete site specific/ client required training. ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment). ▪ First aid kits shall be available at the work site and on each transport vehicle. ▪ Familiarize yourself with route to the site. ▪ Check weather forecast. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions. ▪ Verify that subsurface utilities have been identified. 	L
2. Traveling to the Site by Vehicle		See AHA – Mobilization-Demobilization	L
3. Initial Site Condition Assessment and Walking Around the Site	3A) Poor Communication – General Safety	3A) Poor Communication – General Safety <ul style="list-style-type: none"> ▪ Develop communication methods (agree on hand signals, warning alarms) with subcontractor and other site personnel. ▪ Log all workers and visitors on and off the site. ▪ Let other crew members know when you see a hazard. ▪ Avoid working near known hazards. ▪ Always know the whereabouts of fellow crewmembers. ▪ Carry a radio and spare batteries and or cell phone at all times. ▪ Hold and document Safety Tailgate Meetings. ▪ Establish and communicate work zones, evacuation routes and rally locations. 	L
	3B) Insect Animal Bites and Stings	3B) Insect Animal Bites and Stings <ul style="list-style-type: none"> ▪ See - AHA Insects Stings and Bites 	L
	3C) Poisonous Plants	3C) Poisonous Plants <ul style="list-style-type: none"> ▪ See AHA – Poisonous Plants ▪ Wear long sleeves, long pants and boots. ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Look for signs of poisonous plants and demark area to aid in avoiding plant. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
		<p style="text-align: center;">appropriate.</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <div style="display: flex; justify-content: space-around; align-items: center; font-size: small;"> <div style="text-align: center;"> <p>POISON IVY (<i>Rhus toxicodendron</i> L.)</p> </div> <div style="text-align: center;"> <p>POISON OAK (<i>Rhus diversiloba</i>)</p> </div> <div style="text-align: center;"> <p>POISON SUMAC (<i>Rhus toxicodendron vernix</i>)</p> </div> </div>	
	3D) Chemical Hazards	3D) Chemical Hazards <ul style="list-style-type: none"> ▪ See HASP for appropriate level of PPE. ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone. ▪ Read MSDSs for all chemicals brought to the site. ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labelled. ▪ Decon thoroughly prior to consumption of food, beverage or tobacco. 	L
	3E) High Crime Areas	3E) High Crime Areas <ul style="list-style-type: none"> ▪ Do not enter areas where threats are present. ▪ Contract security where applicable. Use the buddy system. ▪ Maintain contact with support such as radio or cell phone. ▪ Do not work after dark. 	L
	3F) Operations Conducted at an Active Facility	3F) Operations Conducted at an Active Facility <ul style="list-style-type: none"> ▪ Stay well clear of operations being conducted at the facility. ▪ Keep alert for moving materials, equipment or vehicles. ▪ Determine client specific PPE needs prior to arriving at the site. ▪ Determine client specific emergency response procedures and follow as appropriate. ▪ Participate in client required safety training. ▪ Get copies of Clients MSDSs for any client chemicals that workers may be exposed to. ▪ Provide MSDSs to client for all chemicals brought to the site. 	L
	3G) Remote Locations	3G) Remote Locations <ul style="list-style-type: none"> ▪ Carry a two-way radio and or cell phone with clear signal and know how to use it. ▪ Work in teams. Account for all at the end of the workday. ▪ Make sure field crew is trained in CPR and First Aid. ▪ Carry a first aid kit. 	L
	3H) Personnel Decontamination	3H) Personnel Decontamination	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
		<ul style="list-style-type: none"> ▪ See AHA - Decontamination. 	
	3I) Slips / Trips / Falls	3I) Slips / Trips / Falls <ul style="list-style-type: none"> ▪ Site SHSO will inspect the entire work area to identify and mark hazards. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved. ▪ Horseplay is strictly prohibited. ▪ Wear slip resistant footwear preferably laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction. ▪ Pay attention to where you place your feet. Be aware of surroundings. Avoid muddy areas if possible. ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Stay back at least 5 feet from excavated areas. Use caution when walking on or around loose soil. 	L
	3J) Head Injury	3J) Head Injury <ul style="list-style-type: none"> ▪ Identify all overhead hazards prior to commencing work operations. ▪ Personnel are required to wear hard hats that meet ANSI Standard Z89.1. ▪ All ground personnel will stay clear of suspended loads. ▪ All equipment will be provided with guards, canopies or grills to protect the operator from falling or flying objects. ▪ Do not walk or work under scaffolding or other elevated work unless there are guardrails and toe boards in place. ▪ Flag or mark protruding objects at head level. ▪ Inspect rigging prior to each use. ▪ Do not walk under trees in high winds. 	L
	3K) Eye Injury	3K) Eye Injury <ul style="list-style-type: none"> ▪ Wear appropriate safety glasses (tinted for sun and UV protection). ▪ Watch where you walk, especially around trees and brush with protruding limbs. 	L
	3L) Foot Injury	3L) Foot Injury <ul style="list-style-type: none"> ▪ Employees must wear steel toe boots meeting ANSI Standard Z41-1999: Personal Protection - Protective Footwear, or ASTM F2412-2005: Standard Test Methods for Foot Protection, or ASTM F2413-2005. ▪ Wear extra socks or insulated steel toed boots during winter when cold. ▪ Ensure shoes/boots have good traction. 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
4. Oversight During Drilling, Or Construction Operations	4A) Caught In /On / Between Moving Equipment	4A) Caught In /On / Between Moving Equipment <ul style="list-style-type: none"> ▪ Clear area of obstructions and communicate with all workers involved that drilling is beginning. ▪ Wear appropriate PPE including leather gloves and steel-toed boots (See HASP). ▪ Workers will not position themselves between equipment and a stationary object. ▪ Workers will not wear long hair down (place in pony-tail and tuck into shirt), jewelry or loose clothing if working with tools/machinery. 	L
	4B) Eye Injury	4B) Eye Injury <ul style="list-style-type: none"> ▪ See Section 3K above 	L
	4C) Foot Injury	4C) Foot Injury <ul style="list-style-type: none"> ▪ See Section 3L above 	L
	4D) Head Injury	4D) Head Injury <ul style="list-style-type: none"> ▪ See Section 3J above 	L
	4E) Chemical Hazards	4E) Chemical Hazards <ul style="list-style-type: none"> ▪ See Section 3D above 	L
	4F) Dust - Particulates (Respiratory)	4F) Dust - Particulates (Respiratory) <ul style="list-style-type: none"> ▪ Use dust suppression methods. ▪ Stand upwind of point of dust generation. 	L
	4G) Slips / Trips / Falls, Twisted Ankles and Knees	4G) Slips / Trips / Falls, Twisted Ankles and Knees <ul style="list-style-type: none"> ▪ See Section 3I above 	L
	4H) Operations Conducted at an Active Facility	4H) Operations Conducted at an Active Facility <ul style="list-style-type: none"> ▪ See Section 3F above 	L
	4I) Injury from Heavy Equipment or Vehicles	4I) Injury from Heavy Equipment or Vehicles <ul style="list-style-type: none"> ▪ Ground personnel will wear high visibility vests. ▪ All equipment will be equipped with backup alarms. Spotters will be used when backing up trucks and heavy equipment and when moving equipment. ▪ Ground personnel in the vicinity of vehicles or heavy equipment operations will be within the view of the operator at all times. ▪ Ground personnel will make eye contact with operators before approaching equipment. Operator will acknowledge eye contact by removing his hands from the controls. ▪ Equipment will not be approached on blind sides. Ground personnel will not stand directly behind heavy equipment when it is in operation. ▪ Ground personnel will be aware of the swing radius and maintain an adequate buffer zone. ▪ Ground personnel will stay clear of all suspended loads. ▪ Personnel are prohibited from riding in equipment without operator 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
		<p>authorization in designated seats with proper seat belts.</p> <ul style="list-style-type: none"> ▪ Only use manlifts specifically design and operated by qualified individuals. ▪ Prior to backing up a vehicle, conduct a walk around to identify any hazards (especially low-level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter as necessary. ▪ Place cones in the front and behind vehicle if near moving equipment or vehicles. Set up “Workers in the Road” or similar warning signs and cones to alert traffic. ▪ Prior to driving off, walk around vehicle to collect cones and identify any hazards - especially low-level hazards that may be difficult to see when in the vehicle. ▪ Use emergency flashers and roof top flashing light (recommended) to alert oncoming vehicular traffic. ▪ Remain alert at all times as to the traffic outside the vehicle. Step to the side of the road when distracted by by-standers. Keep unofficial personnel out of the work area. Exit vehicle with caution. 	
	4J) Underground Utilities	<p>4J) Underground Utilities</p> <ul style="list-style-type: none"> ▪ All utilities will be marked prior to excavation activities. ▪ For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet. ▪ Use lineman’s gloves when locating underground power lines. ▪ Work at adequate offsets from utility locations. ▪ Immediately cease work if unknown utility markings are discovered. 	L
	4K) Back Injuries	<p>4K) Back Injuries - Lifting</p> <ul style="list-style-type: none"> ▪ Good lifting techniques (lift with legs not back). ▪ Mechanical devices (e.g., hand truck, cart, forklift, etc.) should be used to reduce manual handling of materials and drums. ▪ Team lifting should be utilized if mechanical devices are not available (mandatory for items over 50 lbs). ▪ Split heavy loads in to smaller loads. ▪ Make sure that path is clear prior to lift. ▪ Redesign work area to avoid low lifts. ▪ Stretch prior to lifting. ▪ Maintain a healthy life style and level of physical fitness. 	L
		<p>4K) Back Injuries - Shoveling</p> <ul style="list-style-type: none"> ▪ Select the proper shovel for the task. A long handled, flat bladed shovel is recommend for loose material. ▪ Inspect the handle for splinters and/or cracks. ▪ Ensure that the blade is securely attached to the handle. ▪ Stand with your feet about hip width for balance and keep the shovel close to 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
		your body. <ul style="list-style-type: none"> ▪ Bend from the knees (not the back) and tighten your stomach muscles as you lift. ▪ Avoid twisting movements. If you need to move the snow to one side reposition your feet to face the direction the snow will be going. ▪ Avoid lifting large shoveling too much at once. When lifting heavy material, pick up less to reduce the weight lifted. ▪ Pace yourself to avoid getting out of breath and becoming fatigued too soon. ▪ Be alert for signs of stress such as pain, numbness, burning and tingling. Stop immediately if you feel any of these symptoms. 	
		4K) Back Injuries - Standing/Static Posture <ul style="list-style-type: none"> ▪ Change posture on a frequent basis. ▪ Stretch prior to any physical activity. 	L
	4L) Overhead Power Lines	4L) Overhead Power Lines <ul style="list-style-type: none"> ▪ Identify the location of all overhead power lines at the site. ▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) ▪ Re-locate work so it is not close to power lines. ▪ Avoid storing materials under overhead power lines. 	L
	4M) Noise	4M) Noise <ul style="list-style-type: none"> ▪ Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs). ▪ All equipment will be equipped with manufacturer's required mufflers. ▪ Hearing protection shall be worn by all personnel working in or near heavy equipment. ▪ Hearing protection will be worn when workers need to shout when standing two feet away from each other. ▪ Segregate noisy equipment from the operators. ▪ Use sound dampening around noisy equipment. 	L
5. Sampling and Sampling Oversight	5A) Chemical Hazards	5A) Chemical Hazards <ul style="list-style-type: none"> ▪ See Section 3D above ▪ Calibrate meters in a clean, well ventilated area. ▪ Store calibration gases in well vented area. Ensure chemical labels and warnings are legible. 	L
	5B) Decontamination	5B) Decontamination <ul style="list-style-type: none"> ▪ See AHA - Decontamination 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
	5C) Back Injury - Lifting	5C) Back Injury - Lifting <ul style="list-style-type: none"> ▪ See Section 4K above 	L
	5D) Hand Injury from Use of Hand Tools	5D) Hand Injury from Use of Hand Tools <ul style="list-style-type: none"> ▪ Cut resistant work gloves will be worn when dealing with sharp objects. ▪ All hand and power tools will be maintained in safe condition. ▪ Do not drop or throw tools. Tools shall be placed on the ground or work surface or handed to another employee in a safe manner. ▪ Ensure guards are in place and are in good condition. ▪ Daily inspections will be performed. ▪ Remove broken or damaged tools from service and tag out as defective. ▪ No tampering with electrical equipment is allowed (e.g., splicing cords, cutting the grounding prong off plug, etc.). ▪ Do not use excessive force or impact. ▪ Use tool in accordance with manufacturers instructions and for its intended purpose. Ensure all workers are trained. ▪ No tampering with electrical equipment is allowed (e.g., splicing cords, cutting the grounding prong off plug, etc.). 	L
	5E) Slips/Trips/Falls	5E) Slips/Trips/Falls <ul style="list-style-type: none"> ▪ See Section 3I above. 	L
	5F) Caught In / On / Between	5F) Caught In / On / Between <ul style="list-style-type: none"> ▪ See Section 4A above 	L
	5G) Contact With Electricity	5G) Contact With Electricity <ul style="list-style-type: none"> ▪ All electrical tools and equipment will be equipped with GFCI. ▪ Electrical extension cords will be of the “Hard” or “Extra Hard” service type. ▪ All extension cords shall have a three-blade grounding plug. ▪ Personnel shall not use extension cords with damaged outer covers, exposed inner wires, or splices. ▪ Electrical cords shall not be laid across roads where vehicular traffic may damage the cord without appropriate guarding. ▪ All electrical work will be conducted by a licensed electrician. ▪ All equipment will be locked out and tagged out and rendered in a zero energy state prior to commencing any operation that may exposed workers to electrical, mechanical, hydraulic, etc. hazards. ▪ All utilities will be marked prior to excavation activities. ▪ All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
		powerlines known to be 50 kV or less and a minimum of 35 feet from all others.)	
	5H) Equipment Failure	5H) Equipment Failure <ul style="list-style-type: none"> ▪ All equipment will be inspected before use. If any safety problems are noted, the equipment should be tagged and removed from service until repaired or replaced. 	L
	5I) Fire Protection	5I) Fire Protection <ul style="list-style-type: none"> ▪ Ensure that adequate number and type of fire extinguishers are present at the site. ▪ Inspect fire extinguishers on a monthly basis – document tag on each extinguisher. ▪ All employees who are expected to use fire extinguishers will have received training on an annual basis. ▪ Obey no-smoking policy. ▪ Open fires are prohibited. ▪ Maintain good housekeeping. Keep rubbish and combustibles to a minimum. ▪ Keep flammable liquids in small containers with lids closed or a safety can. ▪ When dispensing flammable liquids, do in well vented area and bond and ground containers. 	L
	5J) Confined Space Entry	5J) Confined Space Entry <ul style="list-style-type: none"> ▪ Confined Space Entry is not included in this project. Contact Chad Barnes before entering any confined space. 	L
6. IDW pickup oversight	6A) Foot Injury	6A) Foot Injury See Section 3L above.	L
	6B) Chemical Hazards	6B) Chemical Hazards <ul style="list-style-type: none"> ▪ See Section 3D above. 	L
	6C) Back Injury - Lifting	6C) Back Injury - Lifting <ul style="list-style-type: none"> ▪ See Section 4K above. 	L
	6D) Slips/Trips/Falls	6D) Slips/Trips/Falls <ul style="list-style-type: none"> ▪ See Section 3I above 	L
7. Environmental Health Considerations	7A) Severe Weather	7A) Severe Weather <ul style="list-style-type: none"> ▪ Watch for clouds and incoming weather. ▪ Monitor weather forecasts. ▪ Train workers about weather and appropriate precautions. ▪ Identify a shelter and a safe place in event of tornado etc. 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC
	7B) Sun	7B) Sun <ul style="list-style-type: none"> ▪ Keep body protected ▪ Wear sunscreen, wide brimmed hat or hardhat. ▪ Schedule work for cool part of day. ▪ Take breaks in the shade. 	L
	7C) Lightning and Thunder	7C) Lightning and Thunder <ul style="list-style-type: none"> ▪ Monitor weather channels to determine if electrical storms are forecasted. ▪ Plan ahead and identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.). ▪ The SHSO shall halt outdoor site operations whenever lightning is visible, outdoor work will not resume until 30 minutes after the last sighting of lightning. 	L
	7D) Wind	7D) Wind <ul style="list-style-type: none"> ▪ Wind chill greatly affects heat loss (see attached Wind Chill Index). ▪ Avoid marking in old, defective timber, especially hardwoods, during periods of high winds due to snag hazards. 	L
	7E) Cold Extremes	7E) Cold Extremes Take precautions to prevent cold stress injuries <ul style="list-style-type: none"> ▪ Cover all exposed skin and be aware of frostbite. While cold air will not freeze the tissues of the lungs, slow down and use a mask or scarf to minimize the effect of cold air on air passages. ▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g., cotton) and a weatherproof slicker. A wool outer garment is recommended. ▪ Take layers off as you heat up; put them on as you cool down. ▪ Wear head protection that provides adequate insulation and protects the ears. ▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia. ▪ Acclimate to the cold climate to minimize discomfort. ▪ Maintain adequate water/fluid intake to avoid dehydration. 	L
	7F) Heat Stress	7F) Heat Stress Take precautions to prevent heat stress <ul style="list-style-type: none"> ▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load. 	L



AHA - Field Work - General

Job Steps	Hazards	Controls	RAC		
		<ul style="list-style-type: none"> ▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action. <p>NOTE: The severity of the effects of a given environmental heat stress is decreased by reducing the work load, increasing the frequency and/or duration of rest periods, and by introducing measures which will protect employees from hot environments.</p> <ul style="list-style-type: none"> ▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). ▪ Allow approximately 2 weeks with progressive degrees of heat exposure and physical exertion for substantial acclimatization. ▪ Acclimatization is necessary regardless of an employee's physical condition (the better one's physical condition, the quicker the acclimatization). Tailor the work schedule to fit the climate, the physical condition of employees, and mission requirements. ▪ A reduction of work load markedly decreases total heat stress. ▪ Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization. ▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement. 			
	7G) Wet Bulb Globe Temperature (WBGT) Index	7G) Wet Bulb Globe Temperature (WBGT) Index <ul style="list-style-type: none"> ▪ Curtail or suspend physical work when conditions are extremely severe (see attached Heat Stress Index). ▪ Compute a Wet Bulb Globe Temperature Index to determine the level of physical activity (take WBGT index measurements in a location that is similar or closely approximates the environment to which employees will be exposed). 	L		
		WBGT THRESHOLD VALUES FOR INSTITUTING PREVENTIVE MEASURES			
		<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">80-90 degrees F</td> <td style="width: 50%;">Fatigue possible with prolonged exposure and physical activity.</td> </tr> </table>	80-90 degrees F	Fatigue possible with prolonged exposure and physical activity.	
80-90 degrees F	Fatigue possible with prolonged exposure and physical activity.				



AHA - Field Work - General

Job Steps	Hazards	Controls		RAC
		90-105 degrees F	Heat exhaustion and heat stroke possible with prolonged exposure and physical activity.	
		105-130 degrees F	Heat exhaustion and heat stroke are likely with prolonged heat exposure and physical activity.	
8. Return to office/home		See AHA - Mobilization/ Demobilization and Site Preparation		L

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	Competent / Qualified Personnel: See HASP Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag defective tools and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use



AHA - Field Work - General



AHA - Field Work - General

Relative Humidity (%) furnished by National Weather Service Gray, ME

Air Temperature °F	Relative Humidity (%)													
	40	45	50	55	60	65	70	75	80	85	90	95	100	
110	136													
108	130	137												
106	124	130	137											
104	119	124	131	137										
102	114	119	124	130	137									
100	109	114	118	124	129	136								
98	105	109	113	117	123	128	134							
96	101	104	108	112	116	121	126	132						
94	97	100	103	106	110	114	119	124	129	135				
92	94	96	99	101	105	108	112	116	121	126	131			
90	91	93	95	97	100	103	106	109	113	117	122	127	132	
88	88	89	91	93	95	98	100	103	106	110	113	117	121	
86	85	87	88	89	91	93	95	97	100	102	105	108	112	
84	83	84	85	86	88	89	90	92	94	96	98	100	103	
82	81	82	83	84	84	85	86	88	89	90	91	93	95	
80	80	80	81	81	82	82	83	84	84	85	86	86	87	

Heat Index
(Apparent
Temperature)

**With Prolonged Exposure
and/or Physical Activity**

Extreme Danger
Heat stroke or sunstroke highly likely
Danger
Sunstroke, muscle cramps, and/or heat exhaustion likely
Extreme Caution
Sunstroke, muscle cramps, and/or heat exhaustion possible
Caution
Fatigue possible



Wind Chill Chart



Temperature (°F)

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

Frostbite Times ■ 30 minutes ■ 10 minutes ■ 5 minutes

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

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

Effective 11/01/01



AHA - Mobilization/Demobilization and Site Preparation

Activity/Work Task:	Mobilization/Demobilization and Site Preparation	Overall Risk Assessment Code (RAC) (Use highest code)	L				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
Notes: (Field Notes, Review Comments, etc.) This AHA involves the following: <ul style="list-style-type: none"> Establishing site specific tasks, hazards, and controls related to site mobilization/demobilization and site preparation This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Negligible	M	L	L	L	L
		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E = Extremely High Risk
Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					H = High Risk		
					M = Moderate Risk		
					L = Low Risk		



AHA - Mobilization/Demobilization and Site Preparation

Job Steps	Hazards	Controls	RAC
1. Prepare For Site Visit	1A) N/A	Prior to leaving for site: <ul style="list-style-type: none"> ▪ Obtain and review HASP prior to site visit, if possible. ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots). ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current. ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment). ▪ If respiratory protection is required/potentially required, ensure that training and fit-testing has occurred within the past year. ▪ Familiarize yourself with route to the site and sample locations. 	NA
	1B) Vehicle Defects	1B) Vehicle defects Inspect company owned/leased vehicle for defects such as: <ul style="list-style-type: none"> ▪ Flat tires/Low air pressure/worn tires. ▪ Windshield wipers worn or torn. ▪ Oil puddles under vehicle. ▪ Headlights, brake lights, turn signals not working. 	L
	1C) Insufficient Emergency Equipment, Unsecured Loads	1C) Insufficient emergency equipment, unsecured loads <ul style="list-style-type: none"> ▪ Ensure vehicle has first aid kit and that all medications are current (if first aid kits are not provided at the site). ▪ Ensure vehicle is equipped with warning flashers and/or flares and that the warning flashers work. ▪ Cell phones are recommended to call for help in the event of an emergency. ▪ All tools and equipment must be properly secured. ▪ Vehicles will not be left unattended and running. ▪ Ensure sufficient gasoline is in the tank. 	L



AHA - Mobilization/Demobilization and Site Preparation

Job Steps	Hazards	Controls	RAC
2. Operating Vehicles	2A) Collisions, Unsafe Driving Conditions	2A) Collisions, unsafe driving conditions <ul style="list-style-type: none"> ▪ Drive Defensively! ▪ Seat belts must be used at all times when operating any vehicle. ▪ Drive at safe speed for road conditions. ▪ Maintain adequate following distance. ▪ Pull over and stop if you have to look at a map. ▪ Try to park so that you don't have to back up to leave. ▪ If backing in required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary. 	L
3. Driving to the Jobsite (Mobilization)	3A) Dusty, Winding, Narrow Roads	3A) Dusty, Winding, Narrow Roads <ul style="list-style-type: none"> ▪ Drive confidently and defensively at all times. ▪ Go slow around corners, occasionally clearing the windshield. 	L
	3B) Rocky Or One-Lane Roads	3B) Rocky Or One-Lane Roads <ul style="list-style-type: none"> ▪ Stay clear of gullies and trenches, drive slowly over rocks. ▪ Yield right-of-way to oncoming vehicles---find a safe place to pull over. 	L
	3C) Stormy Weather, Near Confused Tourists	3C) Stormy Weather, Near Confused Tourists <ul style="list-style-type: none"> ▪ Inquire about conditions before leaving the office. ▪ Be aware of oncoming storms. ▪ Drive to avoid accident situations created by the mistakes of others. 	L
	3D) When Angry Or Irritated	3D) When Angry Or Irritated <ul style="list-style-type: none"> ▪ Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive. 	L
	3E) Turning Around On Narrow Roads	3E) Turning Around On Narrow Roads <ul style="list-style-type: none"> ▪ Safely turn out with as much room as possible. ▪ Know what is ahead and behind the vehicle. ▪ Use a spotter if available. 	L
	3F) Sick Or Medicated	3F) Sick Or Medicated <ul style="list-style-type: none"> ▪ Let others on the crew know you do not feel well. ▪ Let someone else drive. 	L



AHA - Mobilization/Demobilization and Site Preparation

Job Steps	Hazards	Controls	RAC
	3G) On Wet Or Slimy Roads	3G) On Wet Or Slimy Roads <ul style="list-style-type: none"> ▪ Drive slow and safe, wear seatbelts. 	L
	3H) Animals On Road	3H) Animals On Road <ul style="list-style-type: none"> ▪ Drive slowly, watch for other animals nearby. ▪ Be alert for animals darting out of wooded areas 	L
4. Gain Permission to Enter Site	4A) Hostile Landowner, Livestock, Pets	4A) Hostile Landowner, Livestock, Pets <ul style="list-style-type: none"> ▪ Get signed access agreement from private land owners. ▪ Talk to landowner, be courteous and diplomatic. ▪ Ensure all animals have been secured away from work area. 	L
5. Mobilization/ Demobilization of Equipment and Supplies	5A) Struck By Heavy Equipment/ Vehicles	5A) Struck By Heavy Equipment/ Vehicles <ul style="list-style-type: none"> ▪ Be aware of heavy equipment operations. ▪ Keep out of the swing radius of heavy equipment. ▪ Maintain eye contact with equipment operators when in vicinity of working equipment. ▪ Employees shall wear a high visibility vest or T-shirt (reflective vest required if working at night). ▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. 	L
	5B) Struck by Equipment/ Supplies	5B) Struck by Equipment/ Supplies <ul style="list-style-type: none"> ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's workspace, give a verbal warning so they know you are there. 	L
	5C) Overexertion Unloading/ Loading Supplies	5C) Overexertion Unloading/ Loading Supplies <ul style="list-style-type: none"> ▪ Train workers on proper body mechanics, do not bend or twist at the waist while exerting force or lifting. ▪ Tightly secure all loads to the truck bed to avoid load shifting while in transit. 	L
	5D) Overexertion Unloading/ Loading Supplies - Caught in/ on/ between:	5D) Overexertion Unloading/Loading Supplies - Caught in/on/between: <ul style="list-style-type: none"> ▪ Do not place yourself between two vehicles or between a vehicle and a fixed object. 	L



AHA - Mobilization/Demobilization and Site Preparation

Job Steps	Hazards	Controls	RAC
	5E) Slip/Trip/Fall	5E) Slip/Trip/Fall <ul style="list-style-type: none"> ▪ Mark all holes and low spots in workarea with banner tape. Instruct personnel to avoid these areas. ▪ Drivers will maintain 3-point contact when mounting/dismounting vehicles/equipment. ▪ Drivers will check the ground surface before stepping out of vehicles. 	L
	5F) Vehicle Accident	5F) Vehicle Accident <ul style="list-style-type: none"> ▪ Employees should follow company vehicle operation policy ▪ Be aware of all stationary and moving vehicles. 	L
6. Site Preparation	6A) Slip/Trip/Fall	6A) Slip/Trip/Fall <ul style="list-style-type: none"> ▪ Mark all holes and low spots in workarea with banner tape. Instruct personnel to avoid these areas. 	L
7. Installation of soil erosion and sediment controls	7A) Overexertion	7A) Overexertion <ul style="list-style-type: none"> ▪ Workers will be trained in the proper method of placing erosion controls. ▪ Do not bend and twist at the waist while lifting or exerting force. 	L
	7B) Struck by Equipment/ Supplies	7B) Struck by Equipment/ Supplies <ul style="list-style-type: none"> ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's workspace, give a verbal warning so they know you are there. 	L
8. Driving back from the jobsite	7C) See hazards listed under item #3	See safe work practices under item #3	L



AHA - Mobilization/Demobilization and Site Preparation

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
<p>When initially entering the site the following PPE must be available:</p> <ul style="list-style-type: none">• Work Uniform or Work Clothes• Hard Hat• Safety Glasses• Steel Toe Boots• Reflective Vests	<p>Competent / Qualified Personnel: Training requirements:</p>	<p>Daily inspection of motor vehicles documented with daily inspection form.</p>



AHA - Bird Collection

Activity/Work Task:	Bird Collection and Blood Sampling		Overall Risk Assessment Code (RAC) (Use highest code)				L	
Project Location:	Penobscot River		Risk Assessment Code (RAC) Matrix					
AHA Number:	3617237573.06.A02		Severity	Probability				
Date Prepared:	01/30/2023	Date Accepted:		2/14/23	Frequent	Likely	Occasional	Seldom
Prepared by (Name/Title):	Jonathan Bourdeau/Sr Scientist		Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe		Critical	E	H	H	M	L
			Marginal	H	M	M	L	L
Notes: (Field Notes, Review Comments, etc.)	<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific tasks, hazards, and controls pertaining to sampling birds (I.e., Mist netting and blood sampling) <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
			<p>"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p>			RAC Chart		
			<p>"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p>			E = Extremely High Risk		
			<p>Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.</p>			H = High Risk		
						M = Moderate Risk		
						L = Low Risk		

Job Steps	Hazards	Controls	RAC
1. Setting up mist nets	1A) Walking and working in the marsh	<ul style="list-style-type: none"> See the following AHA's: AHA – Working in Muddy Areas AHA – Working Over or Near Water AHA- Field Work General 	L
	1B) Working around marsh vegetation and unstable ground	<ul style="list-style-type: none"> Make sure that all debris and limbs are removed from around sampling area. Watch for uneven surfaces/holes/ditches in marsh area. Use flagging to denote hazardous areas. Use care in raising poles and attaching mist nets to poles. Be aware that non-target animals, insects, and amphibians may be around vegetation. Wear appropriate eye protection while working beneath vegetation. 	L
	1C) Trip/Fall Hazards from guy lines	<ul style="list-style-type: none"> Be sure that guy lines are routed away from foot traffic. Use flagging to mark guy lines. 	L



AHA - Bird Collection

Job Steps	Hazards	Controls	RAC
	1D) Pinch hazards	<ul style="list-style-type: none"> ▪ Leather gloves should be worn while assembling mist net poles to protect hands from pinch points, driving in stakes, and other physical hazards. ▪ Pre-assemble mist net poles on the ground when possible to avoid pinch points that exist when assembling vertically. 	L
2. Working at dawn/dusk conditions	2) Low light conditions	<ul style="list-style-type: none"> ▪ Provide appropriate lighting in all travel areas. ▪ Wear headlamps to allow for hands-free activity. ▪ Mark any potential obstructions to walking with reflective rope or flagging. 	L
3. Collecting birds	3A) Slips/Trips/Falls	<ul style="list-style-type: none"> ▪ See general fieldwork tab for general information on hazards when walking on a site. ▪ Avoid uneven terrain when walking to/from mist nets. ▪ Wear eye protection and appropriate gloves to prevent injury. 	L
	3B) Hazards from birds	<ul style="list-style-type: none"> ▪ Do not touch birds with bare hands. Use appropriate gloves. ▪ If birds are entangled and mist nets must be cut to remove them, use scissors. ▪ Ensure proper training for handling birds in mist nets and while collecting data to minimize stress to birds and minimize potential injuries. ▪ Hold birds using approved techniques for avian sampling. Be aware that birds can bite and peck or scratch with feet. ▪ Transfer bird to storage bag upon removal from mist net. Do not walk while holding birds in hand. 	L
4. Sampling birds	4) Punctures	<ul style="list-style-type: none"> ▪ Always wear appropriate PPE (suitable gloves and eye protection) for use with sharps (e.g. needles.) ▪ Avoid contact with bird blood, waste, and other avian fluids. ▪ Deposit sharps into approved medical waste container. ▪ Use appropriate cleaning technique after sampling to remove any avian materials from skin. ▪ Observe proper decontamination procedures for cleaning equipment, boots, and clothing. 	L
Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)		Inspection Requirements
PPE (gloves (HASP), long sleeved light colored shirt, long light colored pants, and/or waders).	Competent / Qualified Personnel: See HASP - Name – Position/Employer Training requirements: Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting		Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect all PPE prior to use



AHA – Black Duck Collection

Activity/Work Task:	Black Duck Collection	Overall Risk Assessment Code (RAC) (Use highest code)	M					
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix						
AHA Number:	3617237573.06.A02	Severity	Probability					
Date Prepared:	01/31/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely	
Prepared by (Name/Title):	Jonathan Bourdeau/Sr Scientist		Catastrophic	E	E	H	H	M
			Critical	E	H	H	M	L
	Bradley Wolfe		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L	
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)						
This AHA involves the following:		“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart		
<ul style="list-style-type: none"> Establishing site specific tasks, hazards and controls related to collection of ducks. 		“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk		
This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk		
						M = Moderate Risk		
						L = Low Risk		

Job Steps	Hazards	Controls	RAC
1. Setting up traps	1A) Walking and working in the field	<ul style="list-style-type: none"> See the following AHA's: AHA – Working in Muddy Areas AHA – Working Over or Near Water AHA- Field Work General 	L
	1B) Working around vegetation and unstable ground	<ul style="list-style-type: none"> Make sure that all debris and limbs are removed from around sampling area. Watch for uneven surfaces/holes in marsh area. Use flagging to denote hazardous areas. Be aware that non-target animals, insects, and snakes may be around trees. Wear appropriate eye protection while working beneath vegetation. 	L
	1C) Trip/Fall Hazards	<ul style="list-style-type: none"> Be sure that traps are located away from foot traffic. 	L
	1D) Pinch hazards	<ul style="list-style-type: none"> Leather gloves should be worn while assembling traps to protect hands from pinch points, driving in stakes, and other physical hazards. Make sure that safety catches on traps are in place, or otherwise make sure that traps are disarmed, while handling or moving traps. 	L



AHA – Black Duck Collection

Job Steps	Hazards	Controls	RAC
2. Working at dawn/dusk and night conditions	2) Low light conditions	<ul style="list-style-type: none"> ▪ Provide appropriate lighting in all travel areas. ▪ Wear headlamps to allow for hands-free activity. ▪ Mark any potential obstructions to walking with reflective rope or flagging. 	L
3. Collecting ducks	3A) Slips/Trips/Falls	<ul style="list-style-type: none"> ▪ See general fieldwork tab for general information on hazards when walking on a site. ▪ Avoid uneven terrain when walking to/from traps. ▪ Wear eye protection and appropriate gloves to prevent injury. 	L
	3B) Hazards from ducks	<ul style="list-style-type: none"> ▪ Do not touch ducks with bare hands. Use appropriate gloves. ▪ Ensure proper training for handling ducks in traps and while collecting data to minimize stress to ducks and minimize potential injuries. ▪ Hold ducks using approved techniques for avian sampling. Be aware that birds can bite and peck or scratch with feet. 	L
4. Sampling ducks	4A) Punctures	<ul style="list-style-type: none"> ▪ Always wear appropriate PPE (suitable gloves and eye protection) for use with sharps (e.g. needles). ▪ Avoid contact with duck blood, waste, and other avian fluids. ▪ If duck breast samples are to be collected, wear appropriate cut-resistant gloves and use safety knife. ▪ Deposit sharps into approved medical waste container. ▪ Use appropriate cleaning technique after sampling to remove any avian materials from skin. ▪ Observe proper decontamination procedures for cleaning equipment, boots, traps, and clothing. 	L
	4B) Chemical use	<ul style="list-style-type: none"> ▪ If isoflurane is used to incapacitate/euthanize ducks, review SDS, first aid measures, and fire fighting measures, and spill/leak procedures for isoflurane prior to use. ▪ Wear appropriate PPE for handling chemicals per the SDS. ▪ Isoflurane is an inhalation hazard. Use only in open, well-ventilated areas and do not inhale the fumes. 	M
Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)		Inspection Requirements
PPE (Safety glasses, gloves (HASP), safety boots, long sleeved light colored shirt, long light colored pants and/or waders). Additional PPE may be required for isoflurane use.	Competent / Qualified Personnel: See HASP - Name – Position/Employer Training requirements: Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting		Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect all PPE prior to use



AHA – Fish and Shellfish Collection

Activity/Work Task:	Fish and Shellfish Collection	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
AHA Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Jonathan Bourdeau/Sr Scientist	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific tasks, hazards, and controls for sampling fish from a boat. <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
				L = Low Risk			

Job Steps	Hazards	Controls	RAC
1. Boating	1) Refer to Boating AHA	<ul style="list-style-type: none"> Refer to AHA Boat Surface Water and Sediment Sampling 	M
2. Lifting heavy objects (sampling equipment, coolers, etc.)	2A) Muscle strain	<ul style="list-style-type: none"> Use proper ergonomics when lifting heavy objects; use appropriate mechanical assistance and tools when possible. 	L
	2B) Broken glass, cuts to hands	<ul style="list-style-type: none"> Wear proper level of PPE (gloves, safety glasses), use caution while transporting equipment. 	L
3. Fish sampling	3A) Tides/reefs	<ul style="list-style-type: none"> Confirm tides and water elevations are suitable for sampling. Be alert for obstructions. Use spotter when maneuvering boat. 	L
	3B) Dangerous animals	<ul style="list-style-type: none"> Wear site/activity appropriate PPE when handling fish/jellyfish. 	L
	3C) Heat exhaustion and sun exposure	<ul style="list-style-type: none"> Avoid dehydration, excessive sun and heat exposure, wear hats, safety glasses with UV protection and sunscreen. Consume sufficient amount of liquids. (1 cup/15 minutes if >80°F). Refer to general fieldwork AHA for additional information. 	L



AHA – Fish and Shellfish Collection

Job Steps	Hazards	Controls	RAC
	3D) Hypothermia/cold water exposure	<ul style="list-style-type: none"> ▪ Wear PFD for sampling in water. Refer to general fieldwork AHA for additional information. 	L
	3E) Stinging and biting insects and spiders	<ul style="list-style-type: none"> ▪ Be aware of biting/stinging insects during fieldwork. 	L
	3F) Slip/trip hazards	<ul style="list-style-type: none"> ▪ BE ALERT; position sampling equipment in an orderly and safe fashion. 	L
	3G) Muscle and soft tissue injury. Pinching fingers, mashing toes, cutting.	<ul style="list-style-type: none"> ▪ Use proper ergonomics when positioning, lifting, and using nets, traps, and anchors. Use caution and wear work gloves when lifting nets and anchors and when filleting fish. ▪ Be aware that some shellfish can pinch with claws. 	L
4. Icing (re-icing) sample coolers, transporting coolers and other equipment back to laboratory	4A) Slip hazard	<ul style="list-style-type: none"> ▪ Use due care when draining water from coolers. 	L
	4B) Muscle and back injury	<ul style="list-style-type: none"> ▪ Use proper ergonomics when lifting and moving coolers and other equipment. Ask for help if > 50lbs. 	L
	4C) Dry Ice	<ul style="list-style-type: none"> ▪ Use Caution when handling and transporting Dry Ice ▪ Refer to AHA – Dry Ice 	L
5. Decontamination of sampling equipment	5) Chemical Exposure	<ul style="list-style-type: none"> ▪ Wear appropriate level of PPE (gloves, safety glasses) and use caution while decontaminating sampling equipment. Refer to the appropriate SDS for additional information. 	L
Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)		Inspection Requirements
PPE (Safety glasses, gloves (HASP), safety boots, long sleeved light colored shirt, long light colored pants and/or waders). PFD to be worn as appropriate.	Competent / Qualified Personnel: See HASP - Name – Position/Employer Training requirements: Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting		Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect all PPE prior to use



AHA- MANAGING CONTAMINATED WASTE

Activity/Work Task:	Managing Contaminated Waste, Chemical and Radiological			Overall Risk Assessment Code (RAC) (Use highest code)					M	
Project Location:	Penobscot River			Risk Assessment Code (RAC) Matrix						
Contract Number:	3617237573			Severity	Probability					
Date Prepared:	October 16, 2015	Latest Revision:	2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely	
Prepared by (Name/Title):	Chris Miele, CIH, CSP, REHS Safety and Health Manager			Catastrophic	E	E	H	H	M	
Reviewed by (Name/Title):	Bradley Wolfe			Critical	E	H	H	M	L	
				Marginal	H	M	M	L	L	
Notes: <i>This is a DRAFT AHA to be prepared with input from AMEC subcontractors prior to initiating any field activities. The revised DRAFT AHAs will be provided to the CM, RPM ROICC and/or CO/COR for acceptance prior to beginning any work.</i> This AHA is applicable to handling and managing any contaminated wastes, including chemical and radiologically impacted wastes present in Parcel E. This AHA should be in coordination with the Radiological Work Permit applicable to the specific work area. This AHA is not an exhaustive summary of all hazards associated with the Site. This AHA is expected to change as conditions change onsite.				Step 1: Review each “ Hazard ” with identified safety “ Controls ” and determine RAC (See above)						
				“ Probability ” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.					RAC Chart	
				“ Severity ” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible					E = Extremely High Risk	
				Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “ Hazard ” on AHA. Annotate the overall highest RAC at the top of AHA.					H = High Risk	
					M = Moderate Risk					
					L = Low Risk					

JOB STEPS	HAZARDS	CONTROLS	RAC
1. Driving to and from Site	1. Traffic accident, load dumping, struck by vehicle or materials	<ul style="list-style-type: none"> Follow recommendations and requirements in Traffic Plan. Establish in and out-bound lanes for haul trucks to arrive and exit main entrance using signs, flags, barricade, etc. Amec Foster Wheelr main gate project engineer will wear traffic vest and make eye contact with truck driver; signaling to stop. Driver will remain inside vehicle and slowly drive to main gate entrance and meet with Amec Foster Wheeler project engineer. Truck driver to review and accept Amec Foster Wheeler 	M

AHA- MANAGING CONTAMINATED WASTE

JOB STEPS	HAZARDS	CONTROLS	RAC
		<p>safety briefing at main entrance gate.</p> <ul style="list-style-type: none"> • Obey all traffic rules, driving directions to off-loading area and speed limits as posted and included in safety briefing. • Inspect trucks with Amec Foster Wheeler personnel upon arrival at main entrance for load shifts, leaks, tire pressure, etc. • Cell phones must not be used during operation of any vehicle or equipment. • Communicate with personnel in offloading area of site to ensure they are aware that a truck has arrived for offloading. 	
	2. Vehicle Spills, Leaks, etc.	<ul style="list-style-type: none"> • Follow Best Management Practices and procedures as outlined in Spill Contingency Plan in event of a spill or other discharge. • Prior to leaving project site, trucks will be inspected for loose soil / debris – all loose impacted soil on tires will be checked and removed. 	M
	3. Slips, trips, and falls	<ul style="list-style-type: none"> • Use hand & foot holds and steps. Keep steps clean. • Ensure that soles of boots have good traction. • Provide adequate illumination or begin work with sufficient ambient light is available. 	L
2. Delivery and Unload of Equipment (Includes heavy equipment such as excavators and loaders, waste containers, etc.)	1. Struck by falling materials/equipment due to shifting during transport	<ul style="list-style-type: none"> • Ensure that driver has current commercial driver's license. • Perform pre-positioning familiarization of area for uneven or soft ground, blind spots, tight quarters, etc. • Inspect load prior to driving and ensure bundles were installed in accordance with agreed upon method for easy removal from flatbed. • Ensure trucks & trailers are chocked and parking brakes are set prior to removal. • Establish work zone. • Inspect load for shifting prior to removing tie-downs. • Alert workers in area that tie-downs are being removed, then remove tie-downs carefully wearing leather gloves and eye 	M

AHA- MANAGING CONTAMINATED WASTE

JOB STEPS	HAZARDS	CONTROLS	RAC
		protection. <ul style="list-style-type: none"> • Don't throw or toss cables, ropes, straps, bands over trucks, cargo beds, without ensuring spotter or guards are in place. • Ensure that no personnel are behind load / flatbed prior to removal of bundles. • Remove bundles carefully, one-by-one in accordance with approved method and reviewed by Forklift operator considering site conditions at time of removal. • Do not attempt to lift or move stuck objects when equipment is operating. • Never stand by or pass under an elevated load. • Stage removed materials within pre-approved areas 	
	2. Crush & pinch points, cuts, lacerations, abrasions, eye injury from tie-down removal	<ul style="list-style-type: none"> • Wear proper PPE: safety boots, eye protection, abrasive-resistant gloves, safety vest and hard hat. • Inspect cables for burrs, galls, and deforming prior to handling. • Pawl, ratchets, dogs, shall be loosened slowly. • Bands shall be handled and removed with caution. • Cut band flush with bundle supports or fold them out of harm's way. 	L
	3. Injurious contact with equipment	<ul style="list-style-type: none"> • Ensure operator is properly training to operate the piece of equipment. • Excavator shall be safety inspected before each shift. • Operators and workers shall be familiar with proposed routes. • Ensure a copy of the equipment manual is available and know the capacity and capabilities of the equipment. • Make eye contact with operator and do not cross in front of or behind equipment unless operator is aware. • Ensure a clear path of travel to laydown area. • Wear appropriate PPE including high visibility clothing. 	M

AHA- MANAGING CONTAMINATED WASTE

JOB STEPS	HAZARDS	CONTROLS	RAC
	4. Back strains and/or hand injury from manual handling and placement of equipment and/or materials	<ul style="list-style-type: none"> • Do not lift more than 50lbs at one time. • Ask for assistance to lift any materials greater than 50lbs. or loads that are awkwardly shaped or positioned. • Do not bend over to pick up materials. • Use proper ergonomic posture to pick up materials, lifting with legs with head up and knees bent. • Do not twist your body while lifting. • Wear leather gloves. • Be aware of potential pinch points and avoid placing hands there. • Use dolly if available or other non-manual means of transporting dunnage from trucks to laydown location. • Ensure a clear path of travel, free from holes, rocks, debris, etc. 	M
3. Handling and managing waste piles and/or containers.	1. Equipment tip-over, struck-by, noise, nuisance dusts,	<ul style="list-style-type: none"> • Operator to familiarize themselves with terrain prior to entering work area. • Do not operate equipment on slopes that exceed manufacturer's recommendation for safe operation. • Equipment is to have and maintain all guards, ensure they are in place prior to operation. • Wear PPE when operating and working within Exclusion Zone. • Follow all signals, never walk behind a piece of operating equipment without signaling the operator and requesting permission. 	M
	2. Exposure to COCs or other unknown contaminants	<ul style="list-style-type: none"> • Wear correct PPE, (Tyvek coveralls, gloves, overboots, eye protection, hard hat) to avoid any accidental contact with contaminated materials. See SSHP for further PPE requirements • Wear respiratory protection until a negative exposure assessment is completed for the assigned work activity. • Do not eat or smoke within exclusion zone work areas 	M

AHA- MANAGING CONTAMINATED WASTE

JOB STEPS	HAZARDS	CONTROLS	RAC
		and/or waste accumulation areas. <ul style="list-style-type: none"> • Avoid rubbing eyes with gloved hands while in contaminated work areas. • Follow all assigned personnel decontamination procedures as outlined in SSHP and wash hands/face prior to taking break or eating. • Maintain good housekeeping, keeping equipment, PPE, and area clean. • Utilize secondary containment whenever possible to prevent high spill impact. • Limit opening of drums and containers to essential personnel • Perform air monitoring when opening any drums or containers, and comply to all waste-characterization sampling protocols. • See AHA for working around COCs for further information 	
	3. Exposure to radiological contamination within Parcel E	<ul style="list-style-type: none"> • Follow all applicable safety and monitoring specifications within the base-Wide Radiological Work Plan Revision I. • Comply with all dosimetry and monitoring plans. • Utilize the correct PPE strategy and decontamination plans as specified in the SSHP. • See AHA for working within Radiological Control Areas for further information 	

EQUIPMENT TO BE USED	COMPETENT PERSONNEL	INSPECTION REQUIREMENTS
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AHA- MANAGING CONTAMINATED WASTE

EQUIPMENT TO BE USED	COMPETENT PERSONNEL	INSPECTION REQUIREMENTS
<p>PPE (work shirt and full-length cotton pants or coveralls, Tyvek coveralls, gloves, safety-toe boots/shoes and over-boots, chemically resistant gloves, APR, high-visibility safety vest, safety glasses, hard hat, face shield (as applicable), hearing protection)</p> <p>Hand Tools (hammer, snips, pliers, razor knife, 5-in-one, screwdrivers)</p> <p>Equipment: TBD</p>	<p>Construction Manager: TBD</p> <p>SSHO: TBD</p> <p>Qualified Equipment Operator: TBD</p> <p>Radiation Safety Officer:</p> <p>Rad Technician:</p>	<p>Inspect forklift/equipment daily in accordance with the checklist.</p> <p>All inspections will be supervised or performed by qualified or competent persons.</p> <p>Inspect all PPE prior to use.</p> <p>Vehicle inspection checklist.</p>

TRAINING REQUIREMENTS	PROHIBITED ITEMS
<p>APP/SSHP indoctrination</p> <p>Trucker safety briefing</p> <p>AHA review and toolbox update</p> <p>Qualified Forklift Operator training</p> <p>Radiation Safety Training</p> <p>HAZWOPER Training (as applicable)</p>	<p>Certain items are prohibited at all times when working in or around HPNS. Prohibited items include: Personal devices such as radios, music players, headphones. Firearms, weapons, drugs. Jewelry, any other personal items or tool not directly involved or required for the task outlined.</p>



AHA - Soil Sampling by Slide Hammer Activity Description

Activity/Work Task:	Soil Sampling by Slide Hammer	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Johanna DeCotis, Staff Engineer	Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title):	Bradley wolfe	Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific tasks, hazards and controls for soil sampling using a slide hammer. <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
						M = Moderate Risk	
						L = Low Risk	
Job Steps	Hazards	Controls					RAC
1. Prepare for sampling event	1A) Chemical exposure	1A) Chemical Exposure <ul style="list-style-type: none"> See HASP for specific chemical exposure limits. Contact project manager before respirators will be donned. 					L
2. Carrying equipment to site location	2A) Back or muscle strain	2A) Back or muscle strain <ul style="list-style-type: none"> Use proper lifting techniques when lifting pumps or generators Use mechanical aids if available Use 2 person lift for heavy items Observe 50 lb limit for one person to lift 					L
3. Calibrate monitoring equipment	1A) Exposure to calibration gases	3A) Exposure to calibration gases <ul style="list-style-type: none"> Review equipment manuals Calibrate in a clean, well ventilated area 					L



AHA - Soil Sampling by Slide Hammer Activity Description

4. Preparing sampling location	4A) Contact with poisonous plants or the oil from poisonous plants	4A) See AHA – Poisonous Plants	L
	4B) Contact with biting insects (i.e., spiders, bees, etc.)	4B) See AHA – Insect Stings and Bites	L
	4C) Exposure to hazardous Inhalation and contact with hazardous substances (VOCs, contaminated soil).	4A) Exposure to hazardous substances <ul style="list-style-type: none"> ▪ Wear N-95 dust mask to prevent inhalation of dried sediment. ▪ Review hazardous properties of site contaminants with workers before sampling operations begin ▪ Monitor breathing zone air in accordance with HASP to determine levels of contaminants present. ▪ When decontaminating equipment wear additional eye/face protection over the safety glasses such as a face shield. 	L
	4D) Back strain due to lifting or moving equipment to sampling locations	4B) Back strain <ul style="list-style-type: none"> ▪ Use mechanical aids when possible, if mechanical aids are not available, use two person lifts for heavy items. ▪ Use proper lifting techniques 	L
	4E) Foot injuries from dropped equipment	4C) Foot Injuries <ul style="list-style-type: none"> ▪ Be aware when moving objects, ensure you have a good grip when lifting and carrying objects. ▪ Do not carry more than you can handle safely ▪ Wear steel toed boots 	L
5. Collecting soil samples	5A) Using hand auger and slide hammer	5A) Back strain <ul style="list-style-type: none"> ▪ Use proper form while using hand auger, use arms to turn auger, not back ▪ Use proper lifting techniques ▪ Do not lift with hands. Wrap arms beneath handle if stuck and lift with legs. Facial injuries have resulted from lifting stuck augers with hands. ▪ Be sure of hand placement with slide hammer. Keep fingers away from pinch points. 	L
	5B) Encountering underground or overhead utilities	5B) Have all utilities located. Site Supervisor verify by contacting locator by phone. Perform overhead power line survey and communicate findings to all.	M
	5C) Exposure to contaminants	5C) Exposure to Contaminants <ul style="list-style-type: none"> ▪ Stand up wind when sampling ▪ Monitor breathing zone with appropriate monitoring equipment (see HASP) <li style="background-color: #FFFF00;">▪ Wear chemical resistant PPE as identified in HASP ▪ See section 4C) under Safe Practices above 	L



AHA - Soil Sampling by Slide Hammer Activity Description

	5D) Exposure to preservatives	5D) Exposure to preservatives <ul style="list-style-type: none"> ▪ Work in a well ventilated area, upwind of samples ▪ Wear chemical resistant PPE as identified in HASP ▪ Review SDS 	L
	5E) Slips/trips/falls	5E) Slips/trips/falls <ul style="list-style-type: none"> ▪ Ground can become wet/muddy ▪ Wear lug sole boots, chest waders or kneehigh rubber boots. 	L
	5F) Lifting Injury	5F) Lifting injury <ul style="list-style-type: none"> ▪ Use proper lifting techniques when carrying quantities of samples ▪ Use proper ergonomics when hand digging for samples 	L
	5G) Eye injury	5G) Eye Injury <ul style="list-style-type: none"> ▪ Wear eye protection when using picks or similar devices to loosen soil 	L
	5H) Security Issues	6A) Security Issues <ul style="list-style-type: none"> ▪ Ensure gate is secured while sampling ▪ Be diligent about surroundings 	L
	5I) Contamination	6B) Contamination <ul style="list-style-type: none"> ▪ Use appropriate PPE for the contaminants of concern (see HASP). ▪ Minimize sample contact ▪ Label sample in accordance with procedures ▪ Monitor breathing zone levels. 	L
Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)		Inspection Requirements
PPE (1/2 face respirator with P-100 and VOC cartridges, N-95 dust mask, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection) Nitrile gloves over Kevlar Slide hammer Hand Auger	Competent / Qualified Personnel: Name – Position/Employer Training requirements: Respiratory Protection Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting PPE Hand Tools HAZCOM		Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

APPENDIX C

Decontamination Procedures & Equipment Per Task(s)

APPENDIX C1

Decontamination Procedures & Equipment Decontamination Solution: Formula 409™ and Water

Level D	
Station 1: Equipment drop	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross-contamination. During hot-weather operations, a cool-down station may be set up within this area.
Station 2: Outer boots, and gloves wash and rinse (if worn)	Scrub outer boots and outer gloves with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3: Outer boot and glove removal (if worn)	Remove outer boots and gloves. Deposit in plastic bag.
Station 4: Inner glove removal	Remove inner gloves and place in plastic bag.
Station 5: Field wash	Wash hands and face thoroughly. Shower as soon as possible.
Level D (Dry Decontamination) *	
Station 1: Equipment Drop	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross-contamination. During hot-weather operations, a cool-down station may be set up within this area.
Station 2: Glove removal	Remove gloves and place in plastic bag.
Station 3: Field wash	Wash hands and face thoroughly. Shower as soon as possible.

* For use on minimally contaminated sites where the only chemical resistant PPE are chemical resistant gloves.

APPENDIX C2

Decontamination Procedures & Equipment Decontamination Solution: Formula 409™ and Water

Modified Level D & Level C	
Station 1: Equipment drop	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross-contamination. During hot-weather operations, a cool-down station may be set up within this area.
Station 2: Outer garment, boots, and gloves wash and rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3: Outer boot and glove removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4: Canister or mask (Level C only) Change	If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5: Boot, gloves, and outer garment removal	Remove boots, chemical-resistant splash suit, and inner gloves and deposit them in separate containers lined with plastic.
Station 6: Facepiece removal (Level C only)	Remove facepiece. Avoid touching face with fingers. Deposit facepiece on plastic sheet.
Station 7: Field wash	Wash hands and face thoroughly. Shower as soon as possible.

APPENDIX C3

Decontamination Procedures & Equipment Decontamination Solution: Formula 409™ and Water

Level B	
Station 1: Equipment drop	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross-contamination. During hot-weather operations, a cool-down station may be set up within this area.
Station 2: Outer garment, boots, and gloves wash and rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.
Station 3: Outer boot and glove removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4: Field wash	Wash hands and face thoroughly. Shower as soon as possible.

APPENDIX D

Incident Analysis Forms

	Scale	Catastrophic -5-	Major -4-	Moderate -3-	Minor -2-	Insignificant -1-
Health, Safety & Environment	Impact on Health	<ul style="list-style-type: none"> Death of member of the public Multiple worker deaths 	<ul style="list-style-type: none"> Single worker death Life-shortening health effect Health effect causing significant irreversible disability/illness 	<ul style="list-style-type: none"> Irreversible health effect Serious illness from which there is full recovery Illness resulting in three days away from work 	<ul style="list-style-type: none"> Reversible health effect Illness resulting in one day away from work Restricted work Medical treatment beyond first aid 	<ul style="list-style-type: none"> Mild health effect for short period, with no lost time
	Impact on Safety	<ul style="list-style-type: none"> Death of member of the public Multiple worker deaths 	<ul style="list-style-type: none"> Single worker death Multiple serious injuries Significant irreversible disability 	<ul style="list-style-type: none"> Single serious injury Worker injury resulting in three days away from work 	<ul style="list-style-type: none"> Minor injury Injuries resulting in one day away from work Restricted work Medical treatment beyond first aid 	<ul style="list-style-type: none"> First aid case, with no lost time Negligible safety impact
	Impact on Environment	<ul style="list-style-type: none"> Extreme environmental incident, resulting in irreversible or long term or widespread harm 	<ul style="list-style-type: none"> Major environmental incident resulting in significant impact requiring management by external authorities and/or high level of resources for response and remedy Environmental incident managed by external authorities 	<ul style="list-style-type: none"> Moderate environmental impact requiring management response to aid recovery Reportable to authorities 	<ul style="list-style-type: none"> Local impact requiring management response, but from which there is natural recovery 	<ul style="list-style-type: none"> Minimal environmental impact

Check one

- Initial Report:
 Update:
 Final Report:

INCIDENT ANALYSIS REPORT (IAR)

WSP E&I

Confidential – Privileged

Early Case Management Contacts:

Canada – **WorkCare** (888) 449-7787
 USA – **TriageNow** (877) 311-0038

Severity Classification: Select One
 (See chart page 3)

Within 24 hours enter information into iSMS or mobile app iSMS.

Install mobile app using QR code. App Info: WSP USA Inc.

Launch mobile app using iSMS URL: zeroharm.onepb.net



Use the IAR to document findings from the investigation, causal factors, root causes and corrective actions.

Check here if incident was entered into iSMS. iSMS Incident #

Note: All incidents must be entered into iSMS. If unable to enter (e.g., lack of internet access or cell service), complete [iSMS Entry Information Form](#) and provide copy to supervisor / HSE Coordinator to enter incident in [iSMS](#).

Section 1 – General Information

Incident Date: _____ Incident Assigned to: WSP employee Subcontractor: Other (Explain): _____

Injured / Involved Person (IP) Name: _____ Employee Info: Region: Select One / Home office: _____ State / Province: _____

Age Profile: Select One Occupation: Select One Length of time in role (or date of hire): _____ Days Since Last Day Off: _____

Business Line: Select One Dept. Number: _____

Employee Line Supervisor: _____ Project Manager: _____ Field Supervisor: _____

Project Name: _____ Project Number: _____ Client: _____

Location: Select One Is this a Company controlled work site: Yes No Location description: _____

Short Description (who (without names), what, where, and clarify compliance with basic controls, if known. Indicate if no injuries. 150 characters.): _____

First Alert? (HiPo, Recordable (medical/restricted/lost time) injuries): Yes No Email [template](#) (link) HiPo Alert [template](#)

Section 2 – Event Type - Process (mark at least ONE BOLD TYPE and all that apply)

- Near Miss - If near miss, select type.** If an observation of unsafe act / condition, complete [iSMS Observation](#)
- Injury / Illness Incident** If Injury / illness Select One Hospitalization Serious / Critical Injury?
- Asset Damage** If Damage: Select One 3rd Party? If underground utility, complete [GDR](#)
- Vehicle** If Vehicle: Select One 3rd Party? If vehicle, complete [VIR](#)
- Environmental** **Agency Inspection** **Security**

If **injury / illness**: If sprain /strain, complete [MSD Injury Form](#).

If incident involves exposure to blood or other bodily fluids:

Bleeding? Yes – If yes Select One If 'First Aider', provide name:

Did 'First Aider' have contact with blood / infectious material? Select One

If Yes, indicate Exposure Control Precautions taken by First Aider (Check all that apply):

- None (If none, contact WorkCare) Gloves Previous HBV Immunization
- Immediate Personal Hygiene One-way CPR valve Recommended for HBV Immunization
- Eye protection Face mask Other (describe): _____

Blood contaminated work area / surface? Yes – If yes, describe cleanup/disposal:

- A. If **environmental**: Environmental incident category: Pollution Event Non-conformance
 Was Regulatory Action Taken: Yes No Describe:
- B. If **security**: Security Incident Type: Physical Criminal Intellectual
 If Physical: Select One If Criminal: Select One If Intellectual: Select One
- C. If an **inspection by a regulatory agency**, what agency, who were the inspectors, inspector contact information?

Section 3 - Incident Analysis

- A. Explain in **detail** what happened (Expand on Short Description without names, use Injured Person (IP)):
- B. Explain in **detail** what object or substance directly harmed the employee:
- C. Was a tool or equipment involved? Yes No What was it: Last Inspection Date: Defects:
- D. List the names of all persons involved in the incident, and employer information:
- E. List the names of any witnesses, their employer, and a local/company telephone number or address:
- F. Was a Health and Safety Plan (HASP) or Activity Hazard Analysis (AHA) completed for the work being performed? Yes No
 If "yes", Who prepared the document?
- G. Who and when was the last manager (Project, Operations, HSSE, etc.) at the site of the incident?
- H. When and what safety training **directly related** to the incident has the person(s) involved had?
- I. List attached documentation (**Witness statements**, HASP acknowledgement forms, kickoff/daily/weekly meetings, inspections, photographs) Complete a **Physical Evidence Log**, as required:

Section 4 - Incident Investigation Results and Corrective Actions (Why Analysis, HFACS)

- A. Causal Factors: Supervisor/PM identify the Immediate Cause/s and describe the Critical Factor/s that preceded the event.
- B. Root Causes: Supervisor/PM identify the Root Cause/s and describe the factors that if fixed should prevent reoccurrence.

Causal Factors (Acts or Omissions / Conditions)		
	Immediate cause	description of critical factors
1		
2		
3		
Root Cause(s) Analysis - The below items represent major root cause categories which have been determined to be Less Than Adequate (LTA). A more detailed determination of the root cause will be facilitated, if needed, by the applicable HSSE Manager / Incident Review Panel.		
	root cause	description
1		
2		
3		
Life Saving Actions - Select all that apply or <input type="checkbox"/> None		
<input type="checkbox"/> Plant / People Interaction (Work around HME)	<input type="checkbox"/> Hazardous Substances / Atmospheres	<input type="checkbox"/> Working on or near Water
<input type="checkbox"/> Driving	<input type="checkbox"/> Working at Heights	<input type="checkbox"/> Ground Stability
<input type="checkbox"/> Suspended Loads	<input type="checkbox"/> Energy Sources	<input type="checkbox"/> Lone or Remote Work

Corrective Actions – Identify corrective and preventative actions and recommendations to prevent a re-occurrence. Communicate lessons learned using [template](#), modify for event type as required.

Root Cause # / Type	Corrective Actions Taken (Attach additional pages as needed to completely address this section)	Responsible Person	Proposed Completion Date	Closed on Date	Verified by and Date Verified

Section 5 - Notifications, Certification & Approvals

Check the appropriate boxes indicating the applicable reports have been made to the following applicable organizations:

Auto Insurance Carrier was called **HSE Manager Notified**

WorkCare / TriageNow was called **Post-incident Drug/Alcohol Testing Performed**

Incident Report prepared by:

Employee (s):	Date:	HSE Coordinator / Advisor:	Date:
Supervisor:	Date:	HSE Manager:	Date:
Operations Manager:	Date:	HSE Director (if applicable):	Date:

Note: Addition of name/date by the individual represents digital signature when accompanied by an email.

Severity Classification

HiPo = Realistic Potential to be a serious incident or fatality (Level 4 or 5 consequence).

Standard 103 - Reporting Requirements

Scale	Catastrophic -5-	Major -4-	Moderate -3-	Minor -2-	Insignificant -1-	
Health, Safety & Environment	Impact on Health	<ul style="list-style-type: none"> Death of member of the public Multiple worker deaths 	<ul style="list-style-type: none"> Single worker death Life-shortening health effect Health effect causing significant irreversible disability/illness 	<ul style="list-style-type: none"> Irreversible health effect Serious illness from which there is full recovery Illness resulting in three days away from work 	<ul style="list-style-type: none"> Reversible health effect Illness resulting in one day away from work Restricted work Medical treatment beyond first aid 	<ul style="list-style-type: none"> Mild health effect for short period, with no lost time
	Impact on Safety	<ul style="list-style-type: none"> Death of member of the public Multiple worker deaths 	<ul style="list-style-type: none"> Single worker death Multiple serious injuries Significant irreversible disability 	<ul style="list-style-type: none"> Single serious injury Worker injury resulting in three days away from work 	<ul style="list-style-type: none"> Minor injury Injuries resulting in one day away from work Restricted work Medical treatment beyond first aid 	<ul style="list-style-type: none"> First aid case, with no lost time Negligible safety impact
	Impact on Environment	<ul style="list-style-type: none"> Extreme environmental incident, resulting in irreversible or long term or widespread harm 	<ul style="list-style-type: none"> Major environmental incident resulting in significant impact requiring management by external authorities and/or high level of resources for response and remedy Environmental incident managed by external authorities 	<ul style="list-style-type: none"> Moderate environmental impact requiring management response to aid recovery Reportable to authorities 	<ul style="list-style-type: none"> Local impact requiring management response, but from which there is natural recovery 	<ul style="list-style-type: none"> Minimal environmental impact

iSMS ENTRY INFORMATION – INCIDENT / NEAR MISS



INSTRUCTIONS: Only complete this form if you are unable to enter incident data directly into iSMS (e.g., due to lack of internet or some other reason). The purpose of this form is to gather required information to allow others to enter information into iSMS for the involved person. **Information needs to be entered into iSMS within 24-hours.**

INCIDENT OCCURRENCE

Incident Date		Incident Time		Home Phone No.	
Incident Type	<input type="checkbox"/> Near Miss <input type="checkbox"/> Injury/Illness <input type="checkbox"/> Loss or Damage <input type="checkbox"/> Road/Vehicle				
	Event Type#1: Select One Event Type#2: Select One Event Type#3: Select One				

VEHICLE INCIDENT DETAILS

Driver Name		License Plate		Fleet Vehicle #	
Vehicle Year		Vehicle Make		Vehicle Model	
Vehicle Power Source		On/Off Road		Vehicle Ownership	

LOCATION (Where Incident Occurred)

Country		WSP Region (Country)		State / Province	
Office / Project		Description of Location			

ORGANIZATION (Employee Reporting Information)

Division	WSP
Level 1 (E&E, etc.)	
Level 2 (WSP Region)	
Level 3 (Legal Entity)	
Agreement (Employee, Subs, etc.)	
Client Name	
Project #	

CONTACTS

Incident Contact information represents who should be contacted in relation to this incident.

Injured Person/s / Involved Person/s

First Name		Last Name	
Job Description		Trade	
Address (optional)			
Brief description of injury / body parts			

Reported By

Full Name		Title	
Phone		Email	

Contract Safety and Security Manager (If applicable)

Full Name		Title	
Phone		Email	

Witnesses By (If applicable)

Full Name		Title	
Phone		Email	

Additional Contact Description (If applicable)

Full Name		Title	
Phone		Email	

INCIDENT DESCRIPTION

Limit to conditions observable on site. Do not include names or personal medical information.

Short Event Description (2 or 3 sentences, 150 words)	
Long Event Description	
Immediate Actions Taken	

ATTACHMENTS

Append attachments to email or link to shared drive to allow attachments to be uploaded to iSMS.

List / Describe	
List / Describe	
List / Describe	

CHECK ALL THAT APPLY

Only include information that is applicable to the incident response and/or investigation.

Drug / Alcohol Test Conducted	<input type="checkbox"/> Yes				
If Yes	<input type="checkbox"/> Pre-Shift Alcohol Test <input type="checkbox"/> Post Incident Alcohol Test <input type="checkbox"/> Post Incident Drug Test <input type="checkbox"/> Random Drug / Alcohol Test conducted prior to incident on the day				
Activities in Progress					
Emergency Services Called	<input type="checkbox"/> Yes	Description of Emergency Services			
Equipment / Tool Involved	<input type="checkbox"/> Yes	Description Equipment / Tool			
Property Damage	<input type="checkbox"/> Yes	Description of Property Damage		Estimated Value	
Project Impact / Delays	<input type="checkbox"/> Yes	Number of People		Days Impacted / Delayed	
Weather Condition	<input type="checkbox"/> Yes	Weather Condition		Weather Description	

SERVICE STRIKE INFORMATION (If Service Strike identified in Incident Occurrence)

Service Strike	<input type="checkbox"/> Yes	Incident Time		Home Phone No.	
Service Type	<input type="checkbox"/> Electrical (low voltage) <input type="checkbox"/> Electrical (high voltage) <input type="checkbox"/> Gas (high pressure) <input type="checkbox"/> Gas (high pressure) <input type="checkbox"/> Other pipeline <input type="checkbox"/> Sewer / Drain <input type="checkbox"/> Telecommunications <input type="checkbox"/> Water				
Service Position	<input type="checkbox"/> Overhead <input type="checkbox"/> Surface <input type="checkbox"/> Underground				

ENVIRONMENTAL (If Environmental identified in Incident Occurrence)

Env. Sensitive Area?	<input type="checkbox"/> Yes	Reportable Quantity Exceeded?	<input type="checkbox"/> Yes
Clean Up Actions			
Environment Affected	<input type="checkbox"/> Air <input type="checkbox"/> Ground <input type="checkbox"/> Water		
Material Released			
Material Released	<input type="checkbox"/> Discharge <input type="checkbox"/> Emission <input type="checkbox"/> Spill <input type="checkbox"/> Waste Incident		
Community Off-Site Impact			
Environmental Impact			

APPENDIX E

Safety Data Sheets

SAFETY DATA SHEET

CITGO CITGARD® 500 HSN Engine Oil, SAE
15W-40



Section 1. Identification

GHS product identifier : CITGO CITGARD® 500 HSN Engine Oil, SAE 15W-40
Synonyms : Motor oil
Material uses : Motor oil
Code : 622215001

Supplier's details : CITGO Petroleum Corporation
P.O. Box 4689
Houston, TX 77210
sdsvend@citgo.com

Emergency telephone number : Technical Contact: (800) 248-4684
Medical Emergency: (832) 486-4700
CHEMTREC Emergency: (800) 424-9300
(United States Only)

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

General : Avoid contact with eyes, skin and clothing. IF IN EYES: Rinse cautiously with water for several minutes. If swallowed, do not induce vomiting. After handling, always wash hands thoroughly with soap and water. If you feel unwell, seek medical attention and show the label when possible. Keep out of reach of children.

Prevention : Not applicable.

Response : Not applicable.

Storage : Store in a dry place and/or in closed container. Store in accordance with all local, regional, national and international regulations.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Motor oil

CAS number/other identifiers

CAS number : Not applicable.

Section 3. Composition/information on ingredients

Any concentration shown as a range is to protect confidentiality or is due to process variation.

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : Treat symptomatically and supportively.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Section 5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
phosphorus oxides
metal oxide/oxides
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8).
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Bulk Storage Conditions: Maintain all storage tanks in accordance with applicable regulations. Use necessary controls to monitor tank inventories. Inspect all storage tanks on a periodic basis. Test tanks and associated piping for tightness. Maintain the automatic leak detection devices to assure proper working condition.

Section 7. Handling and storage

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, vapor controls, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Avoid skin contact with liquid. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Leather boots are not protective for liquid contact.
- Respiratory protection** : Avoid inhalation of gases, vapors, mists or dusts. Use a properly fitted, air-purifying or supplied-air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

- Physical state** : Liquid.
- Color** : Amber.
- Odor** : Mild petroleum odor
- pH** : Not available.
- Boiling point/boiling range** : Not available.
- Flash point** : Open cup: 232°C (449.6°F) [Cleveland.]
- Evaporation rate** : <1 (butyl acetate = 1)
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : <0.13 kPa (<1 mm Hg) [room temperature]
- Vapor density** : >1 [Air = 1]
- Relative density** : 0.88
- Density lbs/gal** : Estimated 7.34 lbs/gal
- Gravity, °API** : Estimated 29 @ 60 F
- Solubility** : Insoluble in the following materials: cold water.
- Viscosity** : Kinematic (room temperature): 1.17 cm²/s (117 cSt)
Kinematic (40°C (104°F)): 1.13 cm²/s (113 cSt)

Section 9. Physical and chemical properties

Viscosity SUS : Estimated 1.96731666639258E-05 SUS @104 F

Section 10. Stability and reactivity

- Reactivity** : Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Incompatible materials** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

- Conclusion/Summary** : **Distillates (petroleum), hydrotreated heavy paraffinic**: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.
- Distillates (petroleum), solvent-dewaxed heavy paraffinic**: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.
- Distillates (petroleum), solvent-refined heavy paraffinic**: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.

Irritation/Corrosion

- Skin** : No additional information.
- Eyes** : No additional information.
- Respiratory** : No additional information.

Sensitization

- Skin** : No additional information.
- Respiratory** : No additional information.

Mutagenicity

- Conclusion/Summary** : No additional information.

Carcinogenicity

- Conclusion/Summary** :

Section 11. Toxicological information

Distillates (petroleum), solvent-refined heavy paraffinic: In long term studies (up to two years) no carcinogenic effects have been reported in any animal species tested.

Reproductive toxicity

Conclusion/Summary : No additional information.

Teratogenicity

Conclusion/Summary : No additional information.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : Not available.

Bioaccumulative potential

Not available.

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.
Clean Water Act (CWA) 307: Zinc alkyl dithiophosphate
Clean Water Act (CWA) 311: fumaric acid; ethylenediamine; vinyl acetate
 This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

Section 15. Regulatory information

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
ethylenediamine	<0.1	Yes.	10000	1337.1	5000	668.5
vinyl acetate	<0.01	Yes.	1000	129	5000	644.8

SARA 304 RQ : 35223670.3 lbs / 15991546.3 kg [4800590.5 gal / 18172211.7 L]

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

International regulations

- International lists** :
- Australia inventory (AICS)**: All components are listed or exempted.
 - China inventory (IECSC)**: Not determined.
 - Japan inventory**: Not determined.
 - Korea inventory**: All components are listed or exempted.
 - Malaysia Inventory (EHS Register)**: Not determined.
 - New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
 - Philippines inventory (PICCS)**: All components are listed or exempted.
 - Taiwan inventory (CSNN)**: Not determined.
- Canada inventory** : All components are listed or exempted.
- EU Inventory** : Not determined.
- WHMIS (Canada)** : Not controlled under WHMIS (Canada).

Section 16. Other information

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of issue/Date of revision : 6/18/2015.

Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

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Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950
US GHS

Synonyms: Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

*** Section 1 - Product and Company Identification ***

Manufacturer Information

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

*** Section 2 - Hazards Identification ***

GHS Classification:

Flammable Liquid - Category 2
Skin Corrosion/Irritation - Category 2
Germ Cell Mutagenicity - Category 1B
Carcinogenicity - Category 1B
Toxic to Reproduction - Category 1A
Specific Target Organ Toxicity (Single Exposure) - Category 3 (respiratory irritation, narcosis)
Specific Target Organ Toxicity (Repeat Exposure) - Category 1 (liver, kidneys, bladder, blood, bone marrow, nervous system)
Aspiration Hazard - Category 1
Hazardous to the Aquatic Environment – Acute Hazard - Category 3

GHS LABEL ELEMENTS

Symbol(s)



Signal Word

DANGER

Hazard Statements

Highly flammable liquid and vapour.
Causes skin irritation.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Causes damage to organs (liver, kidneys, bladder, blood, bone marrow, nervous system) through prolonged or repeated exposure.
May be fatal if swallowed and enters airways.
Harmful to aquatic life.

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Precautionary Statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and forearms thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist/vapours/spray.
Use only outdoors or in well-ventilated area.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.

Response

In case of fire: Use water spray, fog, dry chemical fire extinguishers or hand held fire extinguisher.
IF ON SKIN (or hair): Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.
Get medical advice/attention if you feel unwell.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting.

Storage

Store in a well-ventilated place.
Keep cool. Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

* * * Section 3 - Composition / Information on Ingredients * * *

CAS #	Component	Percent
86290-81-5	Gasoline, motor fuel	100
108-88-3	Toluene	1-25
106-97-8	Butane	<10
1330-20-7	Xylenes (o-, m-, p- isomers)	1-15
95-63-6	Benzene, 1,2,4-trimethyl-	<6
64-17-5	Ethyl alcohol	0-10
100-41-4	Ethylbenzene	<3
71-43-2	Benzene	0.1-4.9

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110-54-3	Hexane	0.5-4
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A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol). Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

* * * Section 4 - First Aid Measures * * *

First Aid: Eyes

In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

First Aid: Skin

Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

First Aid: Inhalation

Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

* * * Section 5 - Fire Fighting Measures * * *

General Fire Hazards

See Section 9 for Flammability Properties.

Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

Extinguishing Media

SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO₂, water spray, fire fighting foam, or gaseous extinguishing agent.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration.

Unsuitable Extinguishing Media

None

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Fire Fighting Equipment/Instructions

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

* * * Section 6 - Accidental Release Measures * * *

Recovery and Neutralization

Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Personal Precautions and Protective Equipment

Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions

Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards

None

* * * Section 7 - Handling and Storage * * *

Handling Procedures

USE ONLY AS A MOTOR FUEL.
DO NOT SIPHON BY MOUTH

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

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Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage Procedures

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Incompatibilities

Keep away from strong oxidizers.

* * * Section 8 - Exposure Controls / Personal Protection * * *

Component Exposure Limits

Gasoline, motor fuel (86290-81-5)

ACGIH: 300 ppm TWA
500 ppm STEL

Toluene (108-88-3)

ACGIH: 20 ppm TWA
OSHA: 200 ppm TWA; 375 mg/m³ TWA
150 ppm STEL; 560 mg/m³ STEL
NIOSH: 100 ppm TWA; 375 mg/m³ TWA
150 ppm STEL; 560 mg/m³ STEL

Butane (106-97-8)

ACGIH: 1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)
OSHA: 800 ppm TWA; 1900 mg/m³ TWA
NIOSH: 800 ppm TWA; 1900 mg/m³ TWA

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: 100 ppm TWA
150 ppm STEL
OSHA: 100 ppm TWA; 435 mg/m³ TWA
150 ppm STEL; 655 mg/m³ STEL

Benzene, 1,2,4-trimethyl- (95-63-6)

NIOSH: 25 ppm TWA; 125 mg/m³ TWA

Ethyl alcohol (64-17-5)

ACGIH: 1000 ppm STEL
OSHA: 1000 ppm TWA; 1900 mg/m³ TWA
NIOSH: 1000 ppm TWA; 1900 mg/m³ TWA

Safety Data Sheet

Material Name: Gasoline All Grades

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Ethylbenzene (100-41-4)

ACGIH: 20 ppm TWA
OSHA: 100 ppm TWA; 435 mg/m³ TWA
125 ppm STEL; 545 mg/m³ STEL
NIOSH: 100 ppm TWA; 435 mg/m³ TWA
125 ppm STEL; 545 mg/m³ STEL

Benzene (71-43-2)

ACGIH: 0.5 ppm TWA
2.5 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA
NIOSH: 0.1 ppm TWA
1 ppm STEL

Hexane (110-54-3)

ACGIH: 50 ppm TWA
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 500 ppm TWA; 1800 mg/m³ TWA
NIOSH: 50 ppm TWA; 180 mg/m³ TWA

Engineering Measures

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands

Gloves constructed of nitrile, neoprene, or PVC are recommended.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body

Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

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*** Section 9 - Physical & Chemical Properties ***

Appearance:	Translucent, straw-colored or light yellow	Odor:	Strong, characteristic aromatic hydrocarbon odor. Sweet-ether like
Physical State:	Liquid	pH:	ND
Vapor Pressure:	6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)	Vapor Density:	AP 3-4
Boiling Point:	85-437 °F (39-200 °C)	Melting Point:	ND
Solubility (H2O):	Negligible to Slight	Specific Gravity:	0.70-0.78
Evaporation Rate:	10-11	VOC:	ND
Percent Volatile:	100%	Octanol/H2O Coeff.:	ND
Flash Point:	-45 °F (-43 °C)	Flash Point Method:	PMCC
Upper Flammability Limit (UFL):	7.6%	Lower Flammability Limit (LFL):	1.4%
Burning Rate:	ND	Auto Ignition:	>530°F (>280°C)

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

This is a stable material.

Hazardous Reaction Potential

Will not occur.

Conditions to Avoid

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products

Keep away from strong oxidizers.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

*** Section 11 - Toxicological Information ***

Acute Toxicity

A: General Product Information

Harmful if swallowed.

B: Component Analysis - LD50/LC50

Gasoline, motor fuel (86290-81-5)

Inhalation LC50 Rat >5.2 mg/L 4 h; Oral LD50 Rat 14000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

Toluene (108-88-3)

Inhalation LC50 Rat 12.5 mg/L 4 h; Inhalation LC50 Rat >26700 ppm 1 h; Oral LD50 Rat 636 mg/kg; Dermal LD50 Rabbit 8390 mg/kg; Dermal LD50 Rat 12124 mg/kg

Butane (106-97-8)

Inhalation LC50 Rat 658 mg/L 4 h

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

Xylenes (o-, m-, p- isomers) (1330-20-7)

Inhalation LC50 Rat 5000 ppm 4 h; Inhalation LC50 Rat 47635 mg/L 4 h; Oral LD50 Rat 4300 mg/kg; Dermal LD50 Rabbit >1700 mg/kg

Benzene, 1,2,4-trimethyl- (95-63-6)

Inhalation LC50 Rat 18 g/m³ 4 h; Oral LD50 Rat 3400 mg/kg; Dermal LD50 Rabbit >3160 mg/kg

Ethyl alcohol (64-17-5)

Oral LD50 Rat 7060 mg/kg; Inhalation LC50 Rat 124.7 mg/L 4 h

Ethylbenzene (100-41-4)

Inhalation LC50 Rat 17.2 mg/L 4 h; Oral LD50 Rat 3500 mg/kg; Dermal LD50 Rabbit 15354 mg/kg

Benzene (71-43-2)

Inhalation LC50 Rat 13050-14380 ppm 4 h; Oral LD50 Rat 1800 mg/kg

Hexane (110-54-3)

Inhalation LC50 Rat 48000 ppm 4 h; Oral LD50 Rat 25 g/kg; Dermal LD50 Rabbit 3000 mg/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness

Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness

Moderate irritant. Contact with liquid or vapor may cause irritation.

Potential Health Effects: Ingestion

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation

Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization

This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity

This product may cause genetic defects.

Carcinogenicity

A: General Product Information

May cause cancer.

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.

B: Component Carcinogenicity

Gasoline, motor fuel (86290-81-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Toluene (108-88-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Xylenes (o-, m-, p- isomers) (1330-20-7)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Ethyl alcohol (64-17-5)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 100E [in preparation] (in alcoholic beverages); Monograph 96 [2010] (in alcoholic beverages) (Group 1 (carcinogenic to humans))

Ethylbenzene (100-41-4)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 77 [2000] (Group 2B (possibly carcinogenic to humans))

Benzene (71-43-2)

ACGIH: A1 - Confirmed Human Carcinogen

OSHA: 5 ppm STEL (Cancer hazard, Flammable, See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA

NIOSH: potential occupational carcinogen

NTP: Known Human Carcinogen (Select Carcinogen)

IARC: Monograph 100F [in preparation]; Supplement 7 [1987]; Monograph 29 [1982] (Group 1 (carcinogenic to humans))

Reproductive Toxicity

This product is suspected of damaging fertility or the unborn child.

Specified Target Organ General Toxicity: Single Exposure

This product may cause drowsiness or dizziness.

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

Specified Target Organ General Toxicity: Repeated Exposure

This product causes damage to organs through prolonged or repeated exposure.

Aspiration Respiratory Organs Hazard

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

Very toxic to aquatic life with long lasting effects. Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Gasoline, motor fuel (86290-81-5)

Test & Species	Conditions
96 Hr LC50 Alburnus alburnus	119 mg/L [static]
96 Hr LC50 Cyprinodon variegatus	82 mg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	56 mg/L
24 Hr EC50 Daphnia magna	170 mg/L

Toluene (108-88-3)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	15.22-19.05 mg/L [flow-through]
96 Hr LC50 Pimephales promelas	12.6 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	5.89-7.81 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	14.1-17.16 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	5.8 mg/L [semi-static]
96 Hr LC50 Lepomis macrochirus	11.0-15.0 mg/L [static]
96 Hr LC50 Oryzias latipes	54 mg/L [static]
96 Hr LC50 Poecilia reticulata	28.2 mg/L [semi-static]
96 Hr LC50 Poecilia reticulata	50.87-70.34 mg/L [static]
96 Hr EC50 Pseudokirchneriella subcapitata	>433 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	12.5 mg/L [static]
48 Hr EC50 Daphnia magna	5.46 - 9.83 mg/L [Static]
48 Hr EC50 Daphnia magna	11.5 mg/L

Xylenes (o-, m-, p- isomers) (1330-20-7)

Test & Species	Conditions
96 Hr LC50 Pimephales promelas	13.4 mg/L [flow-through]

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Material Name: Gasoline All Grades

SDS No. 9950

96 Hr LC50 Oncorhynchus mykiss	2.661-4.093 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	13.5-17.3 mg/L
96 Hr LC50 Lepomis macrochirus	13.1-16.5 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	19 mg/L
96 Hr LC50 Lepomis macrochirus	7.711-9.591 mg/L [static]
96 Hr LC50 Pimephales promelas	23.53-29.97 mg/L [static]
96 Hr LC50 Cyprinus carpio	780 mg/L [semi- static]
96 Hr LC50 Cyprinus carpio	>780 mg/L
96 Hr LC50 Poecilia reticulata	30.26-40.75 mg/L [static]
48 Hr EC50 water flea	3.82 mg/L
48 Hr LC50 Gammarus lacustris	0.6 mg/L

Benzene, 1,2,4-trimethyl- (95-63-6)

Test & Species

96 Hr LC50 Pimephales promelas	7.19-8.28 mg/L [flow-through]
48 Hr EC50 Daphnia magna	6.14 mg/L

Conditions

Ethyl alcohol (64-17-5)

Test & Species

96 Hr LC50 Oncorhynchus mykiss	12.0 - 16.0 mL/L [static]
96 Hr LC50 Pimephales promelas	>100 mg/L [static]
96 Hr LC50 Pimephales promelas	13400 - 15100 mg/L [flow-through]
48 Hr LC50 Daphnia magna	9268 - 14221 mg/L
24 Hr EC50 Daphnia magna	10800 mg/L
48 Hr EC50 Daphnia magna	2 mg/L [Static]

Conditions

Ethylbenzene (100-41-4)

Test & Species

96 Hr LC50 Oncorhynchus mykiss	11.0-18.0 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss	4.2 mg/L [semi- static]
96 Hr LC50 Pimephales promelas	7.55-11 mg/L [flow- through]
96 Hr LC50 Lepomis macrochirus	32 mg/L [static]
96 Hr LC50 Pimephales promelas	9.1-15.6 mg/L [static]
96 Hr LC50 Poecilia reticulata	9.6 mg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	4.6 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata	>438 mg/L
72 Hr EC50 Pseudokirchneriella subcapitata	2.6 - 11.3 mg/L [static]

Conditions

Safety Data Sheet

Material Name: Gasoline All Grades

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96 Hr EC50 Pseudokirchneriella subcapitata	1.7 - 7.6 mg/L [static]
48 Hr EC50 Daphnia magna	1.8 - 2.4 mg/L

Benzene (71-43-2)

Test & Species

Conditions

96 Hr LC50 Pimephales promelas	10.7-14.7 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	5.3 mg/L [flow-through]
96 Hr LC50 Lepomis macrochirus	22.49 mg/L [static]
96 Hr LC50 Poecilia reticulata	28.6 mg/L [static]
96 Hr LC50 Pimephales promelas	22330-41160 µg/L [static]
96 Hr LC50 Lepomis macrochirus	70000-142000 µg/L [static]
72 Hr EC50 Pseudokirchneriella subcapitata	29 mg/L
48 Hr EC50 Daphnia magna	8.76 - 15.6 mg/L [Static]
48 Hr EC50 Daphnia magna	10 mg/L

Hexane (110-54-3)

Test & Species

Conditions

96 Hr LC50 Pimephales promelas	2.1-2.98 mg/L [flow-through]
24 Hr EC50 Daphnia magna	>1000 mg/L

Persistence/Degradability

No information available.

Bioaccumulation

No information available.

Mobility in Soil

No information available.

*** Section 13 - Disposal Considerations ***

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

*** Section 14 - Transportation Information ***

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Gasoline, motor fuel	86290-81-5	DOT regulated marine pollutant

DOT Information

Shipping Name: Gasoline

UN #: 1203 Hazard Class: 3 Packing Group: II

Placard:



*** Section 15 - Regulatory Information ***

Regulatory Information

A: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Toluene (108-88-3)

SARA 313: 1.0 % de minimis concentration
CERCLA: 1000 lb final RQ; 454 kg final RQ

Xylenes (o-, m-, p- isomers) (1330-20-7)

SARA 313: 1.0 % de minimis concentration
CERCLA: 100 lb final RQ; 45.4 kg final RQ

Benzene, 1,2,4-trimethyl- (95-63-6)

SARA 313: 1.0 % de minimis concentration

Ethylbenzene (100-41-4)

SARA 313: 0.1 % de minimis concentration
CERCLA: 1000 lb final RQ; 454 kg final RQ

Benzene (71-43-2)

SARA 313: 0.1 % de minimis concentration
CERCLA: 10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

Hexane (110-54-3)

SARA 313: 1.0 % de minimis concentration

CERCLA: 5000 lb final RQ; 2270 kg final RQ

SARA Section 311/312 – Hazard Classes

Acute Health

X

Chronic Health

X

Fire

X

Sudden Release of Pressure

--

Reactive

--

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Component	CAS #	
Gasoline, motor fuel	86290-81-5	DOT regulated marine pollutant

State Regulations

Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Gasoline, motor fuel	86290-81-5	No	No	No	No	Yes	No
Toluene	108-88-3	Yes	Yes	Yes	Yes	Yes	No
Butane	106-97-8	Yes	Yes	Yes	Yes	Yes	No
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	Yes	Yes	Yes	Yes	No
Benzene, 1,2,4-trimethyl-	95-63-6	No	Yes	Yes	Yes	Yes	No
Ethyl alcohol	64-17-5	Yes	Yes	Yes	Yes	Yes	No
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	Yes	No
Benzene	71-43-2	Yes	Yes	Yes	Yes	Yes	No
Hexane	110-54-3	No	Yes	Yes	Yes	Yes	No

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Toluene	108-88-3	1 %
Butane	106-97-8	1 %
Benzene, 1,2,4-trimethyl-	95-63-6	0.1 %
Ethyl alcohol	64-17-5	0.1 %
Ethylbenzene	100-41-4	0.1 %
Benzene	71-43-2	0.1 %
Hexane	110-54-3	1 %

Additional Regulatory Information

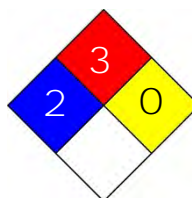
Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Gasoline, motor fuel	86290-81-5	No	DSL	EINECS
Toluene	108-88-3	Yes	DSL	EINECS
Butane	106-97-8	Yes	DSL	EINECS
Xylenes (o-, m-, p- isomers)	1330-20-7	Yes	DSL	EINECS
Benzene, 1,2,4-trimethyl-	95-63-6	Yes	DSL	EINECS
Ethyl alcohol	64-17-5	Yes	DSL	EINECS
Ethylbenzene	100-41-4	Yes	DSL	EINECS
Benzene	71-43-2	Yes	DSL	EINECS
Hexane	110-54-3	Yes	DSL	EINECS

*** Section 16 - Other Information ***

NFPA® Hazard Rating

Health	2
Fire	3
Reactivity	0



HMIS® Hazard Rating

Health	2	Moderate
Fire	3	Serious
Physical	0	Minimal

*Chronic

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

Literature References

None

Safety Data Sheet

Material Name: Gasoline All Grades

SDS No. 9950

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet

1. Identification

Product identifier	Formula 409® Multi-Surface Cleaner		
Other means of identification	EPA 5813-73		
	Document Number: USA001160		
Recommended use	Multi-Purpose Cleaner and Disinfectant		
Recommended restrictions	None known.		
Manufacturer/Importer/Supplier/Distributor information			
Manufacturer			
Company name	The Clorox Company		
Address	1221 Broadway Oakland, CA 94612 United States		
Telephone	1-510-271-7000		
E-mail	Not available.		
Emergency phone number	Medical Emergency:	1-800-446-1014	
	Transportation Emergency:	1-800-424-9300 (Chemtrec)	

2. Hazards Identification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.
OSHA defined hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	None.
Hazard statement	The mixture does not meet the criteria for classification.
Precautionary statement	
Prevention	Observe good industrial hygiene practices.
Response	Wash hands after handling.
Storage	Store away from incompatible materials.
Disposal	Dispose of container in accordance with local, regional, national and international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	This SDS is designed for workplace employees, emergency personnel and for other conditions and situations where there is greater potential for large-scale or prolonged exposure. This SDS is not applicable for consumer use of our products. For consumer use, all precautionary and first aid language is provided on the product label in accordance with the applicable government regulations.

3. Composition/Information on Ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Alkyl (C12 40; C14 50%; C16, 10%) dimethyl benzyl ammonium chloride		68424-85-1	0.3

All concentrations are in percent by weight.

4. First Aid Measures

Inhalation	If breathed in, move person into fresh air.
Skin contact	IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice.
Eye contact	IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses if present, after the first 5 minutes, then, continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion	If swallowed, call a Poison Control Center or doctor immediately. DO NOT induce vomiting.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Symptoms may be delayed.
General information	For further information, call (800) 227-1860 If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. KEEP OUT OF REACH OF CHILDREN AND PETS. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. Fire Fighting Measures

Suitable extinguishing media	Treat for surrounding material.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Prevent entry into waterways, sewer, basements or confined areas. Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Do not discharge into lakes, streams, ponds or public waters.

7. Handling and Storage

Precautions for safe handling	Avoid contact with eyes, skin or clothing. Avoid contact with foods. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash thoroughly after handling. Use good industrial hygiene practices in handling this material. When using do not eat or drink.
Conditions for safe storage, including any incompatibilities	Store in a cool, dry, well-ventilated place. Keep in original container. Do not reuse containers. Store away from incompatible materials (see Section 10 of the SDS). KEEP OUT OF REACH OF CHILDREN.

8. Exposure Controls/Personal Protection

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	General ventilation normally adequate.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Not normally required under normal use conditions. If splashes are likely to occur, wear: Wear safety glasses with side shields.
Skin protection	
Hand protection	Not normally required when used as directed. For prolonged use, wear rubber gloves.
Other	Wear appropriate chemical resistant clothing. As required by employer code.
Respiratory protection	Not required if good ventilation is maintained. If irritation is experienced, ventilation and evacuation may be required.
Thermal hazards	Not applicable.

General hygiene considerations

Wash hands before breaks and immediately after handling the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. When using do not eat or drink.

9. Physical and Chemical Properties

Appearance	Clear
Physical state	Liquid.
Form	Liquid
Color	Green
Odor	Floral, Citrus
Odor threshold	Not available.
pH	9 - 11.5
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Pour point	Not available.
Specific gravity	Not available.
Partition coefficient (n-octanol/water)	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	~1.0
Solubility(ies)	Soluble
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and Reactivity

Reactivity	This product may react with strong oxidizing agents.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Do not mix with other chemicals.
Incompatible materials	Oxidizers. Acids.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Ammonia. Chlorine gas.

11. Toxicological Information

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected. Excessive intentional inhalation may cause respiratory tract irritation.
Skin contact	Not expected to be a primary skin irritant.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	May cause stomach distress, nausea or vomiting.

Symptoms related to the physical, chemical and toxicological characteristics

There are no hazards associated with this product in normal use. Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity See below.

Components Species Test Results

Alkyl (C12 40; C14 50%; C16, 10%) dimethyl benzyl ammonium chloride (CAS 68424-85-1)

Acute

Dermal

LD50 Rabbit 3412 mg/kg, ECHA

Inhalation

LC50 Rat 0.3 mg/l/4h, ECHA

Oral

LD50 Rat 795 mg/kg, ECHA

Skin corrosion/irritation Not expected to be a primary skin irritant.

Exposure minutes Not available.

Erythema value Not available.

Oedema value Not available.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Corneal opacity value Not available.

Iris lesion value Not available.

Conjunctival reddening value Not available.

Conjunctival oedema value Not available.

Recover days Not available.

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization Not available.

Germ cell mutagenicity Not available.

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not available.

Specific target organ toxicity - repeated exposure Not available.

Aspiration hazard Not an aspiration hazard.

Chronic effects Not available.

Further information Not available.

12. Ecological Information

Ecotoxicity See below

Ecotoxicological data

Components Species Test Results

Alkyl (C12 40; C14 50%; C16, 10%) dimethyl benzyl ammonium chloride (CAS 68424-85-1)

Aquatic

Fish LC50 Striped bass (Morone saxatilis) 10.4 - 19.1 mg/L, 96 hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Mobility in soil Not available.

Mobility in general	Not available.
Other adverse effects	Not available.

13. Disposal Considerations

Disposal instructions	Review federal, provincial, and local government requirements prior to disposal. If recycling is not available, discard in trash.
Waste from residues / unused products	Not available.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

General	<p>Canada: TDG Proof of Classification: Classification Method: Classified as per Part 2, Sections 2.1 – 2.8 of the Transportation of Dangerous Goods Regulations. If applicable, the technical name and the classification of the product will appear below.</p> <p>Canada: TDG: Not regulated as dangerous goods.</p> <p>US: DOT: Not regulated as dangerous goods.</p> <p>IMDG: Not regulated as dangerous goods.</p> <p>IATA: Not regulated as dangerous goods.</p>
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15. Regulatory Information

US federal regulations	<p>This product is NOT known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.</p> <p>This chemical is a disinfectant product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-disinfectant chemicals. The hazard information required on the disinfectant label is reproduced below. The disinfectant label also includes other important information, including directions for use.</p> <p>It is a violation of Federal law to use this product in a manner inconsistent with its labeling.</p> <p>EPA 5813-73</p> <p>PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS</p> <p>CAUTION: Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Avoid contact with foods.</p> <p>TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) Not regulated.</p> <p>CERCLA Hazardous Substance List (40 CFR 302.4) Not listed.</p> <p>SARA 304 Emergency release notification Not regulated.</p> <p>OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052) Not regulated.</p> <p>Superfund Amendments and Reauthorization Act of 1986 (SARA)</p> <table> <tr> <td>SARA 302 Extremely hazardous substance</td> <td>No</td> </tr> <tr> <td>SARA 311/312 Hazardous chemical</td> <td>No</td> </tr> <tr> <td>SARA 313 (TRI reporting)</td> <td>Not regulated.</td> </tr> </table> <p>Other federal regulations</p> <p>Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List Not regulated.</p> <p>Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) Not regulated.</p>	SARA 302 Extremely hazardous substance	No	SARA 311/312 Hazardous chemical	No	SARA 313 (TRI reporting)	Not regulated.
SARA 302 Extremely hazardous substance	No						
SARA 311/312 Hazardous chemical	No						
SARA 313 (TRI reporting)	Not regulated.						

Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA) Not regulated.

US state regulations See below

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

California Proposition 65

This product is not subject to warning labeling under the California Proposition 65 regulation.

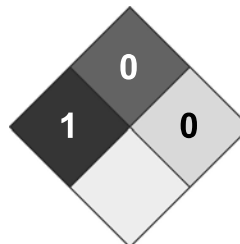
Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

16. Other Information

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

HEALTH	/ 1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	X



Disclaimer

The information in the safety data sheet was written by Dell Tech Laboratories Ltd. (www.delltech.com) based on the best knowledge and experience currently available. Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

Issue date

14-February-2022

Version #

01

Further information

Not available.

Other information

For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.

Reference Item: 238587.001

Prepared by: The Clorox Company, 4900 Johnson Drive, Pleasanton, CA 94588, 925-368-6000

APPENDIX F

Site Safety Orientation Form

Site Safety Orientation Training Form

Penobscot Estuary Remediation - Pre-Design

Project: Investigations and Long-term Monitoring **Date:** _____

All applicable items listed below are to be reviewed on the first day of site activities and when new workers arrive on site.

Topic to Review:	Covered	N/A
1. Identity of Site Manager and the Site Health and Safety Officer (SHSO)	<input type="checkbox"/>	<input type="checkbox"/>
2. Contents of HASP	<input type="checkbox"/>	<input type="checkbox"/>
3. Review WSP Safety initiatives:	<input type="checkbox"/>	<input type="checkbox"/>
a. Life Saving Actions	<input type="checkbox"/>	<input type="checkbox"/>
b. iSMS Observations	<input type="checkbox"/>	<input type="checkbox"/>
4. Review HSE Objectives and Targets for Project	<input type="checkbox"/>	<input type="checkbox"/>
5. Contents of AHAs applicable to the work being conducted	<input type="checkbox"/>	<input type="checkbox"/>
6. Location of HASP and SDSs on site	<input type="checkbox"/>	<input type="checkbox"/>
7. HAZCOM labeling system if different from local operation	<input type="checkbox"/>	<input type="checkbox"/>
8. Site-specific medical surveillance requirements	<input type="checkbox"/>	<input type="checkbox"/>
9. Safety and health hazards on site	<input type="checkbox"/>	<input type="checkbox"/>
10. Site control measures and safety rules	<input type="checkbox"/>	<input type="checkbox"/>
11. Review monitoring instruments and action limits	<input type="checkbox"/>	<input type="checkbox"/>
12. Verify workers have documentation of training identified in Table 8-1	<input type="checkbox"/>	<input type="checkbox"/>
13. Site Specific/Client Specific training	<input type="checkbox"/>	<input type="checkbox"/>
14. The level of protection and specific PPE to be used	<input type="checkbox"/>	<input type="checkbox"/>
15. Work practices to be used on site to minimize exposure	<input type="checkbox"/>	<input type="checkbox"/>
16. Decontamination procedures	<input type="checkbox"/>	<input type="checkbox"/>
17. How to effectively use site/task engineering controls	<input type="checkbox"/>	<input type="checkbox"/>
18. Emergency communication (signals, codes, posted telephone numbers):	<input type="checkbox"/>	<input type="checkbox"/>
19. Emergency procedures (injuries, fires, hazardous materials incidents, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
20. Location of Rally Point	<input type="checkbox"/>	<input type="checkbox"/>
21. Reporting incidents, near misses and HSE concerns	<input type="checkbox"/>	<input type="checkbox"/>
22. Any other site-specific health and safety-related requirements:	<input type="checkbox"/>	<input type="checkbox"/>

Site Safety Orientation Training Form

Trainee Name and Signature:

Trainer Name: _____

Signature _____

APPENDIX G

Tailgate Safety Meeting Report

Tailgate Safety Meeting Report

<i>Check One:</i>			
<input type="checkbox"/> Kick-off Safety Meeting	<input type="checkbox"/> Regular/Daily Tailgate Safety Meeting	<input type="checkbox"/> Unscheduled Tailgate Safety Meeting	
Date:		Site:	Penobscot River -
Site Manager:	Brad Wolfe	Site Health and Safety Officer:	Lindsey Fales
Order of Business			
<i>Topics Discussed (Check all that apply)</i>			
<input type="checkbox"/> Scope of Work	<input type="checkbox"/> Decontamination Procedures for Personnel and Equipment		
<input type="checkbox"/> Site History/Site Layout	<input type="checkbox"/> Physical Hazards and Controls (e.g., overhead utility lines)		
<input type="checkbox"/> Personnel Responsibilities	<input type="checkbox"/> Anticipated Weather (snow, high winds, rain)		
<input type="checkbox"/> Training Requirements	<input type="checkbox"/> Temperature Extremes (heat or cold stress symptoms and controls)		
<input type="checkbox"/> Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazard effects)	<input type="checkbox"/> Biological Hazards and Controls (e.g., poison ivy, spiders)		
<input type="checkbox"/> Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving)	<input type="checkbox"/> Site Control (visitor access, buddy system, work zones, security, communications)		
<input type="checkbox"/> Safe Work Practices	<input type="checkbox"/> Sanitation and Illumination		
<input type="checkbox"/> Engineering Controls	<input type="checkbox"/> Logs, Reports, Recordkeeping		
<input type="checkbox"/> Chemical Hazards and Controls	<input type="checkbox"/> Incident Reporting Procedures		
<input type="checkbox"/> Signs and Symptoms of Overexposure to Site Chemicals	<input type="checkbox"/> Near Misses/Hazard ID, including worker suggestions to correct and work practices to avoid similar occurrences		
<input type="checkbox"/> Medical Surveillance Requirements	<input type="checkbox"/> General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)		
<input type="checkbox"/> Action Levels	<input type="checkbox"/> General Emergency Response Procedures (e.g., earthquake response, typhoon response)		
<input type="checkbox"/> Monitoring Instruments and Personal Monitoring	<input type="checkbox"/> Medical Emergency Procedures (e.g., Exposure Control Precautions, Location of First Aid Kits)		
<input type="checkbox"/> Perimeter Monitoring: Type and Frequency	<input type="checkbox"/> Route to Hospital and Medical Care Provider Visit Guidelines		
<input type="checkbox"/> PPE Required/PPE Used	<input type="checkbox"/> Site/Regional Emergency Response Procedures (e.g., Exposure Control Precautions, Location of First Aid Kits)		
<input type="checkbox"/> Define PPE Levels, Donning, Doffing Procedures	<input type="checkbox"/> Hazardous Materials Spill Procedures		
PPE required for the tasks to be conducted:			
Required Permits:			
Site Access or Other Issues:			
Safety Suggestions by Site Workers:			

Tailgate Safety Meeting Report

Action Taken on Previous Suggestions:			
Injuries/Incidents/Personnel Changes Since Last Meeting:			
Observations of Unsafe Work Practices/Conditions That Have Developed Since Last Meeting:			
Location of (or Changes in the Locations of) Evacuation Routes/Safe Refuge Areas:			
Additional Comments:			
Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting:			
Name (Print)	Company		Signature
Meeting Conducted by:		Title:	
	<i>Print</i>		
Signature:		Time:	
	<i>Print</i>		

APPENDIX H

Weekly Site Safety and Health Checklist

WEEKLY SITE SAFETY AND HEALTH CHECKLIST

Site:	Penobscot Estuary Remediation - Pre-Design Investigations and Long-term Monitoring	Date:	
Project Number:	3617237573	Project Manager:	Rod Pendleton
Conducted by:			
		Y	N
		NA	
HASP, Training and Documentation:			
1.	Are emergency phone numbers posted?	<input type="checkbox"/>	<input type="checkbox"/>
2.	Are directions to the nearest emergency medical care posted?	<input type="checkbox"/>	<input type="checkbox"/>
3.	Is the OSHA poster posted?	<input type="checkbox"/>	<input type="checkbox"/>
4.	Are the WSP Life Saving Actions posted?	<input type="checkbox"/>	<input type="checkbox"/>
5.	Is the WSP Safety Policy posted?	<input type="checkbox"/>	<input type="checkbox"/>
6.	Is there a Site-Specific Health and Safety Plan at the Site?	<input type="checkbox"/>	<input type="checkbox"/>
a.	Is it current and address all tasks?	<input type="checkbox"/>	<input type="checkbox"/>
b.	Does it address all know/suspected hazards?	<input type="checkbox"/>	<input type="checkbox"/>
c.	Are AHAs included for <u>all</u> tasks?	<input type="checkbox"/>	<input type="checkbox"/>
d.	Are employees following the procedures as outlined in the AHAs?	<input type="checkbox"/>	<input type="checkbox"/>
e.	Is it approved?	<input type="checkbox"/>	<input type="checkbox"/>
f.	Have all field members signed off that they have read it?	<input type="checkbox"/>	<input type="checkbox"/>
7.	Are there SDSs for required materials/chemicals brought to the Site?	<input type="checkbox"/>	<input type="checkbox"/>
8.	Are all containers properly labelled, as to content, hazard?	<input type="checkbox"/>	<input type="checkbox"/>
9.	Is there list of chemicals brought to the Site? Do the names on the list match the name on the label and SDS?	<input type="checkbox"/>	<input type="checkbox"/>
10.	Do applicable workers have their 40-hour initial training and are current in their refreshers?	<input type="checkbox"/>	<input type="checkbox"/>
11.	Do the Site Manager and Health and Safety Officer have supervisory training?	<input type="checkbox"/>	<input type="checkbox"/>
12.	Are all applicable workers current in their physicals?	<input type="checkbox"/>	<input type="checkbox"/>
13.	Are Tailgate Safety Meetings taking place and documented?	<input type="checkbox"/>	<input type="checkbox"/>
14.	Are the WSP monthly safety topics reviewed at the site?	<input type="checkbox"/>	<input type="checkbox"/>
15.	Are there means to minimize heat or cold stress on site?	<input type="checkbox"/>	<input type="checkbox"/>
16.	Is eating, drinking, smoking, etc. done only in areas free from toxic materials?	<input type="checkbox"/>	<input type="checkbox"/>
17.	Are two people used to lift equipment or materials weighting more than 50 lbs.?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18.	Are the locations of electrical power lines and other utilities identified prior to digging or drilling?	<input type="checkbox"/>	<input type="checkbox"/>

WEEKLY SITE SAFETY AND HEALTH CHECKLIST

	Y	N	NA
PPE and Monitoring Instruments:			
19. Does the PPE being worn match what is required in the HASP and AHAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Is hearing protection worn when noise makes conversation difficult at a distance of 2 feet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Are approved respirators and cartridges worn when needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Are cartridges changed daily, unless specified otherwise in the HASP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Are cartridges appropriate for the contaminants at the Site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Are <u>all</u> air monitoring instruments identified in the HASP being used and calibrated daily, as required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Do employees know upgrade/downgrade action levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COVID-19			
23. Are handwashing facilities with soap and water available for all personnel or has hand sanitizer been provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Has social distancing measures been adequately communicated to project occupants (e.g., holding meetings outdoors, closed doors to private offices, limiting occupancy in common areas, etc.) and are such measures being followed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Are masks / face coverings available for staff and utilized as appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Are cleaning supplies available for individual use and cleaning community-used items (e.g., microwave, coffee machines, printers, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Are surfaces in trailers, equipment, machines, items, or any surfaces touched by multiple workers, routinely disinfected?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Has appropriate COVID-19 signage been posted around the trailer and project site (e.g., at entrances, breakrooms, conference rooms, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
First Aid:			
29. Are there eyewash bottles on site? Solution not expired?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Are first aid kits on site and adequately stocked (including bloodborne pathogen equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Is there always at least one-person on-site current in their first aid/CPR training?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire Safety:			
32. Is a charged fire extinguisher available at the Site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Have WSP workers who would use extinguishers received fire extinguisher training in past year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Are fire extinguishers visually inspected monthly and are the inspections documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have fire extinguishers been professionally inspected within the past year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Are flammable liquids (e.g., gasoline) being stored safely (e.g., in safety cans and 20 feet from combustibles)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Are flammable liquid dispensing systems bonded (metal to metal)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

WEEKLY SITE SAFETY AND HEALTH CHECKLIST

Compressed Gas:			
35. Are cylinders stored in a secure manner, with caps on, upright, and protected from damage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Are cylinders protected from snow, rain, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Are cylinder caps in place before cylinders are moved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Are fuel gas and oxygen cylinders stored a minimum of 20 feet apart?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Are propane cylinders stored and used only outside of buildings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicles:			
40. Are employees wearing their seat belts and not talking on cell phones while car is in motion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Are vehicles parked in a safe manner? Are traffic cones used, if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Are company vehicles inspected weekly and the inspections documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Are materials stored in vehicles in a neat, orderly, and secure manner such that they will not become a distraction to the driver, become a projectile hazard in the event of a sudden stop, or crash or fall from the vehicle when in transport?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical:			
44. Is at least a 10-foot clearance maintained between equipment and power lines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Are all electrically operated tools grounded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Are ground-fault circuit interrupters (GFCIs) used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Are exposed wiring and cords in good condition (not frayed or deteriorated)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Do extension cords have a grounding conductor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Are extension cords only used in one continuous length (not daisy-chained)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Are extension cords kept out of wet areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Has a lockout/tagout system been established, if required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hand and Power Tools:			
52. Are tools and equipment used by employees in good condition or tagged out of service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Are guards and safety devices in place on power tools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking and Working Surfaces:			
54. Are handrails installed in stairways into trailers/buildings that have four steps or more?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Is good housekeeping being maintained at the Site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. Are all ladders in good condition, stored against damage and properly secured when in use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. Are approved manlifts provided for the lifting of personnel (e.g., cherry pickers, scissor lifts)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58. Are personnel in manlifts wearing approved fall protection devices when required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59. Is fall protection used when working at elevations greater than 6 feet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

WEEKLY SITE SAFETY AND HEALTH CHECKLIST

60. Are ladders inspected before each use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
61. Are all ladders in good condition, and defective ladders tagged out of service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scaffolding:			
62. Is scaffolding placed on a flat, firm surface?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
63. Are scaffold planks free of mud, ice, grease, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64. Is planking on scaffolds overlapped a minimum of 12 inches?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65. Does scaffold planking extend over end supports between 6 to 18 inches (dependent upon platform length)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
66. Are employees restricted from working on scaffolds during storms and high winds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
67. Is required perimeter guarding (top rail, mid-rail, and toe board) present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
68. Has a competent person been designated to oversee scaffold construction and inspect daily?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excavations:			
69. Has entrance into excavations greater than 4 feet deep been prohibited unless the following precautions are taken?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. The sides of excavations sloped or shored to prevent cave-ins if over 5 feet deep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Excavations greater than 4 feet deep been monitored for hazardous atmospheres (i.e., LEL/O2)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Ladders or ramps used in excavations over 4 feet deep?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Means of egress available so as to require no more than 25 feet of lateral travel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Excavation inspected daily by competent persons and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
70. Is excavated material placed a minimum of 24 inches from the excavation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy Equipment:			
71. Is heavy equipment shut down for fuelling and maintenance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
72. Are backup alarms installed and working on mobile equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73. Are riders prohibited on heavy equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74. Are guards and safety appliances in place and used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
75. Are operators using the "three-point" system when mounting/dismounting equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confined Space Entry:			
76. Are there confined spaces at the Site that WSP will be entering? If yes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Is the permit completely filled out and approved prior to entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Are confined spaces thoroughly emptied of the hazardous substances prior to entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Is ventilation provided prior to entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Is air within the confined space tested for oxygen deficiency, lower explosive limit, and toxic substances – in that order?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX I


HSE Postings

iSMS Poster
OSHA Job Safety and Health
Life Saving Actions Poster
Emergency Contacts
Emergency Responses
Hospital Route Map
Clinic Route Maps



MEMO

TO: All U.S. Staff

FROM: Lou Cornell, President and CEO, USA 

SUBJECT: Health, Safety, Environmental and Wellness Policy

DATE: January 1, 2022

Our employees are our most valued asset. Through a partnership of management and staff, we strive to provide and maintain a safe and healthy workplace in which no one is harmed, and the environment is protected. Our Culture of Caring and Zero Harm Vision is for Health, Safety, Environmental, and Wellness (HSEW) responsibilities to be embraced as best practice throughout the regions. Accordingly, the company is committed to:

- Continuously striving to eliminate the realistic likelihood of incidents from our business while minimizing impact to the environment.
- Taking all reasonable action to meet or exceed the applicable occupational health, safety, and environmental requirements, and continually monitoring and improving operations, procedures, technologies and programs that are conducive to maintaining a safe and healthy working environment.
- Having executive management that will lead our Culture of Caring and the HSEW improvement process and provide visible leadership and resources to implement our Zero Harm Vision and Roadmap.
- Providing employees with the knowledge and skills necessary to perform their jobs safely and asking them to make a commitment to 'Making Safety Personal' leading to a Zero Harm culture.
- Working with clients to promote safety, health, and environmental impact considerations in planning, design, and project management, whenever possible while promoting the Zero Harm culture.
- Establishing health and safety performance measures as key indicators for organizational excellence, and incorporating safety as a core process throughout the company.
- Each region will be responsible for establishing its own detailed implementation process to meet policy requirements.

In order to meet these commitments, all employees are expected to act proactively with regard to safety, health, environmental and wellness issues. Employees are also asked to report any accidents, incidents, unsafe acts, near misses or observations where health, safety or environmental performance could be improved. This requires the combined efforts of concerned management, responsible and knowledgeable supervisors and conscientious, well-trained employees.

HSE Reporting by iSMS

Observations

Near Miss

Incidents

Everyone can use the iSMS system to report

- **Observations** Positive Observations, Hazards, or Leadership Engagement
- **Incidents** Near miss, injury/illness, Loss or Damage, Road/Vehicle, Security (workplace violence), Legal (agency inspections), Quality, Complaints, etc. **within 24 hours**

Notify your supervisor and HSE immediately.

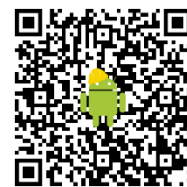
How do you access iSMS?

- [iSMS - Report Something \(onepb.net\)](http://onepb.net)
- Install the mobile app using QR code
- Launch app using iSMS URL:
zeroharm.onepb.net

Download on the App Store



Get it on Google Play



- Access the training for **Incident Reporting and Injury Management**, and **Intro to iSMS**.



Life Saving Actions

**IF I CANNOT FOLLOW THESE LIFE SAVING ACTIONS,
I WILL STOP AND SEEK ADVICE.**



PLANT/PEOPLE INTERFACE

I will

- Position myself to be visible to the equipment operator and to avoid interactions with moving equipment.
- Establish and obey signage, pedestrian paths, barriers and exclusion zones.
- Obtain authorisation from the equipment operator prior to entering the zone of influence of mobile plant/equipment.



DRIVING

I will

- Only use a vehicle that is fit for purpose and checked prior to use.
- Drive at a speed appropriate to the conditions and adhere to the road rules.
- Not use personal devices while driving except for hands-free navigation.
- Plan my journey to include regular breaks and fatigue checks.



SUSPENDED LOADS

I will

- Confirm that the equipment and load have been inspected and are fit for purpose.
- Establish and obey barriers and exclusion zones.
- Observe the instructions given by the banksman/flagman.
- Not place myself under a suspended load.



HAZARDOUS ATMOSPHERES / SUBSTANCES

I will

- Identify and control exposure to hazardous substances/atmospheres before starting work.
- Understand and follow the required procedures for entering a confined/restricted space.
- Test and monitor the atmosphere before entering and during work.
- Establish a rescue plan before entering a confined/restricted space.



WORKING ON OR NEAR WATER

I will

- Assess the weather and environmental conditions when working on or near water.
- Not work alone from a vessel or near fast-flowing or cold water.
- Wear appropriate Personal Flotation Devices where required.
- Establish a rescue plan before working on or near water.



LONE OR REMOTE WORK

I will

- Carry reliable means of communication for check-ins and emergency calls.
- Establish a communication plan with reporting times and escalation procedures.
- Develop and test an emergency response and rescue plan.
- Have appropriate survival gear and training including first aid.



GROUND STABILITY

I will

- Visually inspect all excavations, ground structures and ground support prior to working.
- Not enter areas of unsupported ground without appropriate ground stability measures in place.
- Place equipment and spoil at a safe distance from excavations.



ENERGY SOURCES

I will

- Identify all energy sources before work begins.
- Confirm that energy sources have been isolated and verify zero energy prior to undertaking work.
- Locate and control all buried and overhead services before starting work.



WORKING AT HEIGHTS

I will

- Implement appropriate fall prevention/protection measures when exposed to a fall from heights.
- Establish a rescue plan before commencing work at heights.
- Only work from or operate a mobile elevated work platform (MEWP) if trained, competent and authorised to do so.



OSHA[®]
Occupational Safety
and Health Administration

Job Safety and Health IT'S THE LAW!

All workers have the right to:

- A safe workplace.
- Raise a safety or health concern with your employer or OSHA, or report a work-related injury or illness, without being retaliated against.
- Receive information and training on job hazards, including all hazardous substances in your workplace.
- Request a confidential OSHA inspection of your workplace if you believe there are unsafe or unhealthy conditions. You have the right to have a representative contact OSHA on your behalf.
- Participate (or have your representative participate) in an OSHA inspection and speak in private to the inspector.
- File a complaint with OSHA within 30 days (by phone, online or by mail) if you have been retaliated against for using your rights.
- See any OSHA citations issued to your employer.
- Request copies of your medical records, tests that measure hazards in the workplace, and the workplace injury and illness log.

This poster is available free from OSHA.

Contact OSHA. We can help.

Employers must:

- Provide employees a workplace free from recognized hazards. It is illegal to retaliate against an employee for using any of their rights under the law, including raising a health and safety concern with you or with OSHA, or reporting a work-related injury or illness.
- Comply with all applicable OSHA standards.
- Notify OSHA within 8 hours of a workplace fatality or within 24 hours of any work-related inpatient hospitalization, amputation, or loss of an eye.
- Provide required training to all workers in a language and vocabulary they can understand.
- Prominently display this poster in the workplace.
- Post OSHA citations at or near the place of the alleged violations.

On-Site Consultation services are available to small and medium-sized employers, without citation or penalty, through OSHA-supported consultation programs in every state.



Emergency Response Contact Summary

Name	Telephone Numbers		Date of Pre-Emergency Notification (if applicable)
Emergency Contacts			
Fire Department	911		
Hospital: Eastern Maine Medical Center	(207) 973-7000		
Police Department	911		
Ambulance	911		
TriageNow (early injury case management)	1-(877) 311-0038		
Poison Control	(800) 222-1222		
Penobscot County Sheriff	207-947-4585		
WSP Project Contacts			
	Office	Cell/Home	
Site Health and Safety Officer: Lindsey Fales	NA	207-228-3909	
Project Manager: Rod Pendleton	NA	207-229-0891	
Field Operation Manager: Brad Wolfe	NA	925-323-4082	
Field Lead: Charles Lyman	NA	207-461-0001	
New England District HSSE Manager: Jeff Tweeddale	NA	860-805-5883	
Regulatory Agency Contacts			
National Response Center (Spills, Security): U.S. Coast Guard	800-424-8802 or 202-267-2675		
Clean Harbors 24-Hour Spill Response	207-799-8111		
DFW Warden Service (Central Division – Bangor)	207-941-4470		
DMR Marine Patrol (Division II)	207-667-3373		
U.S. Coast Guard Station Rockland, ME	207-596-6667		
Maine DEP Emergency Response (Bangor)	207-941-4570		
Dig Safe	888-344-7233		

Emergency Response Strategies

Type of Emergency	Description	Immediate Action	Emergency Contact Procedure	Follow Up Procedures
Weather Emergency	Lightning	<ul style="list-style-type: none"> - If lightning is observed, work shall be halted, and employees must follow the 30/30 rule. - Begin counting as soon as you see lightning. If you hear thunder before you reach 30, stop work and go indoors. 	<p><u>SHSO</u>: Lindsey Fales (207-228-3909) <u>FOL</u>: Charles Lyman (207-461-0001)</p>	Outdoor activities must be suspended for at least 30 minutes after the last sound of thunder and/or sight of lightning, whichever is longer. The FOL will be responsible for monitoring weather conditions.
	High Winds	<ul style="list-style-type: none"> - Take appropriate shelter. 	<p><u>SHSO</u>: Lindsey Fales (207-228-3909) <u>FOL</u>: Charles Lyman (207-461-0001)</p>	The FOL will be responsible for monitoring weather forecasts and communicating conditions to on-site personnel.
	Adverse Weather (e.g., snow, hail)	<ul style="list-style-type: none"> - Send personnel home early in advance of an approaching storm. Alternatively, shelter workers if conditions are too hazardous to risk travel. 	<p><u>SHSO</u>: Lindsey Fales (207-228-3909) <u>FOL</u>: Charles Lyman (207-461-0001)</p>	The FOL will be responsible for monitoring weather forecasts and communicating conditions to on-site personnel.
Medical Emergency	An emergency requiring medical attention beyond first aid (e.g., major injury)	<ul style="list-style-type: none"> - Call 911 and follow first responder instructions. - Make area safe for first responders and perform lifesaving procedures if possible (e.g., CPR/FA) 	<p>911 <u>PM</u>: Rod Pendleton (207-229-0891) <u>FOM</u>: Brad Wolfe (925-323-4082) <u>H&SM</u>: Jeff Tweeddale (860-805-5883) <u>SHSO</u>: Lindsey Fales (207-228-3909) <u>FOL</u>: Charles Lyman (207-461-0001)</p>	PM will work with SHSO, FOL, and other on-site personnel to prepare a WSP incident report.
Fire	Fire	<ul style="list-style-type: none"> - If a fire is observed, an employee trained in fire extinguisher use may attempt to extinguish the fire. - Do NOT attempt to extinguish a flammable gas fire until the source of gas has been shut off/eliminated. - If fire not extinguished, contact employees and evacuate to assembly area. - Contact 911 	<p>911 <u>PM</u>: Rod Pendleton (207-229-0891) <u>FOM</u>: Brad Wolfe (925-323-4082) <u>H&SM</u>: Jeff Tweeddale (860-805-5883) <u>SHSO</u>: Lindsey Fales (207-228-3909) <u>FOL</u>: Charles Lyman (207-461-0001)</p>	PM will work with SHSO, FOL, and other on-site personnel to prepare a WSP incident report.
Explosion	Explosion	<ul style="list-style-type: none"> - Contact 911 - Contact employees and evacuate to assembly area. 	<p>911 <u>PM</u>: Rod Pendleton (207-229-0891) <u>FOM</u>: Brad Wolfe (925-323-4082)</p>	PM will work with SHSO, FOL, and other on-site personnel to prepare a WSP incident report.

			<u>H&SM</u> : Jeff Tweeddale (860-805-5883) <u>SHSO</u> : Lindsey Fales (207-228-3909) <u>FOL</u> : Charles Lyman (207-461-0001)	
Employee Absence	Unanticipated employee absence or failure to report to Site at expected time	<ul style="list-style-type: none"> - Attempt to contact employee via cell phone, office phone, or other means. Reach out to employee's manager to evaluate if other circumstances exist. - If not, contact company's HR department to determine next steps. 	<u>PM</u> : Rod Pendleton (207-229-0891) <u>FOM</u> : Brad Wolfe (925-323-4082) 911 (if necessary)	PM will perform situation specific follow-up with assistance of on-site personnel.
Property Damage / Theft / Vandalism	Damage to property, equipment, or vehicles on-site	<ul style="list-style-type: none"> - Assess extent of damage. - If warranted, contact local police to file a report. - Initiate steps to repair or replace property, damaged equipment, or vehicles. 	Penobscot County Sheriff: 207-947-4585 <u>SHSO</u> : Lindsey Fales (207-228-3909) <u>FOL</u> : Charles Lyman (207-461-0001)	SHSO will perform situation specific follow-up with assistance of on-site personnel.
Unauthorized Person	Entry of unauthorized person onto Site	<ul style="list-style-type: none"> - Initiate contact to understand access need and politely request departure. - If unauthorized person is hostile or aggressive, contact Penobscot Sheriff's Office or call 911. 	Penobscot County Sheriff: 207-947-4585 911 <u>SHSO</u> : Lindsey Fales (207-228-3909) <u>FOL</u> : Charles Lyman (207-461-0001)	SHSO will perform situation specific follow-up with assistance of on-site personnel.
Hazardous Material and/or Chemical Spills and Leaks	Small Spill (<10 gallons)	<ul style="list-style-type: none"> - While wearing appropriate PPE, place absorbent material over area to contain spill. - Once contained, place absorbent material into appropriate DOT approved 55-gallon container and label for identification/disposal. - Spills of OHM shall be cleaned up immediately and not left unattended. 	<u>PM</u> : Rod Pendleton (207-229-0891) <u>FOM</u> : Brad Wolfe (925-323-4082) <u>SHSO</u> : Lindsey Fales (207-228-3909) <u>FOL</u> : Charles Lyman (207-461-0001)	PM will perform situation specific follow-up with assistance of on-site personnel.
	Large Spill (>10 gallons)	<ul style="list-style-type: none"> - Cone/barricade off area and evacuate personnel to upwind area. - Contact appropriate governmental agencies, as identified in the SPCC. 	NRC: 1-800-424-8802 ME DEP ER: 207-941-4570	PM will perform situation specific follow-up with assistance of on-site personnel.

		- Contact hazardous materials spill response contractor.	Clean Harbors Spill Response: 207-799-8111 <u>PM</u> : Rod Pendleton (207-229-0891) <u>FOM</u> : Brad Wolfe (925-323-4082) <u>H&SM</u> : Jeff Tweeddale (860-805-5883) <u>SHSO</u> : Lindsey Fales (207-228-3909) <u>FOL</u> : Charles Lyman (207-461-0001)	personnel. Written reports will be completed per the SPCC.
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Abbreviations are as follows:

PM = Project Manager

FOM = Field Operations Manager

H&SM = Health and Safety Manager

SHSO = Site Health and Safety Officer

FOL = Field Operations Lead

CPR = Cardiopulmonary Resuscitation

FA = First Aid

OHM = Oil and/or Hazardous Material

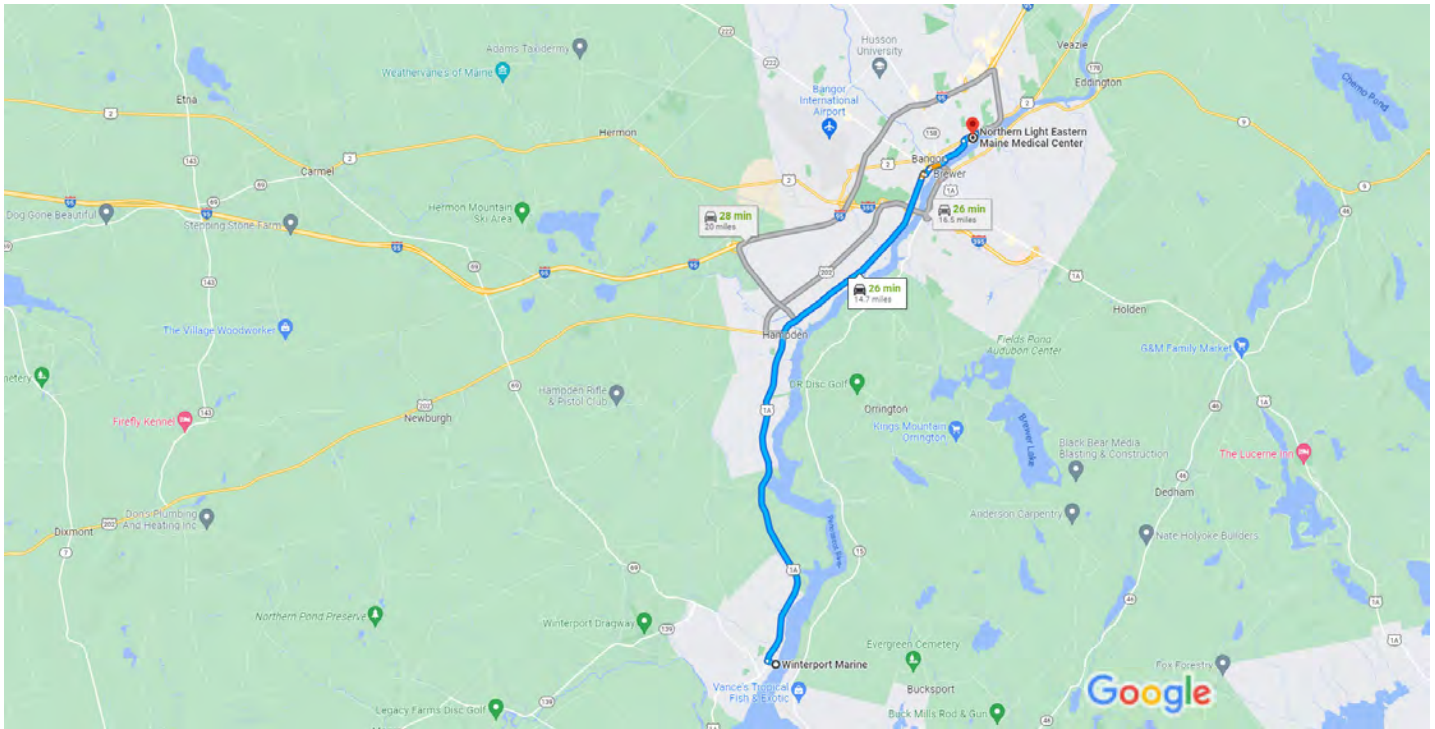
NRC = National Response Center

ME DEP ER = Maine Department of Environmental Protection Emergency Response



Winterport Marine, 49 Water St, Winterport, ME 04496 to Northern Light Eastern Maine Medical Ctr, 489 State St, Bangor, ME 04401

Drive 14.7 miles, 26 min



Map data ©2023 1 mi

Winterport Marine
49 Water St, Winterport, ME 04496

Follow Commercial St to US-1A E/Main St

- _____ 1 min (0.2 mi)
- ↑ 1. Head north on Water St toward Commercial St
- _____ 43 ft
- ↶ 2. Turn left onto Commercial St
- _____ 0.2 mi

Follow US-1A E to Cedar St in Bangor

- _____ 21 min (12.8 mi)
- ↷ 3. Turn right onto US-1A E/Main St
- 📘 Continue to follow US-1A E
- _____ 12.7 mi
- ↑ 4. Continue onto Main St
- _____ 0.1 mi

Take Washington St and Hancock St to State St

- _____ 3 min (1.3 mi)
- ↷ 5. Turn right onto Cedar St
- _____ 249 ft

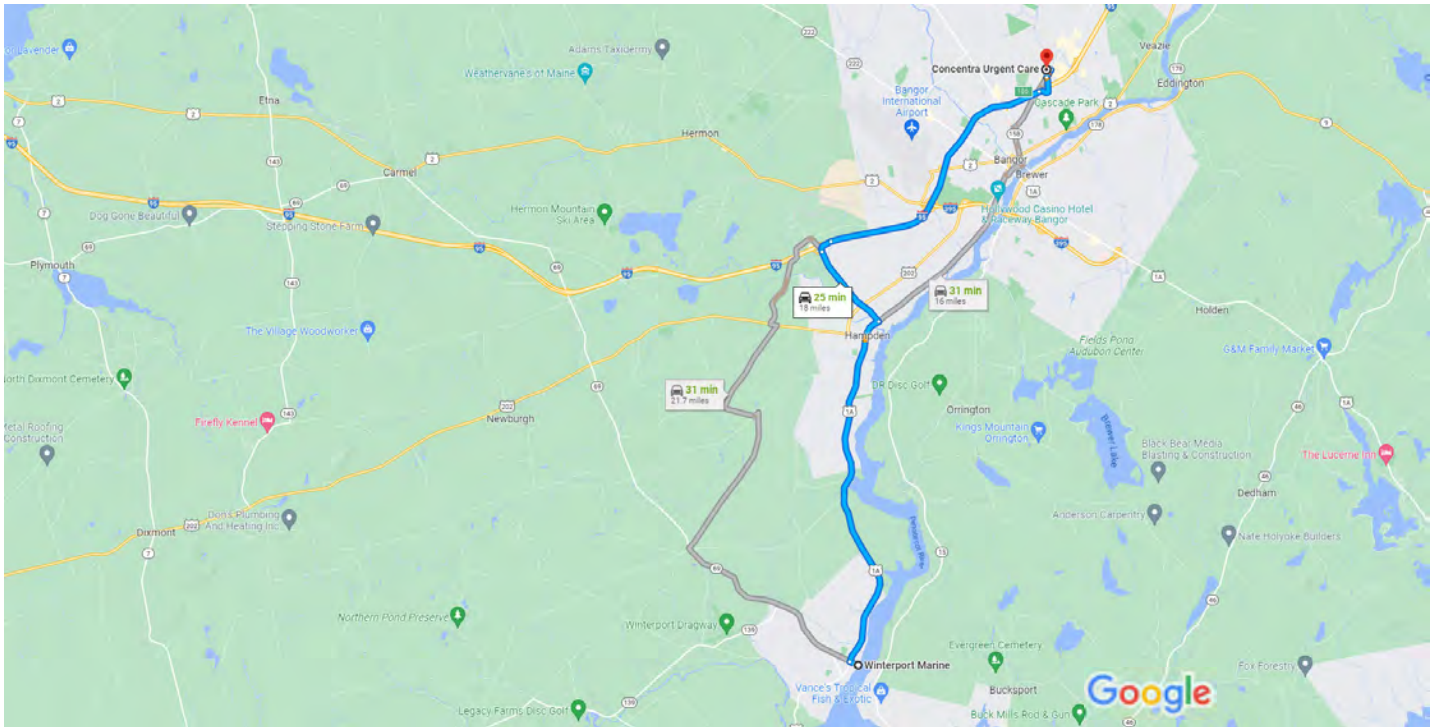
- ↑ 6. Continue onto Summer St
_____ 0.1 mi
- ↑ 7. Continue onto Independent St
_____ 348 ft
- ↑ 8. Continue onto Washington St
_____ 0.4 mi
- ↷ 9. Washington St turns right and becomes Hancock St
_____ 0.6 mi
- ↷ 10. Turn right onto State St
_____ 47 sec (0.3 mi)
- ↷ 11. Turn right
_____ 1 min (0.1 mi)

Northern Light Eastern Maine Medical Ctr
489 State St, Bangor, ME 04401



Winterport Marine, 49 Water St, Winterport, ME 04496 to Concentra Urgent Care, 34 Gilman Rd, Bangor, ME 04401

Drive 18.0 miles, 25 min



Map data ©2023 1 mi

Winterport Marine
49 Water St, Winterport, ME 04496




Follow Commercial St to US-1A E/Main St

- 1 min (0.2 mi)
- ↑ 1. Head north on Water St toward Commercial St
- 43 ft
- ↶ 2. Turn left onto Commercial St
- 0.2 mi
- ↷ 3. Turn right onto US-1A E/Main St
- [Continue to follow US-1A E](#)
- 13 min (8.3 mi)





Get on I-95 N

- 4 min (2.4 mi)
- ↶ 4. Turn left onto Coldbrook Rd
- 2.0 mi
- ⤴ 5. Use the right lane to merge onto I-95 N via the ramp to Bangor
- 0.4 mi

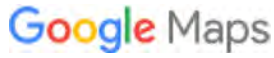
Continue on I-95 N to Bangor

-  6. Merge onto I-95 N 8 min (7.0 mi)
-  7. Take exit 186 for Stillwater Avenue 6.3 mi
-  8. Use the middle lane to turn right onto Stillwater Ave 0.6 mi
- 0.2 mi

Continue on Gilman Rd to your destination

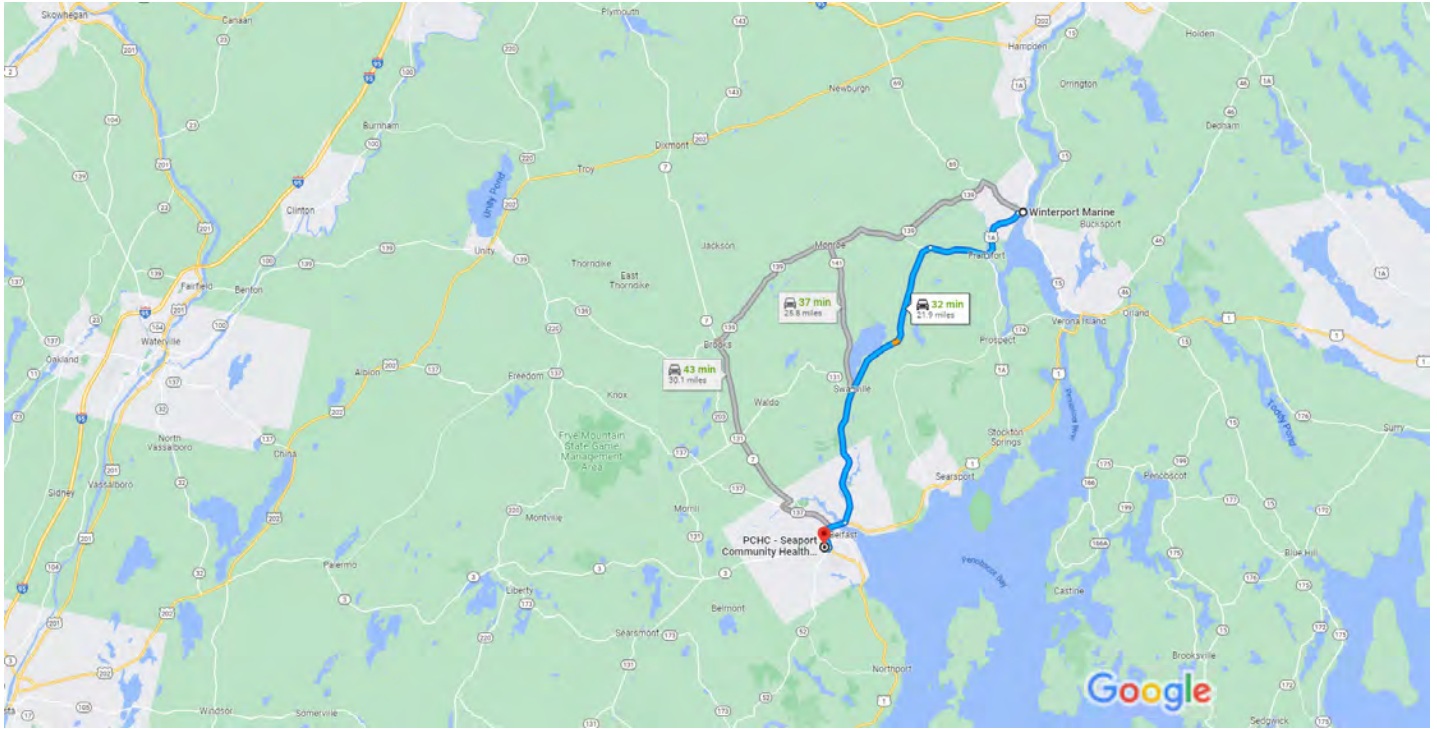
-  9. Turn left onto Gilman Rd 37 sec (0.1 mi)
-  10. Turn left 289 ft
-  11. Turn right 59 ft
-  Destination will be on the right 200 ft

Concentra Urgent Care
34 Gilman Rd, Bangor, ME 04401



Winterport Marine, 49 Water St, Winterport, ME 04496 to PCHC - Seaport Community Health Center, 53 Schoodic Dr, Belfast, ME 04915

Drive 21.9 miles, 32 min



Map data ©2023 Google 2 mi

Winterport Marine
49 Water St, Winterport, ME 04496

Take Ferry St to US-1A W/Main St

- _____ 1 min (0.2 mi)
- ↑ 1. Head south on Water St toward Willow St
_____ 0.1 mi
- ↗ 2. Water St turns slightly right and becomes Ferry St
_____ 0.1 mi

Continue on US-1A W/Main St to Frankfort

- _____ 9 min (5.4 mi)
- ← 3. Turn left onto US-1A W/Main St
_____ 2.8 mi
- ↘ 4. Turn right onto Loggin Rd
_____ 2.6 mi

Follow N Searsport Rd to ME-141 S/Swan Lake Ave in Swanville

- _____ 10 min (7.8 mi)
- ← 5. Turn left onto N Searsport Rd
_____ 7.7 mi

➔ 6. Turn right to stay on N Searsport Rd
_____ 397 ft

Continue on ME-141 S/Swan Lake Ave to Belfast

_____ 11 min (8.2 mi)

↶ 7. Sharp left onto ME-141 S/Swan Lake Ave
_____ 6.4 mi

➔ 8. Turn right onto US-1 S
_____ 1.0 mi

↑ 9. Continue straight to stay on US-1 S
_____ 0.7 mi

➔ 10. Turn right onto Lincolnville Ave
_____ 400 ft

Follow Hatley Rd and Schoodic Dr to your destination

_____ 2 min (0.3 mi)

➔ 11. Turn right onto Hatley Rd
_____ 0.2 mi

↶ 12. Turn left onto Schoodic Dr
_____ 400 ft

↶ 13. Turn left
_____ 82 ft

↶ 14. Turn left
i Destination will be on the right
_____ 3 ft

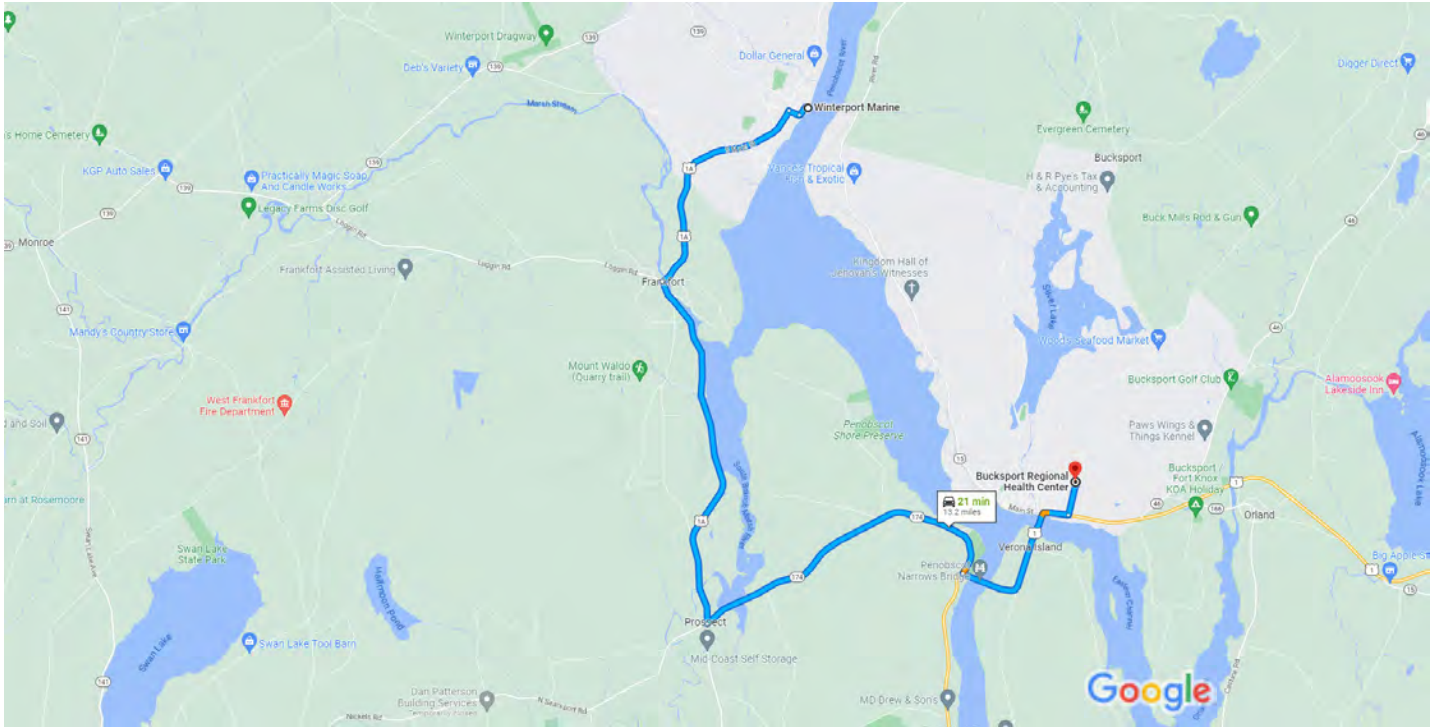
PCHC - Seaport Community Health Center

53 Schoodic Dr, Belfast, ME 04915



Winterport Marine, 49 Water St, Winterport, ME 04496 to Bucksport Regional Health Center, 110 Broadway, Bucksport, ME 04416

Drive 13.2 miles, 21 min



Map data ©2023 5000 ft

Winterport Marine
49 Water St, Winterport, ME 04496

Take Ferry St to US-1A W/Main St

- _____ 1 min (0.2 mi)
- ↑ 1. Head south on Water St toward Willow St
_____ 0.1 mi
- ↗ 2. Water St turns slightly right and becomes Ferry St
_____ 0.1 mi

Continue on US-1A W. Take ME-174 E to Nicholson Ave in Bucksport

- _____ 19 min (12.6 mi)
- ↶ 3. Turn left onto US-1A W/Main St
_____ 2.8 mi
- ↶ 4. Turn left onto US-1A W
_____ 4.2 mi
- ↶ 5. Turn left onto ME-174 E
_____ 3.8 mi
- ↶ 6. Turn left onto US-1 N
_____ 1.8 mi

Continue on Nicholson Ave to your destination

1 min (0.4 mi)

↶ 7. Turn left onto Nicholson Ave

0.3 mi

↗ 8. Slight right at Broadway

i Destination will be on the left

233 ft

Bucksport Regional Health Center
110 Broadway, Bucksport, ME 04416

APPENDIX J

WSP HSE Risk Register

Penobscot Estuary Remediation

E&I HSSE SMARTool Risk Register

Project Number: **3617237573**
Business Unit: **Consulting**
Business Group: **Resilient Environments**
Sub Business Group: **East US**

Risk Rank: **Orange 1**
Project Category: **C**
Project Tier: **Tier 3**
Project Location: **Maine, United States**

NOTE: Training to be completed *as required*

Legal Register

[MEOSH Safety and Health Standards](#)

[States' Environmental Regulations](#)

[US OSHA](#)

[US OSHA Construction Industry Hub](#)

[US OSHA Construction Industry Standards 29 CFR 1926](#)

[US OSHA General Industry Standards 29 CFR 1910](#)

[US OSHA Laws and Regulations 29 CFR complete list](#)

[USACE Health and Safety Requirements Manual, EM 385-1-1, 2014](#)

Core HSSE Training

[Driving Standard](#)

[HSSE Induction](#)

[Incident Reporting and Injury Management](#)

[Life Saving Rules](#)

[Personal Protective Equipment](#)

[Point of Work Risk Assessment](#)

[Safety Handbook Acknowledgement](#)

[Safety Shield for Everyone](#)

Biological Hazards / Exposures (Anthrax, hantavirus, work involving direct exposure to known contagions)

Inherent HSSE Risk Rank: **Substantial**

Cause: Employee exposed to biological hazards such as anthrax, pandemics such as Covid-19 (event) may be encountered/transmitted through the work environment (consequence) causing fatal or serious injury or occupational health effect, to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Particulates not otherwise specified - nuisance

Programs & Procedures

[HSE-PRO-100331 – Hazardous Biological Agents -US](#)

[AHA – Hantavirus](#)

[HSE-STD-100051 – Blue Book](#)

Training

[Wildlife and Field Biological Hazards](#)

Mitigation Controls

Awareness training on biological hazards, safe work practices, social distancing, PPE.

Action Plan

Inspect and ensure 100% compliance.

Owner

HSE / Security / Operations

Biological Hazards / Exposures (Poisonous Plants, Insects, Wildlife)

Inherent HSSE Risk Rank: **Moderate**

Cause: Employee exposed to effects of wildlife or poisonous plants (event) encountered during work activities (consequence) causing fatal or serious injury or occupational health effect, to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Poisonous Plants (unless classified as Substantial)
Insects - Biting and Stinging (unless classified as Substantial)
Wildlife Exposure (unless classified as Substantial)
Wildlife - Dogs (unless classified as Substantial)

Programs & Procedures

[HSE-PRO-100331 – Hazardous Biological Agents -US](#)

[AHA – Insect Stings and Bites](#)

[AHA – Poisonous Plants](#)

[AHA – Dog and Wildlife Hazards](#)

[AHA – Hantavirus](#)

[HSE-STD-100051 – Blue Book](#)

Training

[Wildlife and Field Biological Hazards](#)

[Bear Encounter Prevention and Response](#)

Mitigation Controls

Awareness training (Bear, Cougar, Dog, Snake, Insects, Anthrax, etc.), PPE, Predator control. Wildlife awareness/vehicles.

Action Plan

Inspect and ensure 100% compliance.

Owner

HSE / Security / Operations

Chemical Hazards / Exposures

Inherent HSSE Risk Rank: ■ **Substantial**

Cause: Employee exposed to effects of chemicals (event) used or released during work activities (consequence) causing serious injury or occupational health effect, to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Personal Protective Equipment (PPE) Modified Level D required (refer to PPE Procedure, linked in Instructions)
Personal Protective Equipment (PPE) Standard Level D (Standard work clothing, negligible chemical hazards)
Particulates not otherwise specified - nuisance

Programs & Procedures

[HSE-PRO-100324 – Benzene -US](#)

[HSE-PRO-100276 – Beryllium Disease Prevention- US](#)

[HSE-PRO-100325 – Cadmium -US](#)

[HSE-PRO-100326 – Chromium \(VI\) -US](#)

[HSE-PRO-100340 – Flammable Liquids](#)

[HSE-PRO-100322 – Exposure Monitoring-US](#)

[HSE-PRO-100336 – Handling Drums and Containers-US](#)

[HSE-PRO-100332 – Handling Storage and Control of Hazardous Chemicals-US](#)

[HSE-PRO-100265 – HAZWOPER-US](#)

[HSE-PRO-100262 – Hazard Communication-US](#)

[HSE-PRO-100327 – Lead Safety-US](#)

[HSE-PRO-100275 – Medical Surveillance Program-US](#)

[HSE-PRO-100335 – Process Safety Management Procedure - US](#)

[Stand up for Safety – Process Safety](#)

[HSE-PRO-100328 – Respirable Crystalline Silica-US](#)

[HSE-PRO-100271 – Respiratory Protection Program -US](#)

[HSE-PRO-100268 – Personal Protective Equipment – US](#)

[HSE-PRO-100321 – Medical Emergencies and First Aid - US](#)

[HSE-STD-100051 – Blue Book](#)

[Safety Essential – Wear the Correct PPE](#)

Training

[HAZCOM](#)

[Chemical Handling](#)

[Respirable Silica](#)

[Hydrogen Sulfide Introduction](#)

[Lead Safety](#)

Mitigation Controls

Hazard Communication, Site Specific chemical handling training; HAZWOPER training; First Aiders; Medical Surveillance, Engineering Controls, Control Plans (exposure monitoring, work practices, training); Respirator medical screening, training, fit testing; Control Plans and/or Procedures (Lead, Silica, H2S, methane, etc.)

Action Plan

Inspect and ensure 100% compliance. OH Survey.

Owner

HSE / Operations

Environmental Conditions (e.g. Heat, Cold), Extreme weather.

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee exposed to thermal conditions or extreme weather (event) and the effects on physical capability or other factors due to work (consequence) causing serious injury or occupational health effect, to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Cold stress
Heat stress
Lightning
High Winds
Flooding
Sun, UV light exposure

Programs & Procedures

[HSE-PRO-100329 – Heat and Cold Stress-NA](#)

Training

[Heat Illness Prevention](#)

[Cold Injury and Illness Prevention](#)

Mitigation Controls

Awareness Training, Env. monitoring, work-rest schedules, weather forecasts, lightning detectors/online services

Action Plan

Training, schedule and plan according to conditions. Communicate and assure 100% compliance.

Owner

HSE / Operations

Environmental Spill

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee or contractor responsible for work that has potential to release to environment (event) as a result of

unplanned event involving vehicles, equipment, etc., (consequence) causing release of material or other adverse impacts.

Applicable to the following Selected Hazard(s)

Environmental spills

Programs & Procedures

Training

[Spill Response](#)

Mitigation Controls

Spill prevention and protection, training and response. Substitution. Subcontractor LPP and plan review/approval.

Action Plan

Training and prevention planning.

Owner

HSE / Operations

Ergonomics / Muscular skeletal

Inherent HSSE Risk Rank:  **Low**

Cause: Employee performing manual tasks at workstations or general physical activities (event) which may result in muscular skeletal injury at work (consequence) causing serious injury to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Ergonomic hazards (unless classified as substantial or moderate)

Repetitive tasks

Strenuous field activities

Programs & Procedures

[HSE-PRO-100334 – Ergonomics-NA](#)

[HSE-STD-100051 – Blue Book](#)

Training

[Industrial Athlete](#)

Mitigation Controls

Training, Ergonomic Workstation Assessment, Manual material handling devices.

Action Plan

Training and intervention.

Owner

HSE / Operations

Extreme Environments

Inherent HSSE Risk Rank:  **Substantial**

Cause: Employees and subcontractors may be exposed to hazards when (event) conducting extended field work or construction in extreme environments (e.g. very remote geographic locations: e.g. Antarctica, the Arctic, remote Pacific Islands), locations with temperature extremes (more than 130° F, less than -30° F) (consequence) causing injury or delays in emergency responses.

Applicable to the following Selected Hazard(s)

Remote and difficult to access project sites

Programs & Procedures

Training

Mitigation Controls

HASP review/approval process, assurance, obtaining competent and experience personnel, professional HSE involvement, etc.

Action Plan

Additional mitigations, management support or delivery activities to support successful delivery.

Owner

HSSEA Operations Assurance/HSE/Operations

Field Office Safety

Inherent HSSE Risk Rank: ■ **Low**

Cause: Employee working in an office, lab, site trailer, etc., (event) exposed to office related hazards (e.g., housekeeping, improper storage of materials, blocked exits, electrical, fire,) (consequence) causing serious injury to employee/s or third party/s

Applicable to the following Selected Hazard(s)

Field office tasks
Office tasks

Programs & Procedures

[HSE-PRO-100279 – Facility and Office Safety-NA](#)

[HSE-PRO-100289 – Electrical Safety-US](#)

[HSE-PRO-100312 – Housekeeping-NA](#)

[HSE-PRO-100337 – Fire Protection and Prevention -NA](#)

Training

Mitigation Controls

Awareness training, proper storage of materials, limiting combustible materials, unblocked exits and fire extinguishers.

Action Plan

Monthly office inspections, housekeeping services.

Owner

HSE / Operations

Hazardous Waste Sites

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee and subcontractors may be exposed to contaminants (event) while performing clean up operations at poorly characterized hazardous waste sites (consequence) that can result in employee injuries and illnesses or death.

Applicable to the following Selected Hazard(s)

Conventional decontamination of personnel or equipment at hazardous waste sites using decon stations
Self decontamination, self removal of PPE (with only low levels of contamination)
Personal Protective Equipment (PPE) Standard Level D (Standard work clothing, negligible chemical hazards)

Programs & Procedures

[HSE-PRO-100265 – HAZWOPER-US](#)

[HSE-PRO-100262 – Hazard Communication-US](#)

Training

Mitigation Controls

US: 40-hour initial training, annual 8-hour refresher training, 8-hour supervisory training. HASP, AHAs, Use of respirators and other PPE.

Canada: Service Line HSE Training for Environmental Field Technician

Action Plan

Routine inspections, all parties review HASP and AHAs, management of change, proper selection and inspection of PPE.

Owner

HSE / Operations

Housekeeping, Drinking Water and Sanitation, lack of

Inherent HSSE Risk Rank: ■ **Low**

Cause: Employees may be exposed to unsanitary conditions or slip/trip/fall hazards (event) due to poor housekeeping or lack of sanitation (consequence) resulting in injury or illness.

Applicable to the following Selected Hazard(s)

Sanitation, housekeeping, drinking water

Programs & Procedures

[HSE-PRO-100333 – Drinking Water and Sanitation-NA](#)

[HSE-PRO-100312 – Housekeeping-NA](#)

Training

Mitigation Controls

Awareness training, inspections, providing bottled water, regular housekeeping and cleaning.

Action Plan

Inspect to ensure compliance.

Owner

Inspections

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employees may be exposed to various hazards when (event) conducting various types of inspections on project sites or client's facilities which could lead to (consequence) employee injury

Applicable to the following Selected Hazard(s)

Inspections, surveys not classified as substantial
Phase I, ecological surveys, engineering surveys (when it does not involved listed substantial hazards)

Programs & Procedures

[AHA - Various](#)

Training

Mitigation Controls

Training, situational awareness

Action Plan

Be aware of expected hazards, wear required PPE, training

Owner

HSE / Operations / Employees

Machine Guarding, lack of

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee working on or near unprotect equipment or machinery (event) exposed to caught by or crushing injury (consequence) resulting in serious injury or fatality.

Applicable to the following Selected Hazard(s)

Maintenance of equipment (not including LOTO)

Programs & Procedures

[HSE-PRO-100297 - Machine Guarding - NA](#)

Training

[Tool and Equipment Use, Machine Guarding](#)

Mitigation Controls

Training, inspection, sub out work, replace guards after work is completed. Tag defective equipment (missing/defective guards) out of service.

Action Plan

Subcontract repair and maintenance work. Inspect equipment prior to use. Tag defective equipment out of service.

Owner

HSE / Operations

Manual Lifting, Line of Fire

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee lifting, carrying or handling materials or positioned unsafely (event) which may result in strain, or struck by equipment (consequence) causing serious injury to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Manual lifting, within 50 lbs limits

Programs & Procedures

[HSE-PRO-100296 - Materials Handling and Storage - NA](#)

Training

[Industrial Athlete](#)

Mitigation Controls

Awareness training of line of fire, SWP Safe Lifting, Material handling devices. Ergonomic improvements.

Action Plan

Communicate and ensure compliance. Encourage workshops on safe lifting.

Owner

HSE / Operations

Noise / Hearing Conservation

Inherent HSSE Risk Rank: ■ **Low**

Cause: Employee exposed to effects of noise (event) encountered during work activities (consequence) causing occupational health effect, to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Occupational noise exposure/hearing conservation

Programs & Procedures

[HSE-PRO-100266 - Hearing Conservation - US](#)

[HSE-STD-100051 - Blue Book](#)

Training

[Personal Protective Equipment](#)

Mitigation Controls

Hearing conservation programs, training, engineering controls, PPE

Action Plan

Inspect and ensure 100% compliance.

Owner

Operating Mobile Equipment (ATV, boat, snowmobile, aerial work platform, etc.)

Inherent HSSE Risk Rank: **Substantial**

Cause: Employee operating mobile equipment (event) may be involved in accident due to operator, equipment failure, or third-party actions (consequence) causing death, serious injury, to employee, passengers or third party; or property damage and consequential damages.

Applicable to the following Selected Hazard(s)

Operating mobile equipment including ATVs, boats, snowmobiles, aerial work platforms, etc.

Programs & Procedures

[HSE-PRO-100219 - All Terrain Vehicles-ATVs - NA](#)

[HSE-PRO-100299 - Boating Safety - US](#)

[HSE-PRO-100305 – Mobile Equipment-US](#)

[HSE-PRO-100306 – Mobile Lifts and Powered Platforms-US](#)

[HSE-PRO-100303 - Drilling Safety - US](#)

[Stand up for Safety – Driving](#)

Training

Mitigation Controls

Certified operator training specific to vehicle (hands on). Remote work planning. Subcontractor LPP.

Action Plan

Inspect and ensure 100% compliance, improve competency verification.

Owner

HSE / Operations

Power and Hand Tools

Inherent HSSE Risk Rank: **Low**

Cause: Employee operating tools or equipment (event) may be involved in accident due to operator, equipment failure, or third-party actions (consequence) causing death, serious injury, to employee, passengers or third party; or property damage.

Applicable to the following Selected Hazard(s)

Hand and portable power tools
Hand digging or augering

Programs & Procedures

[HSE-PRO-100298 - Power and Hand Tools - NA](#)

[HSE-PRO-100297 - Machine Guarding - NA](#)

Training

[Tool and Equipment Use, Machine Guarding](#)

Mitigation Controls

Authorized use only, training, work practices(guards), PPE, SWP - Defective Tools (inspections, etc.).

Action Plan

Inspect and ensure 100% compliance, improve competency verification.

Owner

HSE / Operations

Radiological Hazards

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee involved with radiological work (event) involving regulatory infraction or unplanned exposure during work (consequence) causing occupational health effect to employee/s or third party/s, or enforcement actions and reputational damage.

Applicable to the following Selected Hazard(s)

Sun, UV light exposure

Programs & Procedures

[HSE-PRO-100270 - Nuclear Gauge and XRF Devices - US](#)

[HSE-STD-100051 - Blue Book](#)

Training

[Radiation Awareness](#)

Mitigation Controls

RSO Certification, TDG Class 7 training, Certified Health Physicist planning and approval

Action Plan

Inspect and ensure 100% compliance.

Owner

Radiation Safety / HSE / Operations

Slips/Trips/Falls

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employees may be exposed to slip/trip/fall hazards (event) due to poor housekeeping, uneven terrain, slippery surfaces or obstacles (consequence) resulting in injury.

Applicable to the following Selected Hazard(s)

Walking uneven terrain

Poor access, steep slopes (less than 30 degrees), need to climb to get access

Programs & Procedures

[HSE-PRO-100312 - Housekeeping-NA](#)

Training

Mitigation Controls

Awareness training, inspections, regular housekeeping and cleaning.

Action Plan

Inspect to ensure compliance.

Owner

HSE / Operations / Employees

Unusual Work Hours

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee fatigued (event) due to schedule, excessive stressors, etc., contributes to diminished capability (consequence) resulting in an incident with risk of death or serious injury to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Extended work hours

Programs & Procedures

[Stand up for Safety – Driving Handbook](#)

[Stand up for Safety – Journey Management Plan](#)

Training

[Fatigued Driving](#)

Mitigation Controls

Fatigue Management Procedure (training, planning, authorization)

Action Plan

Communicate and assure 100% compliance.

Owner

HSE / Operations

Working offshore

Inherent HSSE Risk Rank: ■ **Moderate**

Cause: Employee involved in marine operations, diving or work on ice (event) exposed to risk of drowning or hypothermia (consequence) causing death or serious injury, to employee/s or third party/s or damages.

Applicable to the following Selected Hazard(s)

Working in marine operations, diving or work on ice who may be exposed to the risk of drowning or hypothermia

Programs & Procedures

[HSE-PRO-100302 – Scientific Diving-NA](#)

[HSE-PRO-100299 – Boating Safety-US](#)

Training

Mitigation Controls

Certified operator training specific to vehicle (hands on). Remote work planning. Subcontractor LPP.

Action Plan

Inspect and ensure 100% compliance, improve competency verification.

Owner

HSE / Operations

Working Over or Near Water

Inherent HSSE Risk Rank: ■ **Substantial**

Cause: Employee involved in marine operations, diving or work on ice (event) exposed to risk of drowning or hypothermia (consequence) causing death or serious injury, to employee/s or third party/s or damages.

Applicable to the following Selected Hazard(s)

Boating - Boats, canoes, rafts, proximity to water
Marine Charter vessels
Water - Boating
Working near oceans, lakes, rivers, streams - within 6 feet/1.8 meters of water

Programs & Procedures

[HSE-PRO-100301 – Working Over or Near Water-NA](#)

[HSE-PRO-100299 – Boating Safety-US](#)

[HSE-PRO-100302 – Scientific Diving-NA](#)

Training

[Working Around Water](#)

Mitigation Controls

Certified operator training specific to vehicle (hands on). Remote work planning. Subcontractor LPP.

Action Plan

Inspect and ensure 100% compliance, improve competency verification.

Owner

HSE / Operations

Workplace Violence / Personal Security / Harassment

Inherent HSSE Risk Rank: ■ **Low**

Cause: Employee exposed to threat or crime (event) encountered during work activities (consequence) causing serious injury to employee/s or third party/s.

Applicable to the following Selected Hazard(s)

Theft/damage to property risk, including vandalism (controlled)

Programs & Procedures

[HRM-PRO-100340 – Harassment Free Workplace-US](#)

[HSE-STD-100051 – Blue Book](#)

Training

Mitigation Controls

Workplace Violence Awareness Training, Violence risk assessment; Harassment awareness training.

Action Plan

Communicate and ensure compliance.

Owner

HSE/Security/HR/ Operations

APPENDIX K

Safety Readiness Review Checklist

All information marked "a" are to be completed by WSP and/or completed/submitted by all subcontractors.

Project Name:		Penobscot Estuary Remediation – Pre-Design Field Investigations & LTM		
WSP Site Manager Name:		Brad Wolfe		
WSP SHSO Name:		Lindsey Fales		
WSP Staff				
(check box to the left if required and box to the right when submitted / done)				
Check if required:				
<input type="checkbox"/>	Establish Safety Bulletin Board in common area, accessible by all. Post (as applicable):			<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Deficiency tracking log		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Emergency contacts		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Form 300A (between February 1 and April 30)		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Location of hard copy of HASP		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Map to emergency care		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	OSHA Poster (US Only)		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Life Saving Actions Poster		<input type="checkbox"/>
<input type="checkbox"/>	Install first aid kit & fire extinguisher in staff common area			<input type="checkbox"/>
<input type="checkbox"/>	Provide initial site-specific job hazard training using AHAs.			<input type="checkbox"/>
<input type="checkbox"/>	Verify employees have the required training (view documents) and that training is current			<input type="checkbox"/>
<input type="checkbox"/>	Verify current medical monitoring			<input type="checkbox"/>
<input type="checkbox"/>	Verify employees have PPE, as required in the HASP			<input type="checkbox"/>
<input type="checkbox"/>	Verify all required air monitoring equipment is available and in good working condition.			<input type="checkbox"/>
<input type="checkbox"/>	Hold a Pre-Construction Site Meeting with subs			<input type="checkbox"/>
<input type="checkbox"/>	Hold an initial Mobilization (Kick-Off) Safety Meeting			<input type="checkbox"/>
<input type="checkbox"/>	Provide WSP Project Safety Orientation training to all WSP employees and subs. Orientation			<input type="checkbox"/>
<input type="checkbox"/>	Establish emergency procedures for the project (e.g., communication methods, rally point,			<input type="checkbox"/>
<input type="checkbox"/>	Establish subcontractor HSE interface arrangements (WSP's roles and responsibilities vs.			<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

Subcontractor			Sub / Done	Date
(Box checked to the left is required. Check the box to the right when submitted / done)				
Project Name:	Penobscot Estuary Remediation - Pre-Design Investigations and Long-term Monitoring			
Subcontractor Company Name:				
Subcontractor Supervisor Name:		Phone #		
<input type="checkbox"/>	Designate On-Site Safety Representative and OSHA Competent Person(s) (when required by OSHA			<input type="checkbox"/>
	Name of Safety Representative:		Phone #:	
	Name of Competent Person:		Phone #:	
	Name of Competent Person:		Phone #:	
<input type="checkbox"/>	Subcontractor agrees to comply with the WSP Loss Prevention Policy (US Version) (Procurement has			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor employees participate in WSP Project Safety Orientation.			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor agrees to comply with site HSE Objectives and Targets.			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor agrees to comply with WSP's HSE standards, procedures, processes, and rules for the site.			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor submitted relevant Standard Operating Procedures for the work to be conducted at the site			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor submitted an Inventory for chemicals brought to the site.			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor submitted Safety Data Sheets for chemicals brought to the site.			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor submitted initial site-specific Activity Hazard Analysis (AHA). (AHA's will be required to be			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor provided initial site-specific Job Hazard Training using AHA's. Obtained signatures at the start			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor employees will conduct point of work risk assessments?			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor provided documentation of required training (e.g., HAZWOPER, HAZCOM, PPE, Fall			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor provided documentation of medical surveillance, if applicable			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor verified employees have minimum PPE as identified in HASP and in the AHAs for the work to			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor posted Project Emergency Procedures and phone numbers in trailers and by telephones.			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor conducted and documented equipment inspections, as required by regulation or			<input type="checkbox"/>
<input type="checkbox"/>	Subcontractor provided ground fault protection for all non-permanent wiring.			<input type="checkbox"/>

APPENDIX L

COVID-19 Information

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Activity/Work Task:	General work environment					Overall RAC	L		
Project Location:		Home Location:		Risk Assessment Code (RAC) Matrix					
Project Number:				Severity	Probability				
Date Prepared:	09 Nov 2022	Date Reviewed:			Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by / for (Name/Title):				Catastrophic	H	H	S	S	M
Reviewed by (Name/Title):				Critical	H	S	S	M	L
				Marginal	S	M	M	L	L
				Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) This AHA involves the following activity: Precautions to be taken for prevention of Communicable Disease at work. A communicable disease is sometimes referred to an infectious or contagious disease and is caused by a wide variety of bacteria, viruses, and fungi. Diseases can be contracted and spread through contact, either directly from person to person, or indirectly through environmental exposures such as air and fluids.				Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
This AHA is not an exhaustive summary of all hazards associated with the Project or activity. Refer to the site HASP for additional requirements.				“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
				“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				H = High Risk	
				Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				S = Substantial Risk	
								M = Moderate Risk	
								L = Low Risk	

MANAGEMENT OF CHANGE: If there is a change or deviation from the planned activity, you must stop the job and re-evaluate the risk assessment and the precautions taken. Any changes to work described in this AHA shall require review by a Qualified Person.

- Communciable Disease Prevention behaviours include:**
- I assess the risk of infection in my environment
 - I prevent the spread of infection by following the rules
 - I protect myself and others by getting vaccinated

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Equipment to be Used	Training Requirements / Contact Information	Monitoring / Inspection Requirements
Cellphone. Running water with handwashing soap and/or hand sanitizer. Disinfecting wipes and cleaners. Refer to Minimum PPE Requirements and specify as per risk assessment where required.	See Emergency Contact List posted on safety boards and/or HASPs for additional contacts if needed. Training requirements: <ul style="list-style-type: none"> • Incident reporting • Fit For Duty • Any other trainings required by the site-specific HASP 	Check that worker are fit for duty at the start of the shift. Check in regularly with yourself and other field staff to ensure hands are washed frequently and/or sanitized. Stay home if: <ul style="list-style-type: none"> • Feeling unwell (i.e., fever, chills, coughing, diarrhea, etc.) • Testing positive for a communicable disease • Directed to isolate or quarantine

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
1. Pre-Work Preparation	<ul style="list-style-type: none"> • Failure to prepare. • Failure to identify or report a hazard and subsequent potential or actual illness and subsequent business continuity impacts. • Unfamiliar with current global/local events and client, WSP E&I and/or government directives. • Not prepared to implement face-covering, spacing or sanitation requirements 	M	<ul style="list-style-type: none"> • Monitor communicable disease-related information issued by local public health or government agency, or HSSE Team and follow all directions from medical health officers and local health authority. • WSP E&I team to stay up to date with current WSP E&I directives/procedures • Ensure workers understand scope of work, hazard and incident reporting process, emergency response procedures and location of emergency response equipment. • Keep workforce briefed on situation daily through tailgates, unscheduled HSSE meetings or workplace posters. if needed. • Post signs at entrances stating that workers are not to come to work if feeling unwell or experiencing symptoms of communicable disease • Encourage vaccination and remaining up to date with boosters, and comply with site/client requirements for vaccination, where applicable. • Have adequate supply of face coverings, preferably K95/N95 or a tight fitting covering with a tight weave and minimal gaps between the face and mask. Have a supply of hand sanitizers and cleaning supplies. Be aware of space restrictions and avoid close contact if possible. 	L

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
3. Symptoms Reporting	<ul style="list-style-type: none"> Failure to identify or report a hazard and subsequent potential or actual illness and subsequent business continuity impacts. 	M	<ul style="list-style-type: none"> Everyone should complete a 'self-check' prior to coming to work Stay home if: <ul style="list-style-type: none"> Feeling unwell (e.g., fever, chills, coughing, diarrhea, etc.) Testing positive for a communicable disease Directed to isolate or quarantine If you develop symptoms of a communicable disease, notify your supervisor and follow applicable local jurisdictional and WSP E&I quarantine and self isolation requirements . Complete required pre-entrance forms, where required. 	L
			<ul style="list-style-type: none"> Support employees who are seeking guidance on self-screening to the local public health guidance to self-evaluate: <u>Canada:</u> AB, BC, MB, NB, NL, NWT/NU, NS, ON, PEI, QC, SK, YK <u>US:</u> CDC COVID-19 Quarantine and Isolation calculator 	L
4. Quarantine and Self-Isolation	<ul style="list-style-type: none"> Failure to isolate and subsequent potential or actual illness and subsequent business continuity impacts. 	M	<ul style="list-style-type: none"> Self-Isolate: Individuals who test positive and/or are symptomatic with COVID -19, must not attend WSP E&I's offices or worksites. 	L
	<ul style="list-style-type: none"> Failure to quarantine and subsequent potential or actual illness and subsequent business continuity impacts. 	M	<ul style="list-style-type: none"> Self-Quarantine: Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then WSP E&I requirements recommend testing on day 2 and 5. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or office. 	L
5. Hygiene Protocols	<ul style="list-style-type: none"> Failure to apply controls measures and prevent spread of communicable disease due to transfer of infectious material from the hands or other parts of the 	M	<ul style="list-style-type: none"> Provide running water with handwashing soap and/or hand sanitizer and encourage their use through use of signage, reminders in HSSE meetings, etc. Avoid touching face, especially nose, eyes. 	L

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
	body (eyes, nose and mouth), or transmission of droplets or airborne routes.		<ul style="list-style-type: none"> Wash hands frequently; before and after eating; after you have been in a public place; after using the washroom; after coughing and sneezing; after touching surfaces that other people also touch Use a tissue if experiencing runny nose and dispose. Alternatively cough and/or sneeze into the crook of arm. 	
6. Cleaning	<ul style="list-style-type: none"> Failure to apply controls measures and prevent spread of communicable disease due to transfer via high touch surfaces 	M	<ul style="list-style-type: none"> Provide disinfecting wipes/cleaners and encourage their use through use of signage, reminders in HSSE meetings, etc. Continue to clean high touch surfaces regularly. 	L
7. Ventilation	<ul style="list-style-type: none"> Failure to apply controls measures and prevent spread of communicable disease due to poor air circulation. 	M	<ul style="list-style-type: none"> Increase airflow and avoid recirculation by opening windows, purge indoor areas frequently, and increase air filtration (i.e. buildings, vehicles, site trailers, etc.) 	L
8. Physical distancing	<ul style="list-style-type: none"> Failure to apply control measures and prevent spread of communicable disease due to close contact 	M	<ul style="list-style-type: none"> Recommend and encourage employees to avoid crowded areas. Try to maintain 6 feet / 2 meters spacing. Consider installation of barriers if risk level is high or space is limited. If a crowded area is not avoidable (physical distancing not possible), a face covering is recommended (refer to 'Mask Use'). 	L
9. Mask Use	<ul style="list-style-type: none"> Failure to apply control measures and prevent spread of communicable disease due to close contact 	M	<ul style="list-style-type: none"> Mask use is not required except in accordance with any jurisdictional or site requirements. Mask use is recommended when in enclosed and crowded spaces. If a close contact within the last 10 days and past minimum quarantine requirements, wear a surgical grade mask or above. 	L
10. Mental Health <ul style="list-style-type: none"> Stress Fear Anxiety 	Unexpected Reactions <ul style="list-style-type: none"> Anger Violence Breakdown 	M	<ul style="list-style-type: none"> Understand that all people are individuals and we all react differently to situations of high stress and change to normal routine in our lives. Watch out for each other's wellbeing. Don't be a downer affecting morale - keep a good attitude and stay positive to encourage a positive atmosphere at home and work. 	L

Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited	
Document Title	Communicable Disease Prevention		

Job Steps	Hazards	RAC Inherent	Controls	RAC Residual
			<ul style="list-style-type: none"> Think before you speak – don't spread false news or gossip; stick to the facts. If you are feeling stress/anxiety that overwhelms you, seek out assistance (e.g., Employee Assistance Program (EAP)). Be prepared for an unexpected reaction to a comment or interaction. Protect yourself and others but be respectful of peoples choices (e.g., to be vaccinated, etc.) 	

ACKNOWLEDGEMENT OF PERSON(S) CARRYING OUT WORK

NAME(S):

SIGNED:


DATE:

Meeting Leader:

SIGNED:

DATE:

The undersigned acknowledge they have read, understood and shall comply with all components of the AHA. This AHA is a living document and should be reviewed and revised during regular meetings with the WSP E&I team.


Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited 
Document Title	Communicable Disease Prevention	

AHA REVIEW ACKNOWLEDGEMENT

Reviewed by (PM):	Signature:	Date:
Plan Concurrence by (other):	Signature:	Date:

The undersigned acknowledge they have read, understood and shall comply with all components of the AHA. This AHA is a living document and should be reviewed and revised during regular meetings with the WSP E&I team.

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Activity Hazard Analysis (AHA)		WSP USA Environment & Infrastructure, Inc WSP E&I Canada Limited 
Document Title	Communicable Disease Prevention	

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COVID-19 MANAGEMENT – EASEMENT OF CONTROLS

In accordance with the Wood [COVID-19 Management Guidance](#) document, Resilient Environments has conducted the risk assessment and has determined that the overall transmission risk level in the USA and Canada is Green – Low Transmission Risk (Phase 3). Due to this, we are happy to announce that an easement of COVID-19 requirements is allowed. Effective immediately, the following are the COVID-19 requirements are to be implemented in Wood offices and Project sites. Note: some requirements have not changed from prior practices. **Also note: these requirements are subject to change should risk levels increase. Increases in COVID-19 risks may require reinstatement of previous control measures. Finally, be aware that some clients or sites may have additional requirements that project teams must comply with.**

	Score 12-23
Criteria	Green – Low Transmission Risk Requirements (Phase 3)
1. Attendance at work	Place signs near badging locations or at all entryways into office stating that workers are not to come to work if experiencing symptoms consistent with Covid and by badging in or entering the building, they are certifying they are Covid free.
2. Work location	Phase 3 (office is fully opened). Office/ Hybrid working environment. Offices need to have determined who works from home, office or hybrid.
3. Identification and support for the vulnerable – identification of vulnerable individuals should be in accordance with local data protection regulations	Those who self-identify as being at serious risk should discuss they work location status. Recommendation is that they continue to work from home. If they do come into the office, risk assessments should be conducted, and reasonable accommodations made (e.g., providing them with medical grade of higher masks, workstation location – away from others, etc.).
4. Cleaning and hygiene	Continue office sanitization efforts, especially routine disinfection of high touch surfaces (doorknobs, handrails, refrigerators, etc.)
5. Common areas	Lunchrooms/breakrooms are open as long as allowed by local jurisdiction
6. Conference rooms/Meeting rooms	Conference rooms must have good ventilation to be used. Social distancing no longer required but maximum usage time is 2-hours with minimum of 10 minutes between usage. Place signs which notify employees of time limitations.
7. Entry requirements including testing	Signs near entryways requiring employees not to enter building if not well.
8. Personal hygiene	Continue hand hygiene and coving nose and mouth when coughing or sneezing. Ensure a sufficient supply of hand sanitizer at key locations.
9. Social distancing	Social distancing recommended but not mandatory. Employees are encouraged to avoid crowded areas.
10. Testing	Self-testing encouraged prior to attending external events
11. Travel	Domestic Travel: All domestic travel allowed. Line management approval International Travel: Requires HSSE approval through Consulting President of HSSES, Kirsten. Pre-travel self-test for Covid recommended, if not mandated by country of travel.
12. International travel to Wood offices/sites	Self-test <u>recommended</u> prior to attending and within 48 hours of visiting

	Score 12-23
Criteria	Green – Low Transmission Risk Requirements (Phase 3)
13. Ventilation	Usually managed by landlord. If feasible: Increase airflow, avoid recirculation, open windows where able, purge rooms frequently, increase air filtration/cleaning. Identify any poorly ventilated areas and take steps to improve air flow.
14. Visitors	All visitors allowed. No restrictions
15. Wardrobes, drying rooms, showers, gym's etc.	Open, no restrictions.
16. Wearing of face coverings indoors	Face coverings not required unless require by local jurisdiction or clients. Face coverings are mandatory if fully vaccinated individuals return to office or project site prior to 10 days from onset of symptoms or after being in close contact with a Covid Positive Individual (See item 19 below). See Wood Return to work guidance document .
17. Wearing of face coverings outdoors	Same as above
18. Workplace capacity - return to office - align with phased return to office	Phase 3: All workforce can return. -Incremental 10% steps ramping up to 100%
19. Quarantine and self-isolation requirements See Wood Return to work guidance document .	Self-Isolate: Individuals who test positive and/or are symptomatic with COVID -19, must not attend Wood's offices or worksites.
	Self-Quarantine: Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then testing on day 2 and 5 is recommended. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or office.
20. Quarantine and self-isolation requirements (Local jurisdictional)	Support employees who are seeking guidance on self-screening to the local public health guidance to self-evaluate: <ul style="list-style-type: none"> • Canada: AB, BC, MB, NB, NL, NWT/NU, NS, ON, PEI, QC, SK, YK • US: CDC COVID-19 Quarantine and Isolation calculator

COVID-19 MANAGEMENT – EASEMENT OF CONTROLS

In accordance with the Wood [COVID-19 Management Guidance](#) document, Resilient Environments has conducted the risk assessment and has determined that the overall transmission risk level in the USA and Canada is Yellow – Medium Transmission Risk (Phase 2). Due to this, we are happy to announce that an easing of COVID-19 requirements is allowed. Effective immediately, the following are the COVID-19 requirements to be implemented in Wood offices and Project sites. Note: some requirements have not changed from prior practices. **Also note: these requirements are subject to change should risk levels increase or decrease. Increases in COVID-19 risks may require reinstatement of previous control measures. Finally, be aware that some clients or sites may have additional requirements that project teams must comply with.**

	Score 24-35
Criteria	Yellow – Medium Transmission Risk Requirements (Phase 2)
1. Attendance at work	Place signs near badging locations or at all entryways into office stating that workers are not to come to work if experiencing symptoms consistent with Covid and by badging in or entering the building, they are certifying they are Covid free.
2. Work location	Phase 2 (up to 70% of employees can come back into the office). Working from home still recommended. Offices need to begin determining who should work from home, work full time in the office or a hybrid approach with the idea that office/hybrid working is only up to 70% capacity of available workstations.
3. Identification and support for the vulnerable – identification of vulnerable individuals should be in accordance with local data protection regulations	Those who self-identify as being at serious risk should discuss they work location status. Recommendation is that they continue to work from home. If they do come into the office, risk assessments should be conducted, and reasonable accommodations made (e.g., providing them with medical grade of higher masks, workstation location – away from others, etc.).
4. Cleaning and hygiene	Continue office sanitization efforts, especially routine disinfection of high touch surfaces (doorknobs, handrails, refrigerators, etc.)
5. Common areas	Lunchrooms/breakrooms are open but continue social distancing and sanitization efforts. No self-service buffets or sharing of food (e.g., pizza)
6. Conference rooms/ Meeting rooms	Conference rooms must have good ventilation to be used. Continue social distancing. Maximum usage time in conference room is 2 hours with 10 min between uses. Place signs which notify employees of time limitations.
7. Entry requirements including testing	Signs near entryways requiring employees not to enter building if not feeling well. Covid testing is recommended but not mandatory (unless required by client or local jurisdiction).
8. Personal hygiene	Continue hand hygiene and covering nose and mouth when coughing or sneezing. Ensure a sufficient supply of hand sanitizer at key locations (near entrances to office, near lunchrooms/breakrooms, conference rooms, etc.).
9. Social distancing	Continue social distancing.
10. Testing	Twice weekly Covid testing is recommended but not mandatory unless required by client or local jurisdiction

	Score 24-35
Criteria	Yellow – Medium Transmission Risk Requirements (Phase 2)
11. Travel	<p>Domestic Travel: Travel is still limited to business essential only. Now only requires line manager approval. Includes travel to project sites, conferences, training, etc., as long as business essential.</p> <p>International Travel: Business essential only. Requires HSSE approval through Consulting President of HSES, Kirsten Saville.</p>
12. International travel to Wood offices/sites	Self-test <u>required</u> prior to attending and within 48 hours of visiting
13. Ventilation	Usually managed by landlord. If feasible: Increase airflow, avoid recirculation, open windows where able, purge rooms frequently, increase air filtration/ cleaning. Identify any poorly ventilated areas and take steps to improve air flow.
14. Visitors	Business essential visitors only
15. Wardrobes, drying rooms, showers, gym's etc.	Can be open/used but must do a risk assessment and implement controls (e.g., social distancing, sanitization, etc.)
16. Wearing of face coverings indoors	Face coverings are recommended, not mandatory, unless required by local jurisdiction or clients. Face coverings are mandatory if fully vaccinated individuals return to office or project site prior to 10 days from onset of symptoms or after being in close contact with a Covid Positive Individual (See item 19 below) See Wood Return to work guidance document .
17. Wearing of face coverings outdoors	Same as above
18. Workplace capacity - return to office - align with phased return to office	<p>Phase 2: Up to 70% capacity. Capacity = available desks/workstations.</p> <p>-Incremental 10% steps ramping up to 70%</p>
19. Quarantine and self-isolation requirements. See Wood Return to work guidance document .	Self-Isolate: Individuals who test positive and/or are symptomatic with COVID -19, must not attend Wood's offices or worksites.
	Self-Quarantine: Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then testing on day 2 and 5 is recommended. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or office.
20. Quarantine and self-isolation requirements (Local jurisdictional)	<p>Support employees who are seeking guidance on self-screening to the local public health guidance to self-evaluate:</p> <ul style="list-style-type: none"> • Canada: AB, BC, MB, NB, NL, NWT/NU, NS, ON, PEI, QC, SK, YK • US: CDC COVID-19 Quarantine and Isolation calculator

Phased Return of Personnel

Substantial/High Transmission Risk Phase 1 - Essential Workforce <ul style="list-style-type: none">• Phased return starting with no more than 20% occupancy• Increasing to a max. of 40%	Phase 1 - Essential workers will include those that enable return to work, including for example Materials Lab, CAD, Admin, IT and P&O, consideration will need to be given to workforce availability and vulnerability status. Also refer the COVID-19 guidance.
Medium Transmission Risk Phase 2 - Core Workforce <ul style="list-style-type: none">• Up to 70% of the core workforce returns	Phase 2 - Consideration should be given to the immunological and vulnerability status. Also refer the COVID-19 guidance.
Low Transmission Risk Phase 3 - All Workforce Return <ul style="list-style-type: none">• All workforce returns	Phase 3 - Consideration will still need to be given to any health-related vulnerability status if there is still virus circulating and/or jurisdictional shielding requirements to be met. Also refer the COVID-19 guidance.

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
1. Attendance at work	Place signs near badging locations or at all entryways into office stating that workers are not to come to work if experiencing symptoms consistent with Covid and by badging in or entering the building, they are stating that they are Covid free.	No one should come to work if they are ill. Everyone must follow the infection control guidance in the workplace - follow our COVID behaviors	No one should come to work if they are ill. Everyone must follow the infection control guidance in the workplace - follow our COVID behaviors	No one should come to work if they are ill. Everyone must follow the infection control guidance in the workplace - follow our COVID behaviors
2. Work location	Medium (Yellow) = Phase 2 (up to 70% of employees can come back into the office). Working from home still recommended. Offices need to begin determining who should work from home, office or hybrid with the idea that office/hybrid working is only up to 70% capacity of available workstations. Low (Green) = Phase 3 (office is fully opened). Office/ Hybrid working environment. Offices need to have determined who works from home, office or hybrid.	Office/Hybrid working	Work from home is recommended. Local jurisdictional requirements must still be met.	Work from home is required in accordance with local jurisdictional requirements. Approval is required from the line manager to attend the office.

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
3. Identification and support for the vulnerable – identification of vulnerable individuals should be in accordance with local data protection regulations	Ensure all employees have completed the “People at Risk of Serious Coronavirus Illness Acknowledgement Form.” Those who self-identify as being at serious risk should discuss they work location status. Recommendation is that they continue to work from home. If they do come into the office, risk assessments should be conducted, and reasonable accommodations made.	Individuals identified at risk are advised to continue to work from home. If they prefer or are required to attend the workplace reasonable adjustments must be risk assessed and put in place, including an Occupational Health assessment as necessary. Guidance should be required by individual from their treating doctor or specialist in first instance	Individuals identified at risk are advised to continue to work from home. If they prefer or are required to attend the workplace reasonable adjustments must be risk assessed and put in place, including an Occupational Health assessment as necessary	Individuals identified at risk are advised to continue to work from home.
4. Cleaning and hygiene	Continue office sanitization efforts, especially routine disinfection of high touch surfaces (doorknobs, hand rails, refrigerators, etc.)	Continue to clean high touch areas regularly. Encourage people to use hand sanitizer and clean hands regularly.	Enhanced	Rigorous in accordance with Wood guidance or local requirements if more stringent

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
5. Common areas	<p>Medium (Yellow) = Open but continue social distancing and sanitization efforts. No self-service buffets or sharing of food (e.g., pizza)</p> <p>Low (Green) = Open as long as allowed by local jurisdiction</p>	Lunch/Breakroom services fully open in accordance with local risk assessments	Lunch/Breakroom can be used but serving food and drink in accordance with local risk assessments. No self-service buffet	Canteen services closed
6. Conference rooms/Meeting rooms	<p>Medium (Yellow) = Conference rooms must have good ventilation to be used. Continue social distancing. Maximum usage time in conference room is 2 hours with 10 min between uses. Place signs which notify employees of time limitations.</p> <p>Low (Green) = Conference rooms must have good ventilation to be used. Social distancing no longer required but maximum usage time is 2-hours with minimum of 10 minutes between usage. Place signs which notify employees of time limitations.</p>	Open - good ventilation should still be applied. Maximum usage time 2 hours with need for minimum of 10 minutes for ventilation remains recommended.	Limited to where physical distancing can be maintained and good ventilation. Maximum usage time 2 hours with need for minimum of 10 minutes for ventilation	Closed

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
7. Entry requirements including testing	<p>Medium (Yellow) = Signs near entryways requiring employees not to enter building if not feeling well. Covid testing is recommended but not mandatory (unless required by client or local jurisdiction).</p> <p>Low (Green) = Signs near entryways requiring employees not to enter building if not well.</p>	Reminder to stay away if unwell	Reminder to stay away if unwell. Recommended 50% to test - IMT/regional management team to determine	Questionnaires - Recommended 100% to test - IMT/regional management team to determine
8. Personal hygiene	<p>Medium (Yellow) = Continue hand hygiene and coving nose and mouth when coughing or sneezing. Ensure a sufficient supply of hand sanitizer at key locations.</p> <p>Low (Green) = Continue hand hygiene and coving nose and mouth when coughing or sneezing. Ensure a sufficient supply of hand sanitizer at key locations.</p>	Individuals reminded of the importance regular hand washing, and covering the nose and mouth if coughing or sneezing	Individuals reminded of the importance regular hand washing, and covering the nose and mouth if coughing or sneezing	Individuals reminded of the importance regular hand washing, and covering the nose and mouth if coughing or sneezing

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
9. Social distancing	<p>Medium (Yellow) = Continue social distancing.</p> <p>Low (Green) = Social distancing recommended but not mandatory. Employees are encouraged to avoid crowded areas.</p>	Recommend and encourage employees to avoid crowded areas.	Distancing never less than 1 metre but advice to avoid less than 2 metre for more than 15 minutes	Distancing never less than 6 feet/2m
10. Testing	<p>Medium (Yellow) = Twice weekly Covid testing is recommended but not mandatory unless required by client or local jurisdiction</p> <p>Low (Green) = Self-testing encouraged prior to attending external events</p>	Self-testing encouraged prior to attending external events	Regular testing is encouraged where available free or as required by jurisdictional or client requirements - this should be twice weekly for those attending the office/site for a full week and prior to attendance if attending on occasion	Regular testing should be done in accordance with work activity where social distancing cannot be maintained - this should be twice weekly for those attending the office/site for a full week and prior to attendance if attending on occasion
11. Travel	<p>Domestic Travel:</p> <p>Medium (Yellow) = Travel is still limited to business essential only. Now only requires line manager approval. Includes travel to project sites, conferences, training, etc., as long as business essential.</p> <p>Low (Green) = All domestic travel allowed.</p>	International business trips can be undertaken mindful of border restrictions and in accordance with risk assessment. Self-test recommended pre-travel if not required by country of travel.	International business trips are not recommended unless they are business critical and in accordance with risk assessment. Domestic travel should be limited and subject to line manager approval. Self-test recommended pre-travel if not required by country of travel.	Business critical travel only - self /test PCR recommended if not required by country of entry

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
	<p>International Travel: Medium (Yellow) = Business essential only. Requires HSSE approval through Consulting President of HSSES, Kirsten Saville.</p> <p>Low (Green) = Requires HSSE approval through Consulting President of HSSES, Kirsten. Pre-travel self-test for Covid recommended, if not mandated by country of travel.</p>			
12. International travel to Wood offices/sites	<p>Medium (Yellow) = Self-test <u>required</u> prior to attending and within 48 hours of visiting</p> <p>Low (Green) = Self-test <u>recommended</u> prior to attending and within 48 hours of visiting</p>	Self-test recommended prior to attending and within 48 hours of visiting	Self-test required prior to attending and within 48 hours of visiting	Self-test required prior to attending and within 48 hours of visiting

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
13. Ventilation	Usually managed by landlord. If feasible: Increase airflow, avoid recirculation, open windows where able, purge rooms frequently, increase air filtration/cleaning. Identify any poorly ventilated areas and take steps to improve air flow.	Increase airflow, avoid recirculation, open windows where able, purge rooms frequently, increase air filtration/cleaning. Identify any poorly ventilated areas and take steps to improve air flow.	Increase airflow, avoid recirculation, open windows where able, purge rooms frequently, increase air filtration/cleaning. Identify any poorly ventilated areas and take steps to improve air flow.	Increase airflow, avoid recirculation, open windows where able, purge rooms frequently, increase air filtration/cleaning. Identify any poorly ventilated areas and take steps to improve air flow.
14. Visitors	Medium (Yellow) = Business essential visitors only Low (Green) = All visitors allowed, no restrictions	Allowed	Visitors can attend if deemed business essential	Visitors should be discouraged unless deemed business critical and based on local risk assessment and line manager approval. Should be fully vaccinated and boosted. Recommended to require negative test - antigen or PCR
15. Wardrobes, drying rooms, showers, gym's etc.	Medium (Yellow) = Can be used but must do a risk assessment and implement controls (e.g., social distancing, sanitization, etc.) Low (Green) = Allowed, no restrictions.	Allowed	Can be used in accordance with local risk assessments	Closed

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
16. Wearing of face coverings indoors	<p>Medium (Yellow) = Face coverings are recommended, not mandatory, unless required by local jurisdiction or clients. Face coverings are mandatory if fully vaccinated individuals return to office or project site prior to 10 days from onset of symptoms or after being in close contact with a Covid Positive Individual (See item 19 below)</p> <p>Low (Green) = Face coverings not required unless require by local jurisdiction or clients. Face coverings are mandatory if fully vaccinated individuals return to office or project site prior to 10 days from onset of symptoms or after being in close contact with a Covid Positive Individual (See item 19 below)</p>	Face coverings are not required except in accordance with any jurisdictional requirements. Employees, however, are recommended to continue to use them especially when in enclosed and crowded spaces.	Face coverings continue to be advised. Local jurisdictional requirements must also still be followed. Employees are strongly recommended to continue to use them especially when in enclosed and crowded spaces.	Face coverings mandatory

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
17. Wearing of face coverings outdoors	<p>Medium (Yellow) = Same as above</p> <p>Low (Green) = Same as above</p>	Wearing of face coverings outdoors not required. Employees, however, are recommended to continue to use them especially when in enclosed and crowded spaces.	Face coverings advised where unable to maintain social distancing. Local jurisdictional requirements must still be followed	Location specific where unable to maintain 6 feet/2m
18. Workplace capacity - return to office - align with phased return to office	<p>Medium (Yellow) =</p> <p>Low (Green) =</p>	Full capacity - Phase 3	maximum 70% capacity - this figure should be reduced if low vaccination or booster rates, or limited access to advanced treatments - Phase 2	Phase 1
19. Quarantine and self-isolation requirements	Self-Isolate: Individuals who test positive and/or are symptomatic with COVID -19, must not attend Wood's offices or worksites.	Individuals who test positive and/or are symptomatic with COVID -19, must not attend Wood's offices or worksites.	Individuals who test positive and/or are symptomatic with COVID -19, must not attend Wood's offices or worksites	Individuals who test positive and/or are symptomatic with COVID -19, must not attend Wood's offices or worksites

	Total Score:	12 To 23	24 To 35	36+
	Control Measures	Low Risk Level	Medium Risk Level	High Risk Level
	<p>Self-Quarantine: Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then testing on day 2 and 5 is recommended. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or office.</p>	<p>Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then testing on day 2 and 5 is recommended. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or office.</p>	<p>Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then testing on day 2 and 5 is required. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or offices.</p>	<p>Individuals who are identified as close contacts must follow the jurisdictional quarantine requirements. This may vary according to vaccination status. Where close contacts are not required to quarantine, then testing on day 2 and 5 is required. Individuals who are identified as close contacts must wear a surgical grade mask or above if attending the worksite or offices.</p>



Self-isolation and quarantine update

Our understanding of COVID-19 continues to evolve as the pandemic evolves. This means we continually review and adapt our guidance as we learn. Developed with consideration for new national and international guidelines, this is our latest guidance on self-isolation should you test positive for COVID-19.

If you are COVID-19 test positive/presumed COVID infected (with or have symptoms regardless of vaccination status).

DAY 0	Self-isolate at home following the onset of symptoms and/or a positive test COVID-19 test result.	
DAY 1		
DAY 2		
DAY 3		
DAY 4		
DAY 5	On day 5 begin home testing with a rapid antigen test.	
DAY 6	On day 6, self isolation can end, and you can return to work, if able, on two negative tests have been confirmed, at least 24 hours apart, and you have no fever. For the following five days, when in the workplace, please wear a medical grade mask or higher, at all times. The mask you are required to wear is dependent on your role and location. Use a risk assessment to determine this.	
DAY 7		
DAY 8		
DAY 9		
DAY 10		

You can now return to the usual control measures used in the workplace. Note - If before the jurisdictional self-isolation are more stringent then these must be followed.



Self-isolation and quarantine update

If you identified as a close contact to someone who has tested positive for COVID-19, and you are in a location where rapid antigen tests/lateral flow tests are readily available, then the following applies.

DAY 0	Contact with individual	
DAY 1	You can attend the workplace, unless jurisdictional quarantine requirements including fully vaccinated status are more stringent, provided you wear at least a medical grade surgical or procedural mask or higher (FFP2/N95) at all times and monitor for symptoms.	
DAY 2	On Day 2, test at home with a rapid antigen/lateral flow test. If negative - continue to attend the workplace wearing a face mask at all times and monitor for symptoms If positive - start self-isolating at home and advise line manager of positive result.	
DAY 3	Monitor for symptoms and self-isolate if any develop	
DAY 4	Monitor for symptoms and self-isolate if any develop	
DAY 5	On day 5, home test again with a rapid antigen/lateral flow test If negative - continue to attend the workplace wearing a face mask at all times. If positive - start self-isolating at home and advise line manager of positive result	
DAY 6	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 7	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 8	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 9	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 10	If attending the workplace monitor for symptoms and self-isolate if develop	

You can now return to the usual control measures used in the workplace. NOTE - if more rigorous jurisdictional testing requirements are in place then these must be followed. If rapid antigen testing/lateral flow tests are not readily available then the current quarantine times of 10 days remains.



Self-isolation and quarantine update.

For close contacts the guidance has also changed for both those fully vaccinated and not.

Definition: Fully vaccinated means that you have been vaccinated with approved vaccines in accordance with the **immunization schedule of the jurisdiction that you live, are up to date with the immunization schedule and at least 14 days have passed since you've received the recommended doses of the vaccines. For some jurisdictions that Wood operates in, this now requires a booster to be considered up to date or fully vaccinated.**

A close contact means anyone who during the infectious period of the case, which is from 48 hours before the onset of symptoms or if asymptomatic, has...

	<p>Lived with or was within two meters of a person who has COVID-19 for 15 minutes or more of cumulative contact, i.e., multiple interactions for a total of 15 minutes or more, even if a mask was worn during that contact.</p>
	<p>Had direct contact with infectious bodily fluids of a person who has COVID-19 (e.g., shared items such as drinks, personal hygiene items, cigarettes, vapes, lipstick, eating utensils, etc.) or was coughed or sneezed on.</p>
	<p>Provided direct care for a person who has COVID-19, had physical contact with a person who has COVID-19, such as handshake, hugging, kissing, etc</p>
	<p>Contact within two meters of a person who has COVID-19 without wearing a mask.</p>

Covid19 Screening and Declaration Form – US

Prior to traveling to or entering this workplace, review the questions below and sign where indicated, declaring that your response to all questions are “No.”

If your response to any of the questions is “YES,” do not sign and we regret to inform you that you are not permitted to come to work or visit the site at this time. Notify your employer. Workers are required to stay at home and self-isolate/self-quarantine (follow the [Wood Self-Isolation and Self-Quarantine Guidelines](#)). Visit the [CDC](#) or County Health Department websites for additional guidance.

1. Have you been in close contact with any person suffering from or is suspected to be suffering from Covid-19 within the last 10 days?
 - Close contact is defined as less than 6 feet (2 meters) separation distance exceeding 15 minutes duration throughout a 24-hour period.
 - If you have close contact AND are fully vaccinated* (See definition below) you can answer “No,” HOWEVER on Day 2 and Day 5, in order to continue answering “No,” you must test negative for COVID using a home test kit or get testing through a lab/clinic (Antigen/Rapid or PCR - must get results back same day). In addition, you must wear a medical grade mask or KN95/N95 for 10 days. If testing is not available on day 2 or 5, answer “Yes.” If either test come back positive, answer question 2 with a “Yes”.
 - If COVID test kits are NOT available or you are NOT fully vaccinated and you have been in close contact with a COVID positive individual, answer question with a “Yes.”

Fully Vaccinated:

- Two weeks since second dose of Pfizer or Moderna or two weeks since dose of Johnson & Johnson AND:
 - Have been boosted OR
 - It has been less than 6 months since 2nd dose of vaccination (Pfizer or Moderna) OR
 - It has been less than 2 months since the Johnson & Johnson vaccination.

2. Do you have any of the following **new or worsening** symptoms or signs? *Symptoms should not be chronic or relate to other known causes or conditions*

<ul style="list-style-type: none">• Fever or chills.• Cough• Difficulty breathing or shortness of breath• Sore throat, trouble swallowing• Pink Eye• Headache (unusual)	<ul style="list-style-type: none">• Runny nose/stuffy nose or nasal congestion• Decrease or loss of smell or taste• Nausea, vomiting, diarrhea, abdominal pain• Not feeling well, extreme tiredness, sore muscles
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3. Have you travelled outside the country within the last 10 days?

- Travelers who are fully vaccinated* (see above) and tested negative prior to entry back into the USA, have met specific country, US [federal guidelines](#) and any local jurisdictional requirements may answer “No.”
- If not fully vaccinated, answer “Yes.” Must self-quarantine for 5 days, receive two negative COVID tests on day 5 and 6 (home tests acceptable or Rapid/Antigen or PCR) and must wear medical grade mask (or N95/KN95) upon return to work (until 10th day after returning to the USA).

**Note: Wood may request proof of vaccination status but will manage the information in line with our Employee Records and Privacy Procedure (HRM-PRO-10083). Employees unable to demonstrate proof of vaccination will be required to follow Wood quarantine requirements.*

Covid19 Screening and Declaration Form – US

By signing below, you are declaring that your responses to the above questions are all “NO,” and that this declaration is true and accurate to the best of your knowledge.

Use your own pen (if possible) and/or disinfect regularly shared tools/equipment; and, practice good hand hygiene using soap/water, or hand sanitizer.

Name	Company	Signature	Date



WELCOME

We appreciate your Care, Courage, and Commitment to protect yourself, our coworkers, and clients.

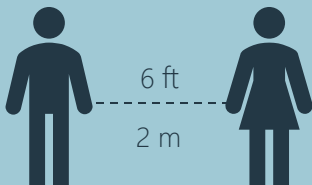
BY PASSING THIS SIGN, YOU ARE ACKNOWLEDGING THE FOLLOWING:

- ✓ I am feeling well, symptom free and not subject to quarantine or isolation requirements of the local public health department.
- ✓ If a close contact within the last 10 days and past minimum quarantine requirements, wear a surgical grade mask or above.
- ✓ Vulnerable individuals at serious risk of illness should speak with their supervisor for assessment and accommodation.

WOOD TRANSMISSION RISK: GREEN PHASE 3 RETURN TO WORKPLACE (FULL OCCUPANCY)

KEY GUIDELINES TO SAFELY OCCUPY THIS SPACE

Social Distancing



Social distancing recommended but not mandatory. Employees are encouraged to avoid crowded areas.

Personal hygiene and cleaning



Regularly use hand sanitizer and wash hands. Clean high-touch surfaces regularly. Cover nose and mouth when sneezing.

Face Coverings



Face coverings are not required except in accordance with any jurisdictional requirements. Employees, however, are recommended to continue to use them especially when in enclosed and crowded spaces.

WELCOME

We appreciate your Care, Courage, and Commitment to protect yourself, our coworkers, and clients.

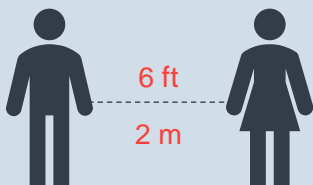
BY PASSING THIS SIGN, YOU ARE ACKNOWLEDGING THE FOLLOWING:

- ✓ I am feeling well, symptom free and not subject to quarantine or isolation requirements of the local public health department.
- ✓ If a close contact within the last 10 days and past minimum quarantine requirements, wear a surgical grade mask or above.
- ✓ Vulnerable individuals at serious risk of illness should speak with their supervisor for assessment and accommodation.

WSP TRANSMISSION RISK: YELLOW PHASE 2 RETURN TO WORKPLACE (UP TO 70% OCCUPANCY)

KEY GUIDELINES TO SAFELY OCCUPY THIS SPACE

Social Distancing



Continue to social distance. Employees are encouraged to avoid crowded areas.

Personal hygiene and cleaning

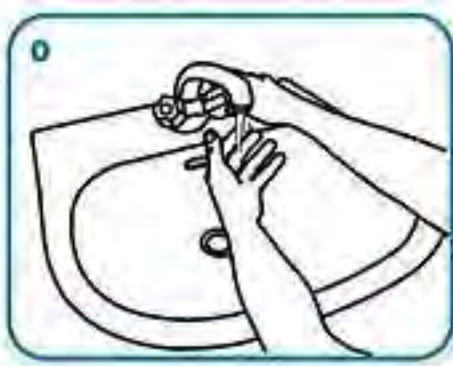


Regularly use hand sanitizer and wash hands. Enhanced cleaning required, including disinfecting high-touch surfaces regularly. Cover nose and mouth when sneezing.

Face Coverings



Face coverings continue to be advised. Local jurisdictional requirements must also still be followed. Employees are strongly recommended to continue to use them especially when in enclosed and crowded spaces.



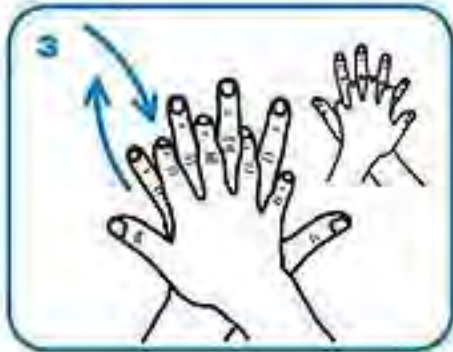
Wet hands with water



apply enough soap to cover all hand surfaces.



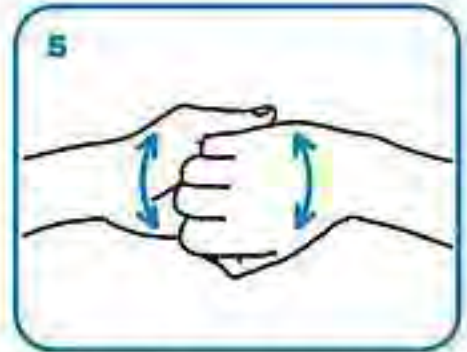
Rub hands palm to palm



right palm over left dorsum with interlaced fingers and vice versa



palm to palm with fingers interlaced



backs of fingers to opposing palms with fingers interlocked



rotational rubbing of left thumb clasped in right palm and vice versa



rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.



Rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



...and your hands are safe.

APPENDIX M

Marine Activity Guidance



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

Activity/Work Task:	Boating- Surface water and sediment collection	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01/30/2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title):	Bradley Wolfe	Critical	E	H	H	M	L
		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)		Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
<p>This AHA involves the following:</p> <ul style="list-style-type: none"> Establishing site specific measures Collecting samples from a boat The Safe Boating Checklist and a Float Plan must be filled out prior to use of a boat See Appendix F of the HASP for the Boating Safety and Personal Floation Device Selection Guide <p>This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.</p>		<p>"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.</p>				RAC Chart	
		<p>"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible</p>				E = Extremely High Risk	
						H = High Risk	
						M = Moderate Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.					
		L = Low Risk					



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) Slips, trips, falls	1A) Slips, trips, falls <ul style="list-style-type: none"> ▪ Familiarize self with site prior to visit. ▪ Complete appropriate training before going on site. ▪ Provide appropriate person in district office your itinerary. ▪ Prepare listing of emergency phone numbers, both on and offsite. ▪ Identify site/activity PPE needs ▪ Ensure that First Aid training is current, and that tetanus booster are current 	L
2. Check and calibrate sampling equipment.	2A) Muscle Strain - lifting, twisting, tugging	2A) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> ▪ Inspect all PPE and equipment and ensure that it is working properly. ▪ Get assistance from a coworker or use mechanical means to move equipment (dolly, cart, etc.) 	
	2B) Slips, trips and falls	2B) Slips, trips, and falls <ul style="list-style-type: none"> ▪ Wear proper footwear ▪ Pay attention to where walking 	
3. Load/carry equipment to the site.	3A) Slips, trips, falls	3A) Slips, trips, falls <ul style="list-style-type: none"> ▪ See AHA for Mobilization / Demobilization and Site Preparation 	M
	3B) Muscle Strain - lifting, twisting, tugging	3B) Muscle Strain - lifting, twisting, tugging <ul style="list-style-type: none"> ▪ Proper lifting, posture, ergonomic practices and body mechanics. ▪ Share the load, move items in smaller shifts, or use cart. ▪ Loading the boat: ensure no twisting. ▪ Use a trailer if possible to launch boat. ▪ Empty boat of gear prior to loading or moving boat to/from vehicle. ▪ Ensure boat is properly secured in the vehicle prior to moving. ▪ Tie a red cloth to the furthest point of the boat if overhanging from the vehicle. ▪ Ensure enough able bodies to move and launch the boat to share the load. 	
	3C) Irrate property owners, pets	3C) Irrate property owners, pets <ul style="list-style-type: none"> ▪ Call property owners in advance. ▪ Check in to introduce yourself upon arrival. ▪ Be courteous and diplomatic 	
	3D) Crime	3D) Crime <ul style="list-style-type: none"> ▪ Do not enter areas where threats are present. ▪ Contract security where applicable. Use the buddy system. ▪ Maintain contact with support such as radio or cell phone. 	
	3E) Struck by traffic – launch boat.	3E) Struck by traffic – launch boat. <ul style="list-style-type: none"> ▪ Wear hi visibility safety vest, use buddy system. ▪ Use traffic cones and a lookout. Launch from public boat launch facilities. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	3F) Battery handling – acid exposure	3F) Battery handling – acid exposure <ul style="list-style-type: none"> ▪ Use care when handling batteries. ▪ Wear gloves and protective clothing when caring batteries. ▪ Check for leaks and damage prior to use of batteries. 	
	3G) Launch and load boat: Capsize	3G) Launch and load boat: Capsize <ul style="list-style-type: none"> ▪ Be aware of the boat maximum weight, person capacity, and engine size limit. ▪ Balance the gear and people in the boat. ▪ Personnel must wear approved, properly sized and buckled PFD when on the water. ▪ Ensure lines and body parts are out of the water before operating engine. ▪ Avoid operation within swimming areas. ▪ Provide signal flags and communication to protect the public of your activities. ▪ Test motor prior to shoving away from the pier. ▪ Ensure all appropriate equipment is provided and accessible according to AMEC EH&S Manual – Boating Safety. ▪ Include bailer, anchor, second means of propulsion, line and throwable floatation. 	
	3H) Pinch points – attaching/mounting the motor	3H) Pinch points – attaching/mounting the motor <ul style="list-style-type: none"> ▪ Mind where hands and body parts are when moving and loading equipment. 	
	3I) Fueling – chemical exposure, fumes, environmental spills.	3I) Fueling – chemical exposure, fumes, environmental spills. <ul style="list-style-type: none"> ▪ See AHA Gasoline 	M
	3J) Noise – engine (optional)	3J) Noise – engine (optional) <ul style="list-style-type: none"> ▪ Wear hearing protection. ▪ Provide shielding from noise such as bulkhead, or sound dampening. ▪ Operate with engine box in place to dampen noise 	
4. Field parameters	4A) Falling into water and capsize	4A) Falling into water and capsize <ul style="list-style-type: none"> ▪ Use equipment that facilitates reaching the location from a safe distance (extensions, etc.). ▪ Work using the buddy system. ▪ Wear PFD when working on the water. ▪ Balance equipment and people. ▪ Avoid leaning over the side of the boat. ▪ Anchor or secure the vessel to hold station. ▪ Steer boat to meet waves on the bow. ▪ Stay seated while in boat. ▪ If moving about, keep weight low. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	4B) Slips trips and falls	4B) Slips trips and falls <ul style="list-style-type: none">▪ Wear appropriate footwear.▪ Survey and clear walking area.▪ Do not walk on slippery surfaces.▪ Maintain good housekeeping.▪ Provide walkways, platforms or secure walking surface.▪ Use the buddy system and maintain communications with support staff.	
	4C) Vermin, leaches, Insect/animal born disease	4C) Vermin, leaches, Insect/animal born disease <ul style="list-style-type: none">▪ Survey the area for dens, nests, etc.▪ Identify areas where biological hazards may be present.▪ Be aware of your surroundings.▪ Wear insect netting clothing or apply insect repellent on all exposed skin surfaces as appropriate – consider sample contamination▪ Wear long sleeve shirt and full length pants▪ Wear appropriate footwear (snake boots, etc.)▪ Avoid high grass areas if possible▪ Tuck pants leg into boot▪ Do not put hand/arm into/under an area that you cannot see into/under clearly▪ Do not touch any suspected contaminant without appropriate hand PPE▪ Wash hands as soon as possible upon completion of task.▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers.▪ Contract vermin relocation, if applicable.▪ Remain vigilant and respectful of wildlife. (See JHA for Insects, Stings and Bites)▪ Wear wind impervious outerwear▪ During warm months – wear a long sleeve cotton/breathable fabric shirt and pants.	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	4D) Weather – temperature extremes, hypothermia, sun stroke, heat exhaustion, dehydration, sunburn.	4D) Weather – temperature extremes, hypothermia, sun stroke, heat exhaustion, dehydration, sunburn. <ul style="list-style-type: none"> ▪ Train workers about weather and appropriate precautions. ▪ Heat: Familiarize self with signs of heat related illnesses: cramps, heat rash, dehydration, heat exhaustion, and heat stroke. ▪ Sun: <ul style="list-style-type: none"> ○ Keep body protected ○ Wear sunscreen, wide brimmed hat or hardhat. ○ Drink plenty of fluids to remain hydrated. (Follow WSP guidelines, procedures and training for fluid intake, sunscreen use, proper clothing, work schedule, etc.) ○ Schedule work for cool part of day. ○ Take breaks in the shade. ▪ Wind: <ul style="list-style-type: none"> ○ Wear layered clothing, gloves, hard hat with winter liner, etc. ▪ Cold: <ul style="list-style-type: none"> ○ During cold weather - layer clothing 	
	4E) Weather – inclement and strong winds	4E) Weather – inclement and strong winds <ul style="list-style-type: none"> ▪ Watch for clouds and incoming weather. ▪ Monitor weather forecasts. ▪ Have a float plan and communications when on and off the water. ▪ Return to shore if weather threatens. ▪ Stay close to shore if possible and abandon work until winds subside. ▪ Schedule work when weather is calm (early morning or evening.) ▪ Provide proper lighting if working after dark. 	
	4F) Run aground – shifting or unbalanced vessel - equipment/personnel/slip/fall/overboard	4F) Run aground – shifting or unbalanced vessel - equipment/personnel/slip/fall/overboard <ul style="list-style-type: none"> ▪ Operate at safe speed. ▪ Post a look out for shallow or submerged obstacles. ▪ Remain seated when under way. ▪ Be wary of tides, flooding, flash floods and dam releases. ▪ Use anchor to kedge or pull back toward the way you came and deeper water. ▪ Use a pole or paddle, lighten the vessel to float off. 	L
5. Sample collection	5A) Falling into water and capsizes.	5A) Same as Item #4 above.	
	5B) Bending, pulling, twisting	5B) Bending, pulling, twisting <ul style="list-style-type: none"> ▪ Use a vibrating or wiggling motion on the sample device to break the soil suction. ▪ Proper lifting technique. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

	5C) Splash	5C) Splash <ul style="list-style-type: none"> ▪ Wear appropriate safety glasses (tinted for sun). ▪ Be aware if sampling water through a filter, if it becomes plugged with sediment it may unexpectedly “blow off” the hose and splash. ▪ Change filter prior to sedimentation back pressure. ▪ Minimize pouring distance to limit the splash between containers. 	
	5D) Chemical exposure	5D) Chemical exposure <ul style="list-style-type: none"> ▪ Wear PPE including protective gloves, coveralls, safety glasses as appropriate. ▪ Work upwind of the sample location. Minimize exposure using a shovel/spoon or tool to collect the sample. ▪ Review and understand MSDS for all chemicals being handled. ▪ Be careful when handling acids and caustic substances. ▪ Wear adequate PPE and wash hands after completion of task. 	
	5E) Vegetation, sticks, reeds, - cuts and punctures.	5E) Vegetation, sticks, reeds, - cuts and punctures. <ul style="list-style-type: none"> ▪ Clear access to site. ▪ Be familiar with toxic plants such as poison ivy. ▪ Avoid such plants. ▪ Wash thoroughly after accidental contact with toxic materials and plants. 	
6. Vessel Operations	6A) Lack of boating skills, boating incident	6A) Lack of boating skills, boating incident <ul style="list-style-type: none"> ▪ Complete USCG/Power Squadron or other recognized boating course. ▪ All employees must wear PFDs while working on or near the water. ▪ Maintain vessel and proper safety equipment. ▪ Carry cell phone and Marine VHF radio. ▪ File a float plan and work in pairs. 	M
7. Sample preparation.	7A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain	7A) Lifting heavy objects (covers, pumps, sampling equipment, coolers, etc.) Muscle strain <ul style="list-style-type: none"> ▪ Use proper ergonomics when lifting heavy objects ▪ Use appropriate mechanical assistance and tools when possible. 	M
	7B) Chemical Exposure	7B) Chemical Exposure <ul style="list-style-type: none"> ▪ Wear PPE including protective gloves, coveralls, safety glasses as appropriate. ▪ Wash/wipe or decontaminate exterior of sample containers and equipment. ▪ Use care handling preservatives (acids/bases.) 	
	7C) Sharps and knives	7C) Sharps and knives <ul style="list-style-type: none"> ▪ Use care handling tape dispensers, knives and sharp objects. ▪ Use guarded dispensers 	
	7D) Extreme cold (ice preservation)	7D) Extreme cold (ice preservation) <ul style="list-style-type: none"> ▪ Minimize exposure to ice. ▪ Use a shovel/spoon or tool to fill bags for preserving samples in coolers. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

8. Site exit and drive home or next site.	8A) Vehicle contamination	8A) Vehicle contamination <ul style="list-style-type: none"> ▪ Wash hands promptly. ▪ Sediment contaminated PPE (Booties, tyvek, latex gloves) should be disposed of prior to demobilizing from a sample location. ▪ Soiled boots and clothing should be decontaminated prior to leaving a sample location. Soiled clothing that cannot be decontaminated shall be removed and placed in a sealed plastic bag, and decontaminated as soon as possible. ▪ Update exposure log. 	M
	8B) Traffic hazards.	8B) Traffic hazards. <ul style="list-style-type: none"> ▪ Follow AHA for Mobilization / Demobilization and Site Preparation 	
		<ul style="list-style-type: none"> • A throwable floatation device (ring) shall also be onboard during boat operation. 	
	8C). Equipment Malfunction	5C). Equipment Malfunction	
		<ul style="list-style-type: none"> • Take a basic tool kit aboard the boat in addition to boat plugs, fire extinguisher, and first aid kit. 	
		<ul style="list-style-type: none"> • Carry extra engine parts and fluids in the event of engine problems. 	
		<ul style="list-style-type: none"> • Be alert and remediate the area of any spilled gas and gas fumes before doing any work on electrical parts that may cause a spark. 	
	8D). Communications	5D) Communications	
		<ul style="list-style-type: none"> • A two-way or marine radio shall be maintained on board the boat at all times. If in a coverage area, a cell phone can be used for a communication device. 	
9. Collecting Samples	9A). Capsizing Boat/Falling Overboard	6). Capsizing Boat/Falling Overboard	M
		<ul style="list-style-type: none"> • Make sure a proper anchor is in the boat to stabilize the boat at the sampling location. 	
		<ul style="list-style-type: none"> • Ensure proper distribution of the load in the boat to avoid tipping and capsizing. Standing in the boat should be minimized. 	
		<ul style="list-style-type: none"> • An appropriate Coast Guard approved personal floatation device shall be worn by each individual on board to protect against drowning. 	



AHA - Surface Water and Sediment Sampling from a Boat Activity Description

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (work gloves, PFDs, safety glasses, gloves, steel toe work boots, high visibility safety vest) Boating first Aid kit Boating Safety Kit (flares, air horn, marine radio, cell phone, tool kit)	Competent / Qualified Personnel: See HASP (Name – Position/Employer) Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting USCG Boat operator Certificate or equivalent	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Full boat inspection prior to use. Inspect all PPE prior to use



AHA – Working Over or Near Water

Activity/Work Task:	Working Over/ Near Water	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location:	Penobscot River	Risk Assessment Code (RAC) Matrix					
Contract Number:	3617237573.06.A02	Severity	Probability				
Date Prepared:	01-26-2023 Date Accepted: 2/14/23		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title):	Charles Lyman	Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Reviewed by (Name/Title):	Bradley Wolfe	Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.) <ul style="list-style-type: none"> A float/activity plan shall be filled out prior to working on or over water, either from a boat or from the shore. This AHA involves the following: <ul style="list-style-type: none"> Establishing site specific measures when working over/near water This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.		Step 1: Review each “Hazard” with identified safety “Controls” and determine RAC (See above)					
		“Probability” is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
		“Severity” is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
						H = High Risk	
		Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.				M = Moderate Risk	
				L = Low Risk			



AHA – Working Over or Near Water

Job Steps	Hazards	Controls	RAC
1. Field Work Over/ Near Water	1A) Slips, trips, falls	1A) Familiarize self with site and tasks prior to conducting work. <ul style="list-style-type: none"> ▪ Be aware of footing and surroundings including weather conditions always when working on or near water. ▪ Maintain a clean and uncluttered working areas. ▪ Work at an unhurried pace. ▪ Have on hand listing of emergency phone numbers, both on and offsite. ▪ Ensure that First Aid training is current, and that tetanus booster is current. ▪ Fall protection installed (warning lines, barriers, ropes, etc.) 	L
	1B) Falling into water/Man over board (MOB)	1B) Falling into water <ul style="list-style-type: none"> ▪ File a float/activity plan when working on or above water, which shall contain a contingency plan in the event of a MOB situation. ▪ Work in teams of three at a minimum when working on or above water. ▪ Use equipment that facilitates reaching the location from a safe distance (extensions, etc.). ▪ When working on or near water have, throw rope and or ring buoys will lines attached available for rescue. ▪ Work using the buddy system at a minimum. ▪ Wear PFD when working on or near the water. ▪ Maintain access to a boat when working over or near water. ▪ Avoid leaning over edge of land to water. ▪ Anchor our secure yourself to a permanent and secure structure when working on or near water. 	M



AHA – Working Over or Near Water

	<p>1C) Vermin, leaches, Insect/animal born disease</p>	<p>1C) Vermin, leaches, Insect/animal born disease</p> <ul style="list-style-type: none"> ▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear insect netting clothing or apply insect repellent on all exposed skin surfaces as appropriate – consider sample contamination. ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas along shoreline if possible. ▪ Tuck pants leg into boot. ▪ Do not put hand/arm into/under an area that you can not see into/under clearly. ▪ Do not touch any suspected contaminant without appropriate hand PPE. ▪ Wash hands as soon as possible upon completion of task. ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers. ▪ Contract vermin relocation, if applicable. ▪ Remain vigilant and respectful of wildlife. (See AHA for Insects, Stings and Bites, and AHA for Dog – Wildlife Safety. ▪ Wear wind impervious outerwear ▪ During warm months – wear a long sleeve cotton/breathable fabric shirt and pants. 	<p>L</p>
	<p>1D) Bending, pulling, twisting</p>	<p>1D) Bending, pulling, twisting</p> <ul style="list-style-type: none"> ▪ Balance weight in the boat with other personnel and equipment. ▪ Use a vibrating or wiggling motion on the sample device to break the sediment suction. ▪ Attach recovery line to sample equipment prior to deploying equipment. ▪ Proper lifting technique. ▪ Do not lean outside the boat or over water 	<p>L</p>



AHA – Working Over or Near Water

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection, PFD)	Competent / Qualified Personnel: Name – Position/Employer Training requirements: List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer’s instructions. Tag tools that are defective and remove from service. Inspect all PPE, rescue, and fall protection equipment prior to use

FLOAT PLAN



General Information:					
Vessel Operator:		Phone:			
Vessel Name:		Registration Number:			
Trip Description:					
Date and Time of Departure:					
Departing From:					
Departing To:					
Estimated Time of Arrival:					
In NO Case Later Than:					
Description of Vessel:					
Type:		Make:			
Trim Color:		Hull Color:			
Most Distinguishing/Identifiable Feature:					
Rafts/Dinghies:					
Number:		Size:		Color:	
Radio:					
Type:		Frequencies Monitored:			
Number of Persons on board (List additional passengers on back):					
Name	Age	Address and Telephone Number			
Engine Type:					
Horse Power:		Normal Fuel Supply (days):			
Survival Equipment on board (check as appropriate):					
	Life Jackets		Flares		Smoke Signals
	Medical Kit		VHF Radio		
	Anchor		GPS		Other:

SAFE BOATING CHECKLIST



Answer Yes, NO, or N/A if not applicable in the space provided below.

Personal Flotation Devices (PFDs)		Sound Producing Devices (Whistle)	
<input type="checkbox"/>	• Is there at least one personal flotation device available per person (minimum of two) on board - USCG approved Type I, II, or III (wearable and properly sized)?	<input type="checkbox"/>	• Is a horn, capable of producing a four-second blast audible for at least 1/2 mile, available?
<input type="checkbox"/>	• Are additional throwable devices available if the vessel is more than 16 feet long?	<input type="checkbox"/>	• If a portable air horn is used, is a spare can of air or an alternate device available?
<input type="checkbox"/>	• Has the location and use of all PFDs been explained to passengers and crew?		
Lights and Shapes		Distress Signals	
<input type="checkbox"/>	• Are all required navigation lights in working order?	<input type="checkbox"/>	• Are accessible flares, day signals, etc., stored in a dry location and accessible?
<input type="checkbox"/>	• Are Instrumental lights working?	<input type="checkbox"/>	• Are signals carried at all times, even if not required by the Coast Guard?
<input type="checkbox"/>	• If crew will engage in an activity that requires a day shape*, are the required shapes available?	<input type="checkbox"/>	• Do you have a waterproof lighter?
<input type="checkbox"/>	• Is there a flashlight (floating and watertight with spare batteries and bulbs) onboard?	<input type="checkbox"/>	• Have the crew and passengers been informed of their location on the boat and their duties?
Tools and Spares		Battery Care	
<input type="checkbox"/>	• Is there a basic tool box onboard?	<input type="checkbox"/>	• Is the selector switch in the proper position for a dual charging system? Is the power on to the entire vessel?
<input type="checkbox"/>	• Is there a bucket onboard for bailing?	<input type="checkbox"/>	• Are there spare batteries for accessories such as a hand-held radio, flashlight, portable navigational aid, etc.?
<input type="checkbox"/>	• Is there a box of spares aboard, e.g. fuel filter, light bulbs, fuses, head parts, through-hull plugs, etc.?	<input type="checkbox"/>	• If they are rechargeable, are they charged?
Fire Extinguishers		Fuel and Oil	
<input type="checkbox"/>	• Are there fire extinguishers, approved for Marine use, onboard and accessible?	<input type="checkbox"/>	• Is there sufficient fuel for the trip and to provide a reasonable margin of safety for your return?
<input type="checkbox"/>	• Are they securely mounted?	<input type="checkbox"/>	• Have engine oil and coolant levels been checked?
Oars or Paddles		Bilges	
<input type="checkbox"/>	• Are oars or paddles available? In some states it is a requirement.	<input type="checkbox"/>	• Are bilges reasonably dry and pumps not running excessively? (Clean up any spilled oil or waste in bilges to prevent overboard discharge.)
Weather Forecast		Documentation	
<input type="checkbox"/>	• Did you check the weather forecast?	<input type="checkbox"/>	• Is required paperwork available (e.g., ship's papers, registration, radio license, license or boating safety course I.D., fishing permit, USCG or Auxiliary boat inspection ,etc.)?
<input type="checkbox"/>	• Is the boat seaworthy and capable of handling the forecasted weather and water conditions?	<input type="checkbox"/>	• Are there chart(s) for the area you intend to work in or cruise through, regardless of your level of local knowledge?
Docking and Anchoring		Trailer Boating	
<input type="checkbox"/>	• Is there at least one anchor and at least 100 ft. of line?	<input type="checkbox"/>	• Is the plug in the boat?
<input type="checkbox"/>	• Are there two or three extra dock lines in case of unusual conditions dockside?	<input type="checkbox"/>	• Has the trailer tire pressure been checked?
<input type="checkbox"/>	• Are the lines free of excessive chafe or wear?	<input type="checkbox"/>	• Is the hitch secure and safety chains attached?
<input type="checkbox"/>	• Are there at least two fenders onboard for docking or towing?	<input type="checkbox"/>	• Is the boat tied down properly?
Boating Offshore		<input type="checkbox"/>	• Have you been trained on hitching and unhitching the trailer?
<input type="checkbox"/>	• Is there an Emergency Position Indicating Radio Beacon (EPIRB) onboard?	<input type="checkbox"/>	• Does the trailer have wheel chocks?
<input type="checkbox"/>	• Is there a Life Raft onboard?	<input type="checkbox"/>	• Is the trailer registered?
Passengers		Float Plan	
<input type="checkbox"/>	• Have all passengers been acquainted with use and location of safety equipment, radio, docking & undocking plans, etc.?	<input type="checkbox"/>	• Have you developed a Activity Hazard Analysis and Float Plan?
		<input type="checkbox"/>	• Has the POB water rescue SOP been reviewed?

PENOBSCOT RIVER PROJECT

PURCHASE OR RENTAL OF EQUIPMENT REQUIRES APPROVAL OF PROJECT MANAGER

CATEGORY	ITEM	PURCHASE	RENT WK	NOTES
WATER CRAFT	Boston Whaler (14') \$158D, \$473/W, \$1350M Carolina Skiff (16', 18' & 19') \$210/D, \$630/W, \$1800/M			Pine Environmental Rental These are apparently boat/motor/trailer/basic controls,
NAVAGATION DEVICES	Day Shapes Navigational Charts Binoculars Loran/GPS Bracket Mounted Magnetic Compass Handheld Digital Depth Sounder			Day Signals or Day Shapes are used for communication.
LIFERING, DISTRESS, RESCUE	30" BRIDGEBUOY - Life Ring with LED lights Rope Bag with 100ft of rope HANDFLARE RED USCG SafeSea V100 Handheld VHF Radio 21 channel/scanning Vessel Ocean Signal Mini EPIRB Water activated LED Life Jacket Light U.S.C.G. Approved Type III floatation coat / PFD (water jacket) Utility Flotation Vest USCG Type III Air Horn Boarding ladder Telescoping rescue pole Mirror			Mesh Vented for warm weather
EMERGENCY	First Aid Kit Sunscreen space Blanket Fire Extinguisher (5 lb) ABC, two/boat Weather Radio - batt/portable Spill Kit			USCG Approved FOS 5 gallon volume recovery - hi-viz bucket with screw top water tight
BASIC TOOLS	Harbor Freight South Portland Small tool box SAE Socket Set adjustable wrench (assorted)			

PROCEDURE

SECTION:	Health and Safety System Procedures	ADL DOC. NO.:	SHE-PRO-000272
TITLE:	HSS-18 MARINE OPERATIONS (Penobscot River Project)		
PREPARED BY:	Charles Lyman	OPERATIONS REVIEW BY:	N/A
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APPROVED BY:		APPROVED FOR DISTRIBUTION:	

1.0 **PURPOSE AND SCOPE:**

This system procedure establishes the requirements and guidelines for operations and employees who are required to work adjacent to or over water, including sampling surface water, sediment and biota. This procedure applies to all WSP operations where work on or around water is performed.

2.0 **INPUTS:**

OSHA 29 CFR 1926.106 Working Over or Near Water
 OSHA 29 CFR 1926.605 Marine Operations and Equipment
 The Deckhand Manual
 USACE 385-1-1 Section 19 Floating Plant and Marine Activities

3.0 **RESPONSIBILITIES**

Site Manager – ensure requirements of this program are established and maintained.

Supervision – ensure employees are trained and comply with the requirements of this program

HSE Manager – Assist with project management and Supervision in the implementation and maintenance of this procedure; provide for required training.

Employees – comply with the guidelines and policies established in this Procedure; adhere to the training provided per this Procedure; conduct work in a safe manner.

4.0 **PROCEDURE REQUIREMENTS**

4.1 **Worker Qualifications**

- All employees required to work on or near water shall be instructed on the requirements of this Procedure.
- If a worker will be required to access a barge for loading/unloading operations under the direction of WSP, he or she shall be instructed on the contents of this procedure and pass the Deckhand Test. This test is an internal confirmation of knowledge and does not designate an employee as a longshoreman or approved operator of any type.

All staff members are responsible for ensuring that they are using the correct revision of this document.



- Operators of tow boats shall provide copies of current U.S. Coast Guard licenses and be able to demonstrate to the project management that they can operate a tow boat safely.

4.2 Lifesaving Equipment

- When working over or near water, each employee exposed to a drowning hazard will wear a U.S. Coast guard approved life vest or buoyant exposure suit:
 - Prior to and immediately after each use, the vest will be inspected for damage or defects that could alter strength or buoyancy. Defective vests will be removed from service immediately.
- Ring buoys with at least 90' of line shall be provided and readily available for emergency rescue operations.
- At least one life-saving skiff shall be immediately available at location where employees are working on or near water
 - Skiff shall have a motor for quick response and be placed in the water at the ready whenever employees are exposed to a drowning hazard

4.3 Boating Specific Requirements

4.3.1 Inspections

FOL and SHSO will be required to check each working boat daily. A Boating Safety Checklist will be filed with a Boating Safety Float Plan for any and all boats used to collect samples. This includes captained, chartered boats for collection of biota (i.e., fish and lobsters).

A 30 inch life-ring with a minimum of 90 feet of line and one portable ladder or permanent ladder that can reach from the deck to the water shall be required on all boats. Employees working on a boat shall have a system to communicate with personnel on shore, in the event of an emergency.

4.3.2 Safe Practices

- A 30 inch life-ring with a minimum of 90 feet of line and one portable ladder or permanent ladder that can reach from the deck to the water shall be required on all barges.
- Employees working on a barge shall have a system to communicate with personnel on shore, in the event of an emergency.
- No fuel or grease will be allowed to be spilled or otherwise accumulate on floors, decks and in bilges.
- No smoking will be allowed on any boat or marine vessel during refueling operations.
- Portable fire extinguishers will be provided:

Length of Vessel	Fire Extinguisher
Less than 26 feet	One 1-A:10- B:C
26 feet or greater	Two 1-A: 10-B:C

All staff members are responsible for ensuring that they are using the correct revision of this document.

- No worker will dive off any boat or marine vessel for the purpose of swimming unless necessary to prevent injury or loss of life. Any person in the water shall be considered as a man overboard and appropriate action shall be taken.
- Deck loading will be limited to safe capacity. Loads will be secured and holdbacks or rings will be provided to secure loose equipment during rough weather.
- Guardrails, bulwarks, or taut cables guard lines shall be provided at all deck openings, elevated surfaces, and similar locations where persons may fall or slip from the deck.
- All projection and tripping hazards shall be immediately removed, identified with warning signs, or distinctly marked with "yellow".
- Safeguards such as barriers, curbs, or other substantial structure will be provided to prevent front-end loaders, bulldozers, trucks, backhoes, cranes, or similar operating equipment from falling into the water.
- Provisions shall be made to protect workers being transported by water to or from the sampling locations (ie., Tidal marsh and mud flats).

4.3.3 Access

- All means of access to a boat or other marine vessel shall be properly secured, guarded, and maintained free of slipping and tripping hazards.
- Non-slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways.
- The means of access shall be adequately illuminated for its full length.
- Double rung or flat tread type Jacob's ladders shall only be used when no safer form of access is practical.
- Safe means for boarding or leaving a barge or other marine vessel shall be provided and guarded to prevent a person from falling or slipping,
- A stairway, ladder, ramp, gangway, or personnel hoist will be provided at all boarding points of access with breaks of nineteen (19") inches or more in elevation.
- No worker will be allowed to pass fore and aft, over, or around deck loads unless there is a safe passage.

4.3.4 Severe Weather

- Plans will be developed when boat or other marine vessel work may be endangered by severe weather, high winds, hurricanes, or flooding.
- Plan shall contain procedures for securing the boat or other marine vessel and the safe evacuation of workers in emergencies.
- Weather forecasts shall be reviewed prior to partaking in any boating activities.

4.3.5 Emergency Planning

- Specific Man Overboard Procedure is to be followed when employees are working on a boat or other marine vessel. The Man Overboard Procedure is to be posted on each boat and marine vessel in a conspicuous location and each employee will be instructed on its contents.

- When marine operations may be endangered by severe weather, plans shall be developed for removing or securing the marine vessels and evacuation of personnel in emergencies.
- Emergency alarms will be developed to notify workers of an emergency.
- Emergency plans shall be developed for response to marine emergencies such as fire, sinking, flooding, or hazardous material incident.
- Each employee working on a boat or other marine vessel will be familiar with all emergency procedures and their specific duties.
- Emergency procedure drills will be conducted monthly unless USCG regulations require more frequent drills. Emergency procedure drills that require monthly testing are
 - Abandon vessel
 - Fire
 - Man overboard and rescue
- Emergency lighting and power systems will be tested monthly
- All monthly emergency drills and tests will be documented.
- All electrical power receptacles shall have a grounding conductor to prevent potential differences between the shore and the vessel.
- All cord connected electrical equipment and tools shall be connected to a GFCI outlet.
- Hazardous Material Spill Kit and adequate absorption booms will be immediately available in case of a spill.

5.0 **OUTPUTS**

There are no outputs for this Procedure.

6.0 **TRAINING**

Employees designated as boat operators and or deck hands will have some form of formal training. At a minimum you will need to have a Boating Safety Class recognized by the State of Maine.

7.0 **DEFINITIONS**

Boat – A vessel used to access sample locations, owned and operated by WSP and or our subcontractor.

Deckhand – Any person assigned to work on a boat or marine vessel. Deckhands perform the general manual labor and are supervised by a foreman and/or the vessel's mate.

Towboat – Is a boat designed for pushing barges. Towboats are characterized by a square bow with steel knees for pushing and powerful engines.

8.0 **REFERENCES**

Water Rescue SOP

USCG Boaters Guide



VHF Radion Operation

A BOATER'S GUIDE TO THE FEDERAL REQUIREMENTS FOR RECREATIONAL BOATS AND SAFETY TIPS



New in this Edition:

- Navigation Locks
- Trailer Safety
- Digital Selective Calling
- Rescue 21
- Naval Vessel Protection Zones
- America's Waterway Watch



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WELCOME

As a boat operator, you are expected to make sure that your vessel carries the required safety equipment (carriage requirement) and is in compliance with federal and state regulations for such things as numbering and operation. A Quick Reference Chart on page 42 will help you determine the minimum federal safety equipment requirements for your vessel.



This publication contains information about federal laws and equipment carriage requirements for recreational vessels of the United States. It is important that you understand that federal equipment requirements are **minimum** requirements and **do not** guarantee the safety of your vessel or its passengers. In the following sections, we have also provided recommendations for additional safety equipment you may wish to have on board.

In addition to the requirements stated in this pamphlet, the owner/operator may be required to comply with additional regulations and/or laws specific to the state in which the vessel is registered or operated. To ensure compliance with state boating laws, you should contact the appropriate boating agency in your area. A vessel in compliance with the laws of the state of registration may not meet the requirements of another state where the vessel is being operated.



Other equipment recommended for your safety and the safety of your passengers is noted in the section on Vessel Safety Checks on page 52 and in the Boater's Pre-Departure Checklist on page 70.

Remember, drowning is the Number One cause of boating fatalities and the most preventable. The U.S. Coast Guard recommends that you always wear a life jacket and require your passengers to do the same.

Conversion of Metric to U.S. Units

Metric Measure	Feet in Decimals	Feet and Inches
50.0 m	164.0 ft.	164' 1/2"
20.0 m	65.6 ft.	65' 7 1/2"
12.0 m	39.4 ft.	39' 4 1/2"
10.0 m	32.8 ft.	32' 9 3/4"
8.0 m	26.3 ft.	26' 3"
7.0 m	23.0 ft.	22' 11 1/2"
6.0 m	19.7 ft.	19' 8 1/4"
5.0 m	16.4 ft.	16' 4 3/4"
4.0 m	13.1 ft.	13' 11/2"
2.5 m	8.2 ft.	8' 2 1/2"
1.0 m	3.3 ft.	3' 3 1/3"

REGISTRATION (33 CFR 173) AND DOCUMENTATION (46 CFR 67)

There are two methods of registration for U.S. recreational vessels.

- Vessel Registration: state-issued Certificate of Number.
- Vessel Documentation: federally documented with the U.S. Coast Guard.

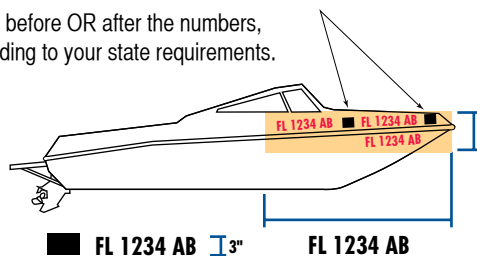
Vessel Registration: All undocumented vessels equipped with propulsion machinery must be registered in the state of principal use. A Certificate of Number will be issued upon registration and the number must be displayed on your vessel. The owner/operator of a vessel must also carry the valid Certificate of Number whenever the vessel is in use. When a vessel is moved to a new state of principal use, the Certificate remains valid for 60 days. Check with your state boating authority for registration requirements. Some states require all vessels to be registered, including vessels that are manually propelled and those that are Coast Guard documented.

Display of Numbers

Numbers must be painted or permanently attached to each side of the forward half of the vessel. The numbers must be read from left to right, and of a color that is contrasting with the background color; for example, black numbers on a white hull. The validation sticker(s) must be affixed within six inches of the registration number. No other letters or numbers may be displayed nearby.

State Validation Sticker

Place before OR after the numbers, according to your state requirements.



Lettering must be in plain, vertical block characters of not less than 3 inches in height. Spaces or hyphens between letter and number groupings must be equal to the width of a letter other than "l" or a number other than "1".

Notification of Changes to a Numbered Vessel

The owner of a vessel must notify the agency that issued the Certificate of Number within 15 days if:

- The vessel is transferred, destroyed, abandoned, lost, stolen, or recovered.
- The Certificate of Number is lost, destroyed, or the owner's address changes.

If the Certificate of Number becomes invalid for any reason, it must be surrendered to the issuing authority within 15 days.



Vessel Documentation

The U.S. Coast Guard Certificate of Documentation is a national form of registration dating back to the 11th Act of the First Congress. It serves as evidence of a vessel's nationality for international purposes, provides for unhindered commerce between the states, and admits vessels to certain restricted trades, such as coastwise trade and the fisheries. Since 1920, vessel financing has been enhanced through the availability of preferred mortgages on documented vessels.

Recreational vessels are eligible to be documented if they are wholly owned by a citizen or citizens of the United States *and* measure at least five net tons. Net tonnage is a measure of a vessel's volume. Most vessels more than 25 feet in length will measure five net tons or more.

A documented vessel is not exempt from:

- Applicable state or federal taxes.
- Compliance with state or federal equipment carriage requirements.

A documented vessel may also be required to pay a registration fee and display a validation sticker from the state of principal use. Boaters should check with their state boating agency.

To be in compliance with federal documentation requirements, a Certificate of Documentation must be:

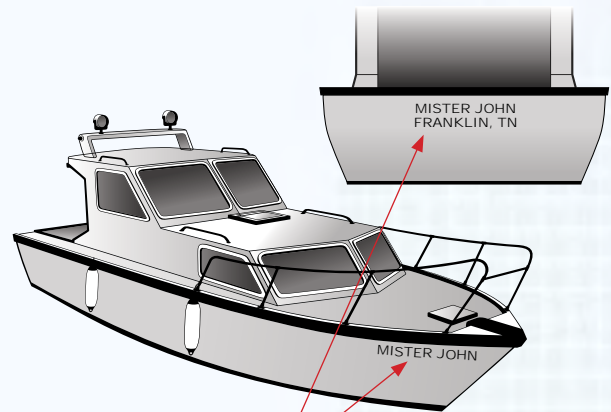
- The original document (photocopy not acceptable).
- On board the vessel.
- Current (not expired).
- Signed by the Director of the National Vessel Documentation Center.

Documented Vessel Marking Requirements

Hull Display

A documented recreational vessel hull display must:

- Have the name and hailing port of the vessel together in one place on the hull (usually on the stern).
- Be in letters not less than 4 inches in height.
- Be clearly readable.



MISTER JOHN 4"
FRANKLIN, TN 4"

Letters not less than 4 inches high

The marking requirements for a documented recreational vessel state “together in one place on the hull.” Many recreational vessels will place the vessel name and hailing port on the stern, and vessel name on both sides of the bow, which is required for a commercial vessel. Although not required for a recreational vessel, this is an acceptable option.

Interior Display (Recreational and Commercial)

In addition, the vessel must have the official number permanently affixed in block-type Arabic numerals of not less than 3 inches in height, preceded by the letters “NO.” on some clearly visible interior integral structural part of the vessel.

Arabic numerals are the most common symbolic representation of numbers in the world. Permanently affixed means that the numbers must be affixed to the vessel so that alteration, removal, or replacement would be obvious. Numbers can be painted, carved, or welded.

NO.1234567 3"

*Interior display (recreational and commercial).
Numbers must be no less than 3 inches high.*

For more information on documented vessels, contact the U.S. Coast Guard National Vessel Documentation Center at (800) 799-8362 or online at www.uscg.mil/hq/cg5/nvdc.

EQUIPMENT REQUIREMENTS

The United States Coast Guard sets minimum standards for recreational vessels and associated safety equipment. To meet these standards, required equipment must be U.S. Coast Guard “approved” or “certified.” This means that it meets U.S. Coast Guard specifications, standards, and regulations for performance, construction, or materials.

Life Jackets (33 CFR 175)

You may have heard reference to Type I, II, III, IV, and V “Personal Flotation Devices” (PFDs). The term PFD is used in a strictly regulatory sense. For greater clarity, this publication will use the term “wearable life jacket” and “throwable device.” Understand that Type and Number refer to the same equipment, whether called a PFD or life jacket, and that any PFD is approved for use anywhere.

All recreational vessels must carry one wearable life jacket for each person on board. Any boat 16 feet and longer (except canoes and kayaks) must also carry one throwable (Type IV) device. Life jackets **should** be worn at all times when the vessel is underway. **A life jacket can save your life, but only if you wear it.**



Always check and read the manufacturer’s information booklet and label provided with all life jackets. They will provide valuable information, including size, type, intended use, and Coast Guard approval information.

Life jackets must be:

- U.S. Coast Guard-approved (check the label).
- In good and serviceable condition.
- Appropriate size and type for the intended user.
- Properly stowed.

Some items that are not required but are a good idea to have with your life jacket are a whistle and an emergency light.

Stowage

- Wearable life jackets must be readily accessible.
- You should be able to put them on in a reasonable amount of time in an emergency (vessel sinking, on fire, etc.)
- They should not be stowed in plastic bags, in locked or closed compartments, or have other gear stowed on top of them.
- Throwable devices must be immediately available for use. They should be on the main deck within arm's reach, hanging on a lifeline, or other easily reached location.

Inflatable Life Jackets

- U.S. Coast Guard-approved inflatable life jackets are authorized for use by persons 16 years of age and older (check the label).
- Inflatable life jackets require regular maintenance and attention to the condition of the inflator.
- They must have a full cylinder and all status indicators on the inflator must be green or the device is **not** serviceable and does **not** satisfy the legal requirement for the wearable life jacket carriage requirement.
- Inflatable life jackets are more comfortable, encouraging regular use. The best life jackets are ones the user will wear.

Child Life Jacket Requirements

On a vessel that is underway, children under 13 years of age must wear an appropriate U.S. Coast Guard-approved life jacket unless they are 1) below deck, or 2) within an enclosed cabin. If a state has established a child life jacket wear requirement that differs from the Coast Guard requirement, the state requirement will be applicable on waters subject to that state's jurisdiction.

Children's life jackets are approved for specific weight categories. Check the "User Weight" on the label and for an approval statement that will read something like:



Approved for use on recreational boats and uninspected commercial vessels not carrying passengers for hire by persons weighing "less than 30, lbs.," "30 to 50 lbs.," "less than 50 lbs.," or "50 to 90 lbs."

Life Jacket Requirements for Specific Activities

The U.S. Coast Guard recommends – and many states require – wearing life jackets when engaged in the following activities:

- Water skiing and other towed activities (use a type designed for water skiing.)
- Operating a Personal Watercraft, or PWC (use a type designed for water skiing or PWC use.)
- Whitewater boating activities.
- Sailboarding.

Check with your state boating agency for the laws that apply.

Federal law does not require life jacket use on racing shells, rowing sculls, racing canoes, and racing kayaks; state laws vary, however. Check with your state boating agency.

Note that if you are boating in an area under the jurisdiction of the U.S. Army Corps of Engineers, or a federal, state, or local park authority, other rules may also apply.

The U.S. Coast Guard recommends that you always wear a life jacket while underway on a boat and require passengers to do the same.

Life Jacket Flotation

The five types of life jackets are based on three kinds of flotation and can be characterized as follows:

Inherently Buoyant (Primarily Foam)

- The most reliable.
- Come in Adult, Youth, Child, and Infant sizes.
- Designed for swimmers and non-swimmers.
- Come in wearable and throwable styles.
- Special designs available for water sports.

Inflatable

- The most compact.
- Lightweight and comfortable.
- Sized only for adults.
- Only recommended for swimmers.
- Wearable styles only.
- Some have the best in-water performance.

Hybrid (Foam and Inflation)

- Reliable.
- Provides Inherent and Inflatable Buoyancy.
- Adult, Youth, and Child sizes.
- For swimmers and non-swimmers.
- Wearable styles only.
- Some designed for water sports.

BUOYANCY RATING: FOAM

Wearable Size	Type	Inherent Buoyancy
Adult	I	22 lbs.
	II & III	15.5 lbs.
	V	15.5 to 22 lbs.
Youth	II & III	11 lbs.
	V	11 to 15.5 lbs.
Child and Infant	II	7 lbs.
Throwable:		
Cushion	IV	20 lbs.
Ring Buoy		16.58. 32 lb.

BUOYANCY RATING: INFLATABLE

Wearable Size	Type	Inflatable Buoyancy
Adult	I & II	34 lbs.
	III	22.5 lbs.
	V	22.5 to 34 lbs.

BUOYANCY RATING: HYBRID

Wearable Size	Type	Inherent Buoyancy	Inflated Total Buoyancy
Adult	II & III	10 lbs.	22 lbs.
	V	7.5 lbs.	22 lbs.
Youth	II & III	9 lbs.	15 lbs.
	V	7.5 lbs.	15 lbs.
Child	II	7 lbs.	12 lbs.

Types of Life Jackets

A Type I, Off-Shore Life Jacket provides the most buoyancy. It is effective for all waters, especially open, rough, or remote waters where rescue may be delayed. It is designed to turn an unconscious wearer to a face-up position in the water.

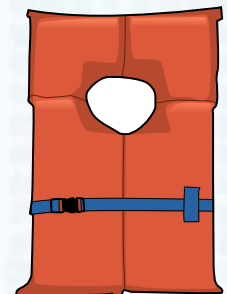
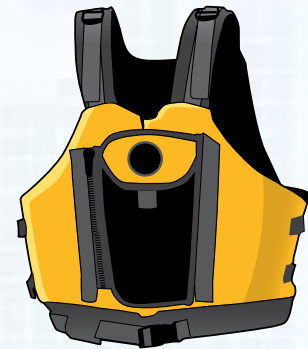


Uninflated



Inflated

A Type II, Near-Shore Buoyancy Vest is intended for calm, inland waters or where there is a good chance of quick rescue. Inherently buoyant life jackets of this type will turn some unconscious wearers to a face-up position in the water, but the turning is not as pronounced as with a Type I. This type of inflatable turns as well as a Type I foam jacket.



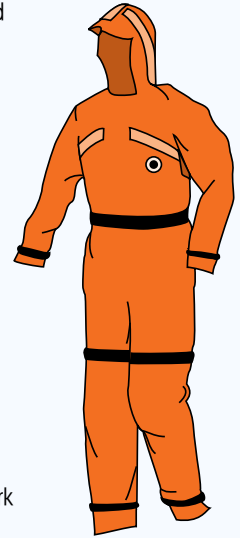
A Type III, Flotation Aid is good for users in calm, inland waters, or anywhere there is a good chance of quick rescue. The wearer may have to tilt their head back to remain in a face-up position in the water. The Type III foam vest has the same minimum buoyancy as a Type II. It comes in many styles, colors, and sizes and is generally the most comfortable type for continuous wear. Float coats, fishing vests, and vests designed with features suitable for various sports activities are examples of this type. This type of inflatable turns as well as a Type II foam vest.



A Type IV, Throwable Device is intended for use anywhere. It is designed to be thrown to a person in the water and grasped and held by the user until rescued. It is not designed or intended to be worn. Type IV devices include buoyant cushions, ring buoys, and horseshoe buoys. There are no Coast Guard-approved inflatable Type IV devices.



A Type V, Special-Use Device is intended for specific activities and may be carried instead of another life jacket only if used according to the condition(s) for which it is approved, as shown on its label. A Type V provides the performance of a Type I, II, or III (as marked on its label). If the label says the life jacket is “approved only when worn,” the life jacket must be worn (except by persons in enclosed spaces) and used in accordance with the approval label to meet carriage requirements. Some Type V devices provide significant hypothermia protection. Varieties include deck suits, work vests, sailboarding vests, and sailing vests with a safety harness.



An Inflatable with Safety Harness is approved only as a Type V, Special-Use Device because its use to prevent falls overboard presents several risks. The U.S. Coast Guard has not assessed its potential for injury from suddenly stopping a fall and, in case of capsizing or sinking, the boat may take the wearer down, resulting in death. **Do not** attach the harness to the boat unless it is being worn with a tether of less than 6.5 feet in length with quick-release-under-load hardware. *Read the safety harness section of the owner’s manual for intended use. Under no circumstances should the safety harness be used for any climbing activity. U.S. Coast Guard approval does not apply to this harness used under those circumstances.*

Finding the Right Life Jacket for You

Life jackets come in many designs, colors, styles, and materials. Some are made to stand up to rugged water sports, others to protect the wearer from cold-water temperatures. Be sure to choose one that is appropriate for your body size, planned activities, and the water conditions you expect to encounter.

Test the Fit

Start with a life jacket that is U.S. Coast Guard-approved. Try it on. It should fit comfortably snug. Then give it this test: with all straps, zippers, and ties securely fastened, raise your arms over your head. The jacket should stay in place and not ride up. Next, have someone lift your life jacket straight up at the shoulders. Again, the jacket should stay in place. If the zipper touches your nose or the jacket almost comes off, it is too loose.

Test the Buoyancy of Your Life Jacket

In shallow water or a swimming pool, under supervision and with all straps, zippers, and ties fastened, see how the life jacket floats you. Relax your body and let your head tilt back. Your chin should remain above water so that you can breathe easily. If not, you may need a different size or model, one that provides more buoyancy.

Choosing a Child's Life Jacket

Be sure to choose a child's life jacket that is U.S. Coast Guard-approved. Check to make sure your child's weight falls within the range shown on the label. While some children in the 30-50 pound weight range who can swim may ask for the extra freedom of movement that a Type III provides, note that most children in this weight range, especially those who cannot swim, should wear a Type II. To check for a good fit, pick the child up by the shoulders of the life jacket. If it fits correctly, the child's chin and ears will not slip through.

A child's life jacket should be tested in the water immediately after purchase. Children may panic when they fall into the water suddenly. Float testing not only checks the fit and buoyancy but also provides an important opportunity to teach them to relax in the water.

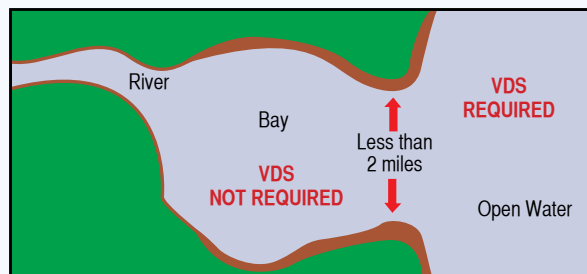
Be Safe. Wear Your Life Jacket.

Most deaths from drowning occur near shore in calm weather, not out at sea during a storm; 9 out of 10 drowning fatalities occur in inland waters, most within a few feet of safety. Worse still, many of these victims owned life jackets and may have survived had they been worn.

**Wear your life jacket.
When you don't, you're risking your life.**

Visual Distress Signals (33 CFR 175.101)

Vessels operating on U.S. coastal waters, the Great Lakes, and territorial seas, as well as those waters connected directly, up to a point where the waterway is less than two nautical miles wide, must be equipped with U.S. Coast Guard-approved visual distress signals (VDS). Vessels owned in the United States and operating on the high seas must also be equipped with U.S. Coast Guard-approved visual distress signals.



The following vessels are not required to carry day signals, but must carry night signals when operating from sunset to sunrise:

- Recreational boats less than 16 feet in length.
- Boats participating in organized events, such as races, regattas, or marine parades.
- Open sailboats less than 26 feet in length that are not equipped with propulsion machinery.
- Manually propelled boats.

Remember: *The carriage requirement is only applicable in areas where VDS are required.*

Pyrotechnic Devices

Pyrotechnic visual distress signals must be U.S. Coast Guard-approved, in serviceable condition, and readily accessible.

Check the expiration date. Expired signals may be carried as extra equipment, but cannot be counted toward meeting the visual distress signal requirement.

Launchers manufactured before January 1, 1981, and intended for use with approved signals, are not required to be U.S. Coast Guard-approved as long as they remain in serviceable condition.

If pyrotechnic devices are selected, a minimum of three signals are required for day use and three signals for night use. Some pyrotechnic signals meet both day and night use requirements (combination flares).

Pyrotechnic devices should be stored in a cool, dry place, if possible. A watertight container painted red or orange and prominently marked "DISTRESS SIGNALS" or "FLARES" is recommended.

U.S. Coast Guard-approved pyrotechnic visual distress signals and associated devices include:

- Pyrotechnic red flares, hand-held or aerial (day/night use.)
- Pyrotechnic orange smoke, hand-held or floating (day use.)
- Launchers for aerial red meteors or parachute flares.

Each of these devices has a different operating/burning time. Check the label to see how long each pyrotechnic device will remain illuminated. Choose a device best suited to the conditions in the area where your vessel is typically used.

Non-Pyrotechnic Devices

Non-pyrotechnic visual distress signals must be in serviceable condition, readily accessible, and certified by the manufacturer as complying with U.S. Coast Guard requirements. These signals include:

Orange Distress Flag

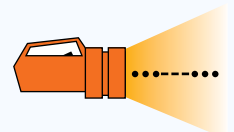
- Used as a day signal only.
- Must be at least 3 x 3 feet with a black square and ball on an orange background.
- Must be marked with an indication that it meets U.S. Coast Guard requirements in 46 CFR 160.072.
- Most visible when attached and waved on a paddle or boat hook, or flown from a mast.
- May be incorporated into devices designed to attract attention in an emergency, such as balloons, kites, or floating streamer.



Orange Flag (day only)

Electric Distress Light

- Acceptable for night use only.
- Automatically flashes the international SOS distress signal (•••-----•••).
- Must be marked with an indication that it meets U.S. Coast Guard requirements in 46 CFR 161.013.



Electric Distress Signals (night only)

Under Inland Navigation Rules, a high-intensity white light flashing at regular intervals from 50-70 times per minute is considered a distress signal. Such devices, however, **do not** meet the Visual Distress Signal carriage requirement.

Regulations prohibit display of visual distress signals on the water under any circumstances, except where assistance is needed because of immediate or potential danger to persons on board a vessel.

All distress signals have distinct advantages and disadvantages. No single device is ideal under all conditions or suitable for all purposes.

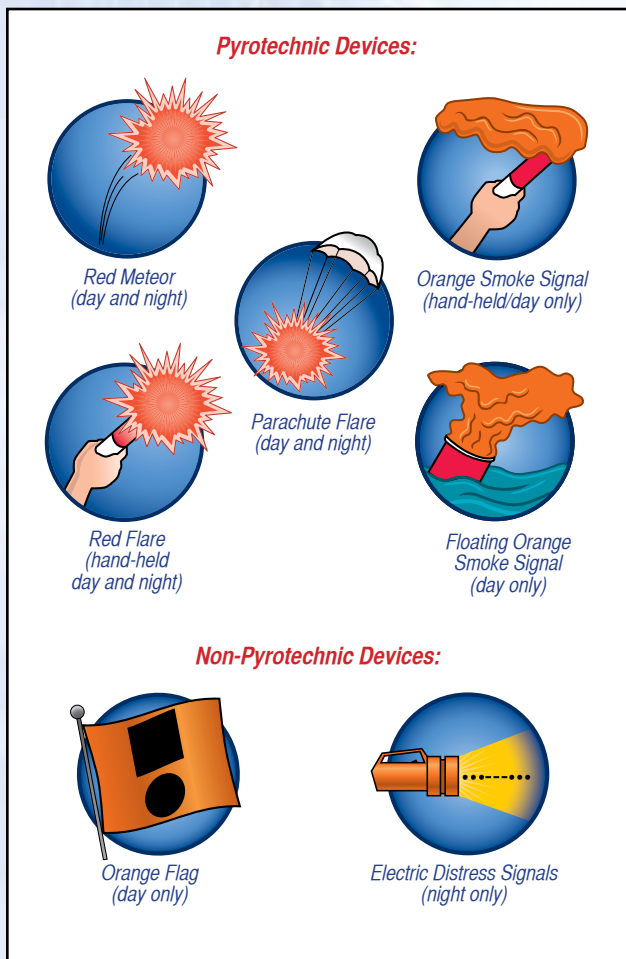
Pyrotechnics are universally recognized as excellent distress signals, but there is potential for injury and property damage if not handled properly. These devices produce a very hot flame with the potential to cause burns and ignite flammable materials.

Pistol-launched and hand-held parachute flares and meteors have many characteristics of a firearm and must be handled with extreme caution. In some states and Canada they may be considered a firearm and prohibited from use. Be sure to check with your state boating agency.



The following are just a few of the many combinations of devices that will meet the requirements:

- 3 hand-held red flares that are approved for day/night use.
- 1 hand-held red flare and 2 parachute flares for day/night use.
- 1 hand-held orange smoke signal and 2 floating orange smoke signals for day, and 1 electric distress light for night.

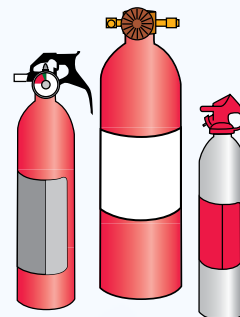


All boaters should be able to signal for help. Boaters must have U.S. Coast Guard-approved day and night signals for vessels when required. Signaling devices are recommended when operating on all open bodies of water.

Fire Extinguishers (46 CFR 25)

U.S. Coast Guard-approved, marine-type fire extinguishers are required on boats where a fire hazard could be expected from the engines or fuel system. Extinguishers are classified by a letter and number symbol. The letter indicates the type of fire the unit is designed to extinguish. Type B, for example, is designed to extinguish flaming liquids, such as gasoline, oil, and grease. The number indicates the amount of the extinguishing agent contained in the extinguisher; the higher the number, the greater the amount of agent in the extinguisher.

U.S. Coast Guard-approved extinguishers required for boats are hand-portable, have either B-I or B-II classification, and must be provided with a mounting bracket. While not required, it is recommended that the extinguishers be mounted in a readily accessible location. Consider locations where the extinguisher can be reached easily; for example, at or near the steering station or in the galley or engine room, but away from locations where a fire may likely start.



Fire Extinguishers

Extinguisher markings can be confusing because one extinguisher can be approved for several different types of fires (A, B, or C). For example, an extinguisher marked "Type A, Size II; Type B; C, Size I" is acceptable as a Type B-I extinguisher.

Look for the section of the label that states "Marine Type USCG, Type A, Size II; Type B; C Size I." (It will also contain a USCG approval number.) Make sure Type B is indicated. Hand-portable extinguishers will be either a Size I or II.

Size III and larger are too big for use on most recreational boats.

Classes	Foam (gals)	CO ² (lbs)	Dry Chemical (lbs)
B-I (Type B, Size I)	1.75	4	2
B-II (Type B, Size II)	2.5	15	10

Fire extinguishers are required on boats when any of the following conditions exist:

- There are closed compartments and compartments under seats where portable fuel tanks may be stored.
- There are double bottoms not sealed to the hull or that are not completely filled with flotation materials.
- There are closed living spaces.
- There are closed stowage compartments, in which combustible or flammable materials are stored.
- There are permanently installed fuel tanks. (Fuel tanks secured so they cannot be moved in case of a fire or other emergency are considered permanently installed. Also, if the weight of a fuel tank is such that persons on board cannot move it, the U.S. Coast Guard may consider it permanently installed.)

Fire Extinguisher Maintenance

Inspect extinguishers monthly to make sure that:

- Seals and tamper indicators are not broken or missing.
- Pressure gauges or other indicators, if so equipped, read in the operable range as described on the extinguisher.
- There is no obvious physical damage, rust, corrosion, leakage, or clogged nozzles.

If the minimum weight is stated on the extinguisher label, weigh extinguishers annually to check.

Fire extinguishers that do not satisfy the above requirements or that have been partially emptied must be replaced or taken to a qualified fire extinguisher servicing company for recharge.

Required Number of Fire Extinguishers

The following chart lists the number of fire extinguishers that are required on recreational vessels. If a U.S. Coast Guard-approved fixed fire extinguishing system is installed for the protection of the engine compartment, the required number of extinguishers may be reduced in accordance with the chart.

It is recommended that hand portable extinguishers be mounted in a readily accessible location.

Minimum Number of Hand-Portable Fire Extinguishers Required

Vessel length	No Fixed System	With approved Fixed Systems
Less than 26'	1 B-I	0
26' to less than 40'	2 B-I or 1 B-II	1 B-I
40' to 65'	3 B-I or 1 B-II and 1 B-I	2 B-I or 1 B-II

Ventilation (33 CFR 175/183, 46 CFR 25)

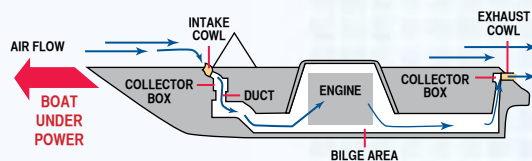
Boats that use gasoline for electrical generation, mechanical power, or propulsion are required to be equipped with a ventilation system.

A natural ventilation system is required for each compartment in a boat that:

- Contains a permanently installed gasoline engine.
- Has openings between it and a compartment that requires ventilation.
- Contains a permanently installed fuel tank and an electrical component that is not ignition-protected.
- Contains a fuel tank that vents into that compartment (including a portable tank.)
- Contains a non-metallic fuel tank.

A natural ventilation system consists of:

- A supply opening (duct/cowl) from the outside air (located on the exterior surface of the boat), or from a ventilated compartment, or from a compartment that is open to the outside air.
- An exhaust opening into another ventilated compartment or an exhaust duct to the atmosphere.



All blower motors installed in exhaust ducts must be in working condition regardless of date of manufacture.

Each exhaust opening or exhaust duct must originate in the lower one-third of the compartment. Each supply opening or supply duct and each exhaust opening or duct in a compartment must be above the normal accumulation of bilge water.

A powered ventilation system is required for each compartment in a boat that has a permanently installed gasoline engine with a cranking motor for remote starting.

A powered ventilation system consists of one or more exhaust blowers.

Each intake duct for an exhaust blower must be in the lower one-third of the compartment and above the normal accumulation of bilge water.

For boats built prior to 1980, there was no requirement for a powered ventilation system; however, some boats were equipped with a blower.

The U.S. Coast Guard Ventilation Standard, a manufacturer requirement, applies to all boats built on or after August 1, 1980. Some builders began manufacturing boats in compliance with the Ventilation Standard as early as August 1978. If your boat was built on or after August 1, 1978 it might have been equipped with either (1) a natural ventilation system, or (2) both a natural ventilation system and a powered ventilation system. If your boat bears a label containing the words "This boat complies with U.S. Coast Guard safety standards," you can assume that the design of your boat's ventilation system meets applicable regulations.

Boats built after 1980 with remote starters are required to display a label that contains at least the following information:

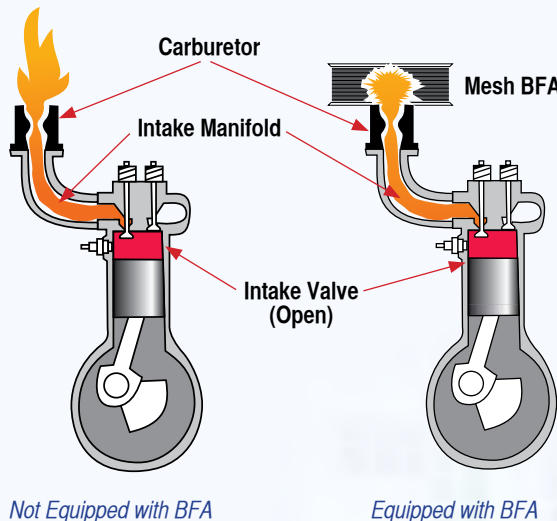
Warning

Gasoline vapors can explode. Before starting engine, operate blower at least four minutes and check the engine compartment bilge for gasoline vapors.

All boat owners are responsible for keeping their vessel's ventilation systems in operating condition. This means making sure openings are free of obstructions, ducts and ducting are not blocked or torn, blowers operate properly, and worn components are replaced with equivalent marine-type equipment.

Backfire Flame Control (46 CFR 25/58)

Gasoline engines installed in a motorboat or motor vessel after April 25, 1940, except outboard motors, must be equipped with an acceptable means of backfire flame control. The backfire flame arrester (BFA) must be suitably secured to the air intake with a flame-tight connection, and is required to be either U.S. Coast Guard-approved or comply with SAE J-1928 or UL 1111 standards and marked accordingly.



Other acceptable means of backfire flame control include: air and fuel induction systems usually found on personal watercraft, velocity stacks (attachments to carburetors), and reed-type (found in outboards.)

Sound Producing Devices (33 CFR 83)

Navigation Rules require sound signals to be made under certain circumstances. Meeting, crossing, and overtaking situations, described in the Navigation Rules beginning with Rule 32, are examples of circumstances in which sound signals are required. Recreational vessels are also required to use sound signals during periods of reduced visibility and while at anchor.

The following matrix provides the sound producing devices required for vessels:

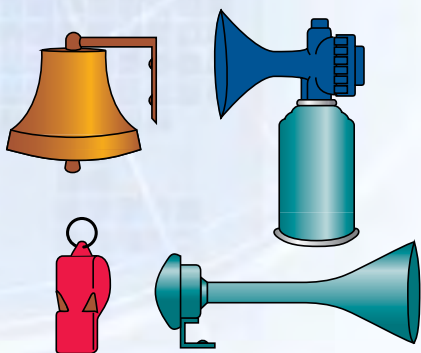
International Waters

Vessel Length	Whistle	Bell	Gong
12 meters or more (39.4 ft.)	X		
20 meters or more (65.6 ft.)	X	X	
100 meters or more (328.1 ft.)	X	X	X

Inland Waters*

Vessel Length	Whistle	Bell	Gong
12 meters or more (39.4 ft.)	X		
20 meters or more (65.6 ft.)	X	X	
100 meters or more (328.1 ft.)	X	X	X

**There have been changes to the Collision Regulations (COLREGS) and a regulatory change is forthcoming that will align the Inland Navigation Rules with the COLREGS. The Coast Guard is exercising its discretion not to enforce the provisions of the inland rules until the regulatory change is enacted.*



Signaling Devices

Navigation Lights (33 CFR 83)

Recreational vessels are required to display navigation lights between sunset and sunrise and during periods of restricted visibility (fog, rain, haze, etc.) The U.S. Coast Guard Navigation Rules, International-Inland, specifies lighting requirements for every description of watercraft. The information provided below is for power-driven and sailing vessels less than 65.5 feet (20 meters) in length.

Power-Driven Vessels

Note that a sail vessel under machine propulsion is considered a power-driven vessel.

If your power-driven vessel is less than 164 feet (50 meters) in length, it must display navigation lights as shown in Figure 1.

If your power-driven vessel is less than 39.4 feet (12 meters) in length, then it may display navigation lights as shown in Figure 2.

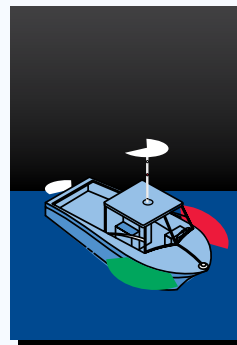


Figure 1

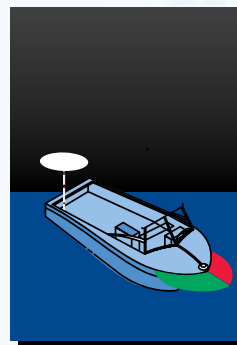


Figure 2

If your power-driven vessel is less than 23 feet (7 meters) in length and its maximum speed does not exceed 7 knots, then it may display an all-round white light and, if possible, sidelights, instead of the lights prescribed previously. (International Rules only.)

For power-driven vessels less than 39.4 feet (12 meters) in length, the masthead or all-round white light must be at least 3.3 feet (1 meter) above the sidelights.

In a vessel of less than 65.6 feet (20 meters) in length, sidelights may be displayed in a combination light as shown in Figure 2.

Sailing Vessels

If your sailing vessel is less than 65.6 feet (20 meters) in length, then it must display navigation lights as shown in Figures 3, 4, or 5.

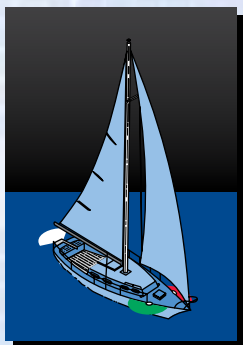


Figure 3



Figure 4

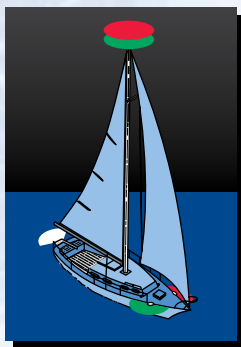


Figure 5



Figure 6

Vessel Under Oars

A vessel under oars may exhibit the lights for a sailboat. If it does not, it shall have ready at hand an electric torch (flashlight) or lighted lantern showing a white light that shall be exhibited in sufficient time to prevent collision. (See Figure 7.)



Figure 7

Lights and Shapes

To alert other vessels of conditions that may be hazardous, there are requirements to display lights at night and shapes during the day.

Anchored Vessels

At night: All vessels at anchor must display anchor lights. If your vessel is less than 164 feet (50 meters) in length, then its anchor light is an all-round white light visible where it can best be seen from all directions. (See Figure 8.)

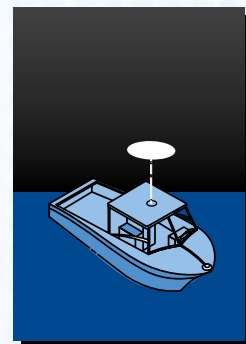
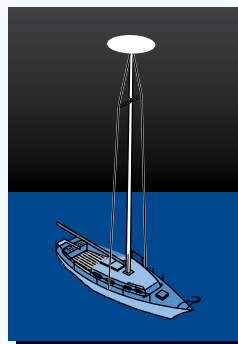
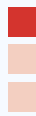


Figure 8

A sailing vessel of less than 23 feet (7 meters) in length shall, if practicable, exhibit lights as shown. (Figures 3 or 4.) If it does not, it shall have ready at hand an electric torch or lighted lantern (flashlight) showing white light that shall be exhibited in sufficient time to prevent collision. (See Figure 6.)



During the day: All vessels at anchor must display forward, where it can be best seen, a black ball shape. (See Figure 9.)

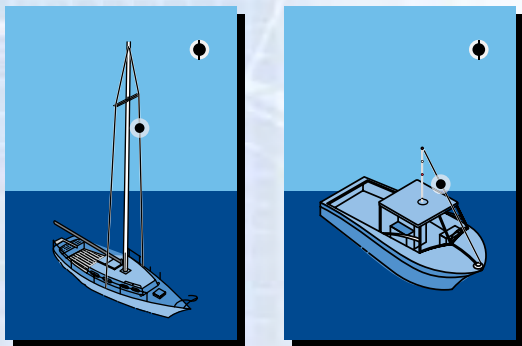


Figure 9

EXCEPTIONS: If your vessel is less than 23 feet (7 meters) in length, it is not required to display an anchor light or shape unless it is anchored in or near a narrow channel, fairway, or anchorage, or where other vessels normally navigate.

If your vessel is less than 65.6 feet (20 meters) in length, it is not required to display an anchor light if it is anchored in inland waters in a special anchorage designated by the Secretary under which the Coast Guard is operating.

Sailing Vessels Under Power

During the day, vessels under sail that are also being propelled by machinery, must exhibit forward, where it can best be seen, a black conical shape with the apex pointing down. (See Figure 10.)

EXCEPTION: If your vessel is less than 39.4 feet (12 meters) in length, then it is not required to display the shape in inland waters.



Figure 10

Reminder: If you are operating your sailing vessel at night using machinery, or sail and machinery, then your vessel must display the lights required for a power-driven vessel. (See Figures 3, 4, and 5.)

Vessels Restricted in their Ability to Maneuver

Navigation Rules require vessels restricted in their ability to maneuver to display appropriate day shapes (ball/diamond/ball) or lights. If the size of the vessel engaged in diving activities during the day make it impractical to display the day shapes, then it must exhibit a rigid replica of the international code flag "Alpha" not less than 3.3 feet (1 meter) in height to meet this requirement. If the diving activities are at night, then your vessel must display the navigation lights shown in Figure 11. This requirement does not affect the use of a red and white Divers Flag, which may be required by state or local law to mark a diver's location. The "A" flag is a navigation signal indicating your vessel's restricted maneuverability and does not pertain to the location of the diver.

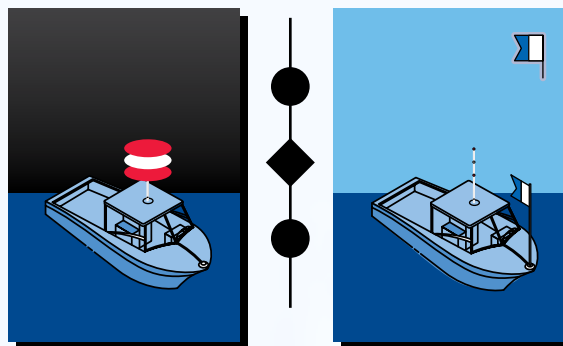


Figure 11



Pollution Regulations (33 CFR 151/155)

Annex V of MARPOL 73/78 prohibits throwing, discharging, or depositing any refuse matter of any kind (including trash, garbage, oil, and other liquid pollutants) into the waters of the United States.

The Federal Water Pollution Control Act prohibits the discharge of oil or hazardous substances that may be harmful into U.S. navigable waters. Vessels 26 feet and greater in length, with machinery spaces, must display a placard at least 5 by 8 inches, made of durable material, fixed in a conspicuous place in the machinery spaces, or at the bilge pump control station, stating the following:

Discharge of Oil Prohibited

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste upon or into any navigable waters of the United States. This prohibition includes any discharge that causes a film or discoloration of the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil and/or criminal sanctions, including fines and imprisonment.

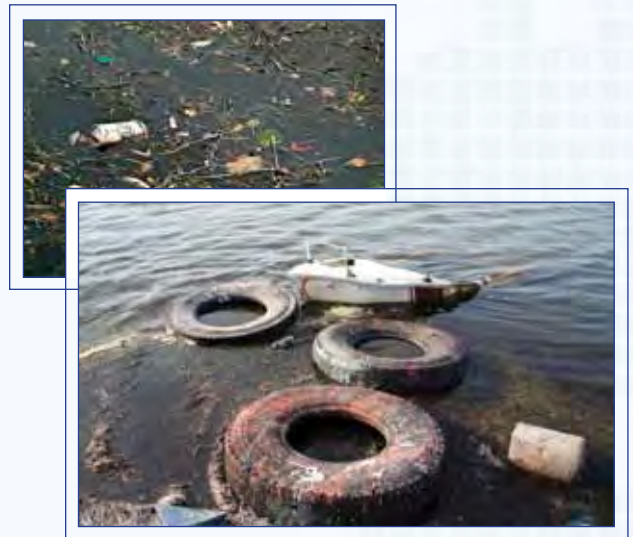
Regulations issued under the Federal Water Pollution Control Act require all vessels with propulsion machinery to have a capacity to retain oily mixtures on board and be equipped with a fixed or portable means to discharge these oily mixtures to a reception facility. On recreational vessels, a bucket, oil absorbent pads, and heavy-duty plastic bag, bailer, or portable pump are some of the suitable means that meet the requirement for retention on board until transferring the oily mixture to a reception facility. No person may intentionally drain oil or oily waste from any source into the bilge of any vessel. You must immediately notify the U.S. Coast Guard if your vessel discharges oil or hazardous substances in the water. Call the Coast Guard National Response Center toll-free (800) 424-8802, or (202) 267-2675.

Report the following information:

- Location of the incident.
- Size/quantity (estimated amount of material released).
- Description, color, consistency, odor.
- Date and time observed.
- Source and cause of the release, if known.
- Substance, if known.
- Weather and any other information that may help emergency personnel respond to the incident.

Discharge of Garbage

The Act to Prevent Pollution from Ships (MARPOL ANNEX V) places limitations on the discharge of garbage from vessels. It is illegal to dump plastic trash anywhere in the ocean or navigable waters of the United States. It is also illegal to discharge garbage in the navigable waters of the United States, including the inland waters and anywhere in the Great Lakes. The discharge of other types of garbage is permitted outside of specific distances offshore as determined by the nature of that garbage. (See chart next page.)



Note: state and local laws may place further restrictions on the disposal of garbage.

Garbage Type	Discharge
Plastics – includes synthetic ropes, fishing nets, and plastic bags	Prohibited in all areas
Comminuted or ground food waste, paper, rags, glass, etc.	Prohibited less than 3 miles from nearest land
Food waste, paper, rags, glass, metal, bottles, crockery, and similar refuse	Prohibited less than 12 miles from nearest land
Floating dunnage, lining, and packing materials	Prohibited less than 25 miles from nearest land

United States vessels of 26 feet or longer must display in a prominent location, a durable placard at least 4 by 9 inches notifying the crew and passengers of the discharge restrictions.



United States ocean-going vessels of 40 feet or longer that are engaged in commerce or equipped with a galley and berthing must have a written waste management plan describing the procedures for collecting, processing, storing, and discharging garbage, and must designate the person in charge of carrying out the plan.

Marine Sanitation Devices (33 CFR 159)

All recreational boats with installed toilet facilities must have an operable marine sanitation device (MSD) on board. Vessels 65 feet and under may use a Type I, II, or III MSD. Type I and Type II are “flow-through” devices, while a holding tank is a Type III device. Vessels over 65 feet must install a Type II or III MSD. All installed MSDs must be U.S. Coast Guard-certified. U.S. Coast Guard-certified devices are so labeled, except for some holding tanks, which are certified by definition under the regulations.

The discharge of treated sewage is allowed within 3 nautical miles of shore except in designated “No Discharge Zone” areas. (Untreated sewage may be discharged beyond 3 nautical miles.)

A “No Discharge Zone” is a body of water where the discharge of treated or untreated sewage is prohibited. When operating a vessel in a No Discharge Zone, the operator must secure the device in a manner that prevents any discharge. Some acceptable methods are: padlocking overboard discharge valves in the closed position, using a non-releasable wire tie to hold overboard discharge valves in the closed position, closing overboard discharge valves and removing the handle, and locking the door to the space enclosing the toilets. Note: these methods for preventing the overboard discharge are only required when operating in a No Discharge Zone. State and local laws may place further restrictions on overboard discharges.



OPERATING PROCEDURES

Navigation Rules

Boaters call navigation rules – the basic laws governing the steering or sailing of a boat – “The Rules of the Road.” These Rules define the roles and responsibilities of vessel operators. If all operators followed these rules, most accidents could be avoided.

The Rules are divided into two parts, Inland and International. Inland Rules apply to vessels operating inside the line of demarcation, while International Rules apply outside that line. Demarcation lines are printed on most navigational charts and are listed in the Navigation Rules.

Print copies of the rules can be obtained from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 979050, St. Louis, MO 63197-9000. Tel. (202) 512-1800, or you can download a copy from the U.S. Coast Guard, Boating Safety Division website at www.uscgboating.org.

The operator of a vessel 39.4 feet (12 meters) or greater is responsible for having and maintaining a copy of the Navigation Rules on board while operating on U.S. inland waters.

The Rules vary slightly depending on whether you are boating on inland or on international waters. As an example, when operating on inland waters, sound signals are signals of *intent*; when operating on international waters, they are signals of *action*.

Post a lookout. Designate someone to watch for dangers that may come from any direction.

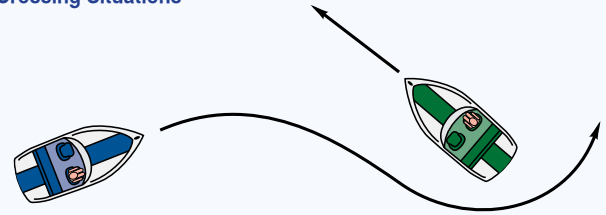
Maintain a safe speed. Except where speed is restricted by regulation, or the waterway is marked as a “No Wake” or “Slow Speed” area, you must judge safe speed for yourself, taking into account visibility, vessel traffic, your boat’s ability to maneuver, and the weather conditions.

Avoid a collision. The Rules of the Road include the actions to take when encountering another vessel on the water. Some of the most common situations you may encounter are: overtaking, meeting head-on, and crossing the bow of another vessel. In each case, the

boat designated as the “give-way” vessel is required to yield to the other boat, while the boat designated as the “stand-on” vessel should maintain its course and speed.

The following diagrams describe the whistle signals and actions to be taken by vessels in a crossing, meeting, or overtaking situation while operating in inland waters. These are basic examples; for additional information, consult the Navigation Rules.

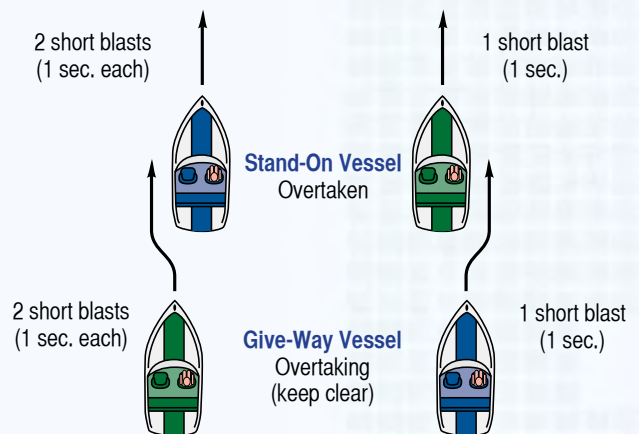
Crossing Situations



Give-Way Vessel
should alter course to pass
astern (behind)
1 short blast (1 sec.)

Stand-On Vessel
should maintain its course
and speed
1 short blast (1 sec.)

Overtaking Situation



2 short blasts
(1 sec. each)

Stand-On Vessel
Overtaken

1 short blast
(1 sec.)

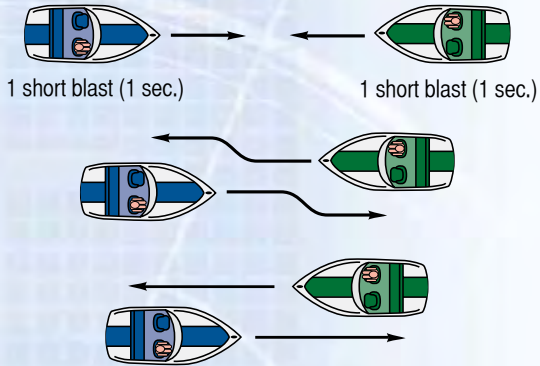
2 short blasts
(1 sec. each)

Give-Way Vessel
Overtaking
(keep clear)

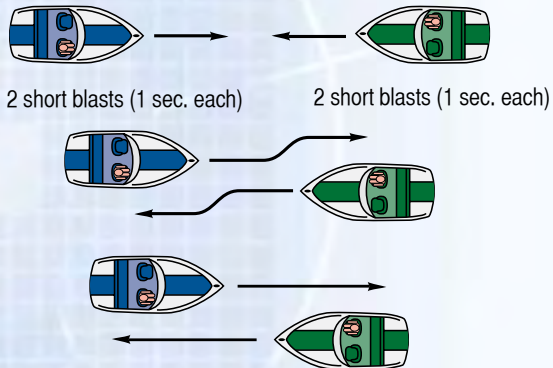
1 short blast
(1 sec.)

Meeting Head-On

Port-to-Port Passing (preferred)



Starboard-to-Starboard Passing



Aids to Navigation

Navigation buoys and beacons are placed along coastal and navigable waters as guides to mark safe water and hidden dangers, as well as to assist boat operators in determining their position in relation to land. Each aid to navigation provides specific information.

Several Aids are usually used together to form a local system that helps the boat operator follow natural and improved channels. Such Aids also provide a continuous system of charted markers for coastal piloting.

Individual Aids are used to mark landfall from seaward, and to mark isolated dangers.

Lateral markers are buoys or beacons that indicate the port and starboard sides of a route to be followed. Virtually all U.S. lateral marks follow the traditional 3-R principle of "Red, Right, Returning." This means that when returning from seaward, keep the red markers on the right-hand (starboard) side of the vessel.

















Boat operators **should not** rely on Aids to Navigation alone for determining their position. Storms and wave action can move buoys out of place.



Lateral Aids

Lateral aids marking the sides of channels, as seen when entering from seaward.






Proceeding Upstream

Green Aids: Odd Numbers Square dayboards, buoys, and cans		Red Aids: Even Numbers <i>Red, Right, Returning: when proceeding upstream, keep the red Aids to starboard</i>	
 G "7"	 Daybeacon	 Daybeacon	 R "8"
 "5" FI G 6s	 Light	 Light	 "6" FI R 6s
 G C "3"	 Can	 Nun	 R N "4"
 G "1" FI G 4s	 Lighted Buoy	 Lighted Buoy	 R "2" FI R 4s

Open Water (seaward)






Characteristics

- Beacons may have green odd numbers.
- Buoys may have white odd numbers.
- If lit, the light will be green and is likely to flash in one of the following patterns:

Flashing (2)	
Flashing	
Occulting	
Quick Flashing	
Isophase	

Characteristics


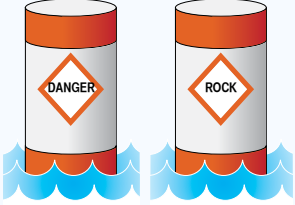

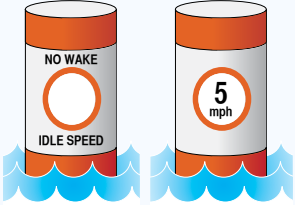

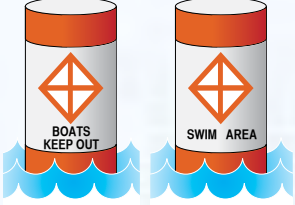

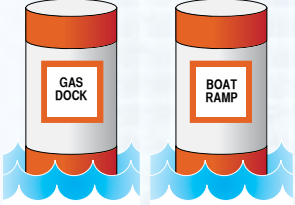
- Beacons may have red even numbers.
- Buoys may have white even numbers.
- If lit, the light will be red and is likely to flash in one of the following patterns:

Flashing (2)	
Flashing	
Occulting	
Quick Flashing	
Isophase	

Do not tie up your boat to Aids to Navigation; it is dangerous and illegal.

Information and Regulatory Markers

These orange-and-white Aids are used to alert vessel operators to various warnings and regulations.

Symbol	Meaning	Examples
	Danger A diamond shape alerts boaters to hazards	
	Restricted Operations Marks with a circle indicate areas with regulated operations	
	Exclusion A diamond shape with a cross means boats are prohibited from the area	
	Information Marks with a square provide helpful information such as directions, distances, and locations	

Characteristics

- White with an orange horizontal band at both top and bottom.
- Black text within or around an orange square, circle, or diamond; or black text outside a diamond with an orange cross.
- May be buoys or beacons.
- If lit, the light will be white and may have any light rhythm except quick flashing, flashing (2), or Morse code "A."
- The chart symbol for this type of buoy is:

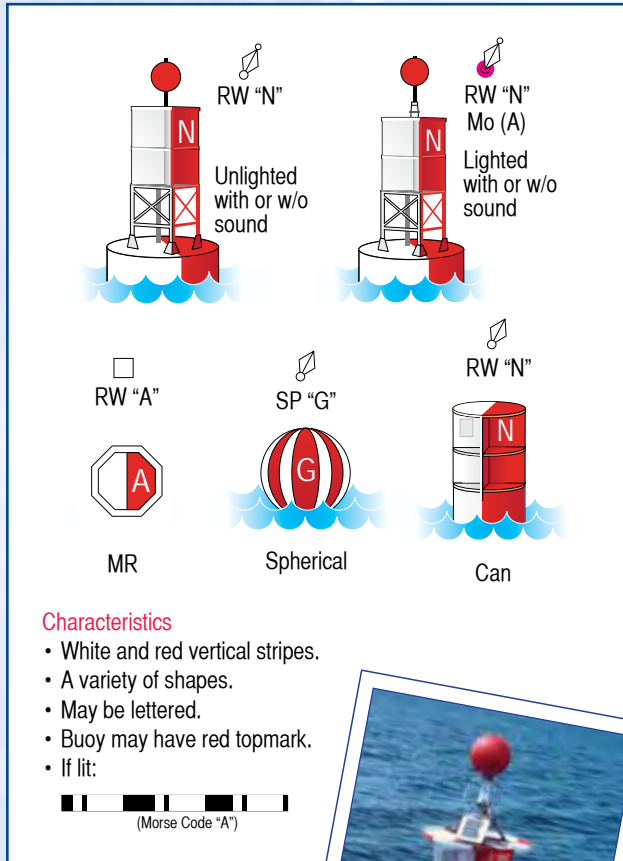


QUICK REFERENCE CHART

Equipment	Requirement	<16	16-26	26-40	40-65	Page
Certificate of Number (State Registration)	All undocumented vessels equipped with propulsion machinery must be state registered. Certificate of Number must be on board when the vessel is in use. Note that some states require all vessels to be registered.	X	X	X	X	5
State Numbering	(a) Plain block letters/numbers, not less than 3 inches in height, must be affixed on each side of the forward half of the vessel, in a contrasting color to the background, and read from left to right. (b) State validation sticker(s) must be affixed within 6 inches of the registration number. Note: check with your local boating agency for specific state requirements.	X	X	X	X	5
Certificate of Documentation	Applies only to "Documented" vessels: (a) Original and current certificate must be on board. (b) Vessel name/hailing port must be marked on exterior part of hull in letters not less than 4 inches in height. (c) Official Number must be permanently affixed on interior structure in numbers not less than 3 inches in height.		X	X	X	6
Life Jackets	(a) One Type I, II, III, or V wearable life jacket for each person on board. Must be U.S. Coast Guard-approved. (b) In addition, must carry one Type IV throwable device.	X	X	X	X	9
Visual Distress Signals (VDS)	(a) One electric distress light, or three combination day/night red flares. Note: only required to be carried on board when the vessel is operating between sunset and sunrise. (b) Three combination day/night red flares – hand-held, meteor, or parachute-type, or one orange distress flag, or one electric distress light, or three hand-held or floating orange smoke signals and one electric distress light.	X		X	X	17
Fire Extinguishers	(a) One B-I (when enclosed compartment). (b) One B-II or two B-I. Note: fixed system equals one B-I. (c) One B-II and one B-I, or three B-I. Note: fixed system equals one B-I.	X	X	X	X	21
Ventilation	(a) All vessels built after April 25, 1940 that are gasoline-fueled with enclosed engine and/or fuel tank compartments must have natural ventilation (at least two ducts fitted with cowls). (b) In addition, a vessel built after July 31, 1980 must have a rated power exhaust blower.	X	X	X	X	23
Sound Producing Devices	(a) A vessel of less than 39.4 feet (12 meters) must, at a minimum, have some means of making an efficient sound signal – i.e., handheld air horn, athletic whistle. A human voice/sound is not acceptable. (b) A vessel 39.4 feet (12 meters) or greater, must have a sound-signaling appliance capable of producing an efficient sound signal, audible for 1/2 mile, with a 4- to 6-second duration.	X	X	X	X	25
Backfire Flame Arrestor	Required on gasoline engines installed after April 25, 1940, except outboard motors.	X	X	X	X	25
Navigational Lights	Required to be displayed from sunset to sunrise and in areas of restricted visibility.	X	X	X	X	27
Oil Pollution Placard	(a) Placard must be at least 5 by 8 inches and made of durable material. (b) Placard must be posted in each machinery space or at the bilge control station.		X	X	X	32
Garbage Placard	(a) Placard must be at least 4 by 9 inches and made of durable material. (b) Displayed in a conspicuous place notifying all on board of the discharge restrictions.		X	X	X	34
Marine Sanitation Devices	If there is an installed toilet, the vessel must have an operable MSD Type I, II, or III.	X	X	X	X	35
Navigation Rules (Inland Only)	The operator of a vessel 39.4 feet (12 meters) or greater while operating on U.S. inland waters must have on board a copy of these rules.		X	X	X	36

Safe Water Markers

These Aids are used to mark fairways, mid-channels, and offshore approach points. They have unobstructed water on all sides. A buoy, lighted or unlighted, may show a red topmark. An appropriate nautical chart must be consulted to determine exact position



Nautical Charts

One of the most important tools for safely navigating waterways is a Nautical Chart. Today, many recreational boaters use GPS receivers and perform electronic waypoint navigation. Although a GPS can tell you where you are in terms of latitude and longitude, it cannot show what is around or beneath the boat, or what obstacles may be in the way.

Nautical charts show the nature and shape of the coast, including water depths, marine hazards, general configuration and character of the bottom, and Aids to Navigation, as well as prominent landmarks, port facilities, and other relevant information. Changes brought about by people and nature require that nautical charts be constantly maintained and updated to aid safe navigation.

To meet the needs of the boating public, the National Oceanic and Atmospheric Administration's National Ocean Service (NOS) produces a variety of nautical charts and related products. Nautical charts can vary in scale and format. Chart scale refers to a measurement of an area, not the distance. A chart covering a relatively large area is called a "small scale" chart; a "large scale" chart will cover a relatively small area and show much greater detail. Having the most current chart is important. That is why the publication date is critical. Storms and wave action can alter the coastline, so only up-to-date charts should be used for navigation. For all navigation, boat operators should also use the chart that provides the level of detail needed.

NOS nautical charts may be purchased directly by mail from the NOS Distribution Branch or through an authorized agent. There are more than 1,700 nautical chart agents that sell NOS charts. Use the address and contact numbers below to obtain a list of agents near you or to request a free catalog:

FAA, National Aeronautical Charting Office

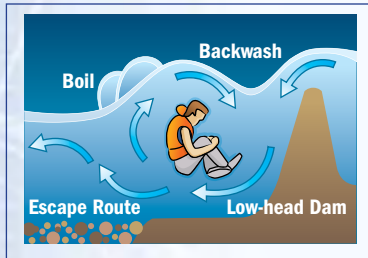
Distribution Division, AJW-3550
10201 Good Luck Road
Glendale, MD 20769-9700
Tel: (301) 436-8301 or (800) 638-8972
Fax: (301) 436-6829
E-mail: 9-AMC-chartsales@faa.gov
Website: www.naco.faa.gov/ecom

Updated chart information can be obtained from "Local Notice to Mariners," updated weekly by the U.S. Coast Guard and available online at www.navcen.uscg.gov/lnm/default.htm.

Dams and Navigation Locks

Low-head Dams

Those boating on rivers need to be aware of their location in regard to dams in their boating area. Low-head, or “fixed crest,” dams can be difficult to see from small vessels moving down-river. They can be extremely dangerous to small boats and swimmers; so much so they have been nicknamed “drowning machines.” Be aware that buoys are not in the river year round and even when they are they can be moved off station by the current. Keep a lookout for “Danger Dam” signs. It is strongly recommended that boaters **use navigation charts**, which provide valuable information on the location of dams and other hazards in the river.



Navigation Locks

A lock is an engineered structure that enables vessels to move between waterways of differing heights. There are specific procedures in place for navigating through locks. Specifics may vary in certain regions, but in general:

- Stay between the red and green buoys that mark the river's navigable channel.
- Request an opening using your marine radio, cell phone, or with a sound signal consisting of one prolonged blast (4-6 seconds) and one short blast (1 second) within one mile of the lock. Sound signals can be made by using the lock's pull-cord or your whistle, horn, megaphone, or hailer.
- Wait for the lock operator to signal you with horn blasts; additional signals may include traffic lights or flashing lights.
- Enter the lock at reduced speed.
- Make sure all passengers remain seated and wear their life jackets.
- Tie your craft to the mooring devices after entering; a minimum of 50 feet of line is recommended.
- Use fenders to avoid damage to your vessel and the lock walls.
- When through, wait for the lock operator's signal (horn and/or lights), then leave the lock at idle speed.

There is a specific order of lockage priority among vessels. Military and most commercial vessels have priority over recreational vessels.

LAW ENFORCEMENT

A vessel underway when hailed by a Coast Guard vessel is required to heave to or maneuver as directed so as to permit a boarding team to come aboard. (See “U.S. Coast Guard Boarding Policy: What to Expect” page 50.)

Other federal, state, and local maritime law enforcement officials may also board and examine your vessel, whether it is numbered, unnumbered, or documented. U.S. Coast Guard law enforcement personnel work with and may also be found aboard other agencies' enforcement vessels.

The U.S. Coast Guard may impose a civil penalty for failure to:

- Comply with equipment requirements.
- Report a boating accident.
- Comply with other federal regulations.
- Comply with Navigation Rules.

Negligent Operation (46 USC 2302 (a) (b))

Federal law prohibits the negligent or grossly negligent operation of a vessel and/or interference with the safe operation of a vessel so as to endanger lives and/or property. The U.S. Coast Guard may impose a civil penalty for negligent operation. Grossly negligent operation is a criminal offense and an operator may be fined up to \$5,000, imprisoned for one year, or both.

Some actions that may constitute negligent or grossly negligent operation are:

- Operating a boat in a designated swimming area.
- Excessive speed in the vicinity of other boats or in regulated waters.
- Hazardous water skiing or other water sports practices.
- Bowriding, or riding on seatback, gunwale, or transom.
- Operating a boat while under the influence of alcohol or drugs.

Boating Under the Influence (BUI) (46 USC 2302 (c)/33 CFR 95)

Operating a vessel while intoxicated is dangerous and a federal offense. If an operator of a recreational boat has a blood alcohol content of .08 (.10 in some states) or greater, the operator is subject to a civil penalty not to exceed \$1,000 a criminal penalty not to exceed \$5,000, or a one-year imprisonment, or both. Intoxicated operators who are cited by the Coast Guard may also be cited by other state or local law enforcement officials. State criminal penalties may vary and could include arrest, fines, and/or loss of motor vehicle driving privileges.

Termination of Use (46 USC 4308/33 CFR 177.05)

A U.S. Coast Guard Boarding Officer who observes a vessel being operated in an unsafe condition, specifically defined by law or regulation, and determines that an especially hazardous condition exists that cannot be corrected on the spot, may terminate the vessel's voyage and direct the operator to return to port.

Termination for unsafe use may be imposed for:

- Insufficient life-saving devices.
- Insufficient fire extinguishers.
- An overloaded vessel.
- Improper display of navigation lights.
- Improper ventilation of fuel tanks and engine spaces.
- Fuel leak or accumulation of fuel in the bilges.
- Inadequate backfire flame control.
- Operating in regulated boating areas during predetermined adverse conditions (applies only to Thirteenth USCG District: Idaho, Montana, Oregon, Washington).
- A manifestly unsafe voyage.

An operator who refuses to comply with the directions of a U.S. Coast Guard Boarding Officer to terminate the unsafe use of a recreational vessel can be cited for failure to comply with the Boarding Officer's instruction, as well as for the specific violation that was the basis for the termination order. Violators may be fined up to \$1,000, or imprisoned for up to one year, or both.

Reporting Boating Accidents (33 CFR 173.55)

The operator or owner of any recreational boat is required to file a Boating Accident Report if the boat is involved in an accident that results in any of the following:

- Loss of life.
- A person disappears from the vessel under circumstances that indicate death or injury.
- Personal injury that requires medical treatment beyond basic first aid.
- Damage to the boat and other property damage of \$2,000 or more.
- Complete loss of the boat.

Boat operators are required to report their accident to local authorities in the state where the accident occurred.

Fatal Accidents

Immediate notification is required for fatal accidents. If a person dies or goes missing as a result of a recreational boating accident, the nearest state boating authority must be notified without delay. The following information must be provided:

- Date, time, and exact location of the accident.
- Name of each person who died or went missing.
- Number and name of the vessel.
- Name and address of the owner and operator.

Reporting Timelines

If a person dies, goes missing from the boat, or receives injuries requiring medical treatment beyond basic first aid, a formal report must be filed within 48 hours of the accident.

For accidents involving property damage of \$2,000 or more, or the complete loss of a vessel, a formal report must be made within 10 days.

Note that state requirements for reporting boating accidents may be more stringent than federal requirements. Some states, for example, may require that all boating accidents be reported immediately. Check with the local marine patrol or the Boating Law Administrator in the state where the accident occurred for the reporting procedures that

apply. To download a Reference Guide to State Boating Laws and find more information regarding accident reporting, visit the U.S. Coast Guard Boating Safety Division website at www.uscgboating.org.

Rendering Assistance (46 USC 2304)

The master or person in charge of a vessel is obligated by law to provide assistance that can be safely provided to any individual in danger at sea. The master or person in charge is subject to a fine and/or imprisonment for failure to do so.

Requesting Assistance (Non-Distress Call)

If a boater contacts the U.S. Coast Guard on Channel 16 VHF-FM or Channel 70 DSC and the situation is determined to be non-distress, the Coast Guard will offer to contact any assistance provider (commercial or friend) the boater requests. If the boater has no preference, the Coast Guard will issue a Marine Assistance Request Broadcast (MARB). The boater may then be contacted directly by another boater "Good Samaritan" or by a commercial assistance provider with an offer of help.

U.S. Coast Guard Boarding Policy

Title 14, Section 89, of the United States Code authorizes the U. S. Coast Guard to board vessels subject to the jurisdiction of the United States, anytime upon the high seas and upon waters over which the United States has jurisdiction, to make inquiries, examinations, inspections, searches, seizures, and arrests.

What to Expect

The U.S. Coast Guard is a multi-mission agency. Although its legacy mission of saving lives at sea remains a priority, enforcement of maritime laws and homeland security has become the U.S. Coast Guard's – and the nation's – focus. The U.S. Coast Guard conducts nearly 70,000 boardings a year in its multiple roles: enforcing the law, providing search and rescue services, promoting boating safety, preventing damage to marine environments, and helping to secure the nation's borders. The more time a boater spends on the water, the more likely he or she will experience a U.S. Coast Guard boarding.

During law enforcement boardings, the scope of the vessel inspection is to determine the vessel's status (commercial, recreational, passen-

ger, cargo, and/or commercial fishing) and to check for compliance with all applicable federal laws and regulations.

The decision to board may be based on a vessel's activity, location, and, in some circumstances, obvious violations, such as operating at night without navigation lights, or improper display of registration numbers. The Coast Guard vessel will usually radio a series of pre-boarding questions, such as: What was the vessel's last port of call and what is its next port of call? How many persons are on board? What is the purpose of your voyage?

If the Coast Guard decides to board, consider it an important opportunity to learn something

new about safety equipment and safe boating practices. Typically, a uniformed U.S. Coast Guard Boarding Team of two to four officers will come aboard, introduce themselves, and state the reason for the boarding. Like all law enforcement officers, they will be armed. The officer in charge will ask if you have any weapons aboard; if so, they will usually secure all weapons for the duration of the boarding. They will conduct an initial safety inspection to identify any obvious safety hazards and to verify the general seaworthiness of your vessel.

The officer will then ask to see the vessel's registration or other documentation and proceed to a more detailed inspection of your required safety equipment: life jackets, fire extinguishers, flares, etc. You should know that the Boarding Officer will check every aspect of each item on the list. For example, with life jackets – the item most frequently cited for violations – the officer will check to see if you have U.S. Coast Guard-approved life jackets on board, in good and serviceable condition, properly stowed, and the correct size for the intended wearers.

When the boarding is complete, the officer will provide you with a report of the boarding, noting the results of the inspection of your vessel. In the event of a violation, the Boarding Officer will explain the results and the procedures you will need to follow to bring your vessel into compliance. If you have any questions, ask the Boarding Officer before the team departs.



VESSEL SAFETY CHECK

The U.S. Coast Guard would like to see all vessels in compliance with equipment carriage requirements and safely operated. If you are uncertain about the safety requirements for your vessel, one way to make sure you are in compliance is to schedule a Vessel Safety Check (VSC), offered as a free public service by the United States Coast Guard Auxiliary and United States Power Squadrons®, volunteer organizations dedicated to assisting the U.S. Coast Guard in promoting boating safety. Other federal and state agencies may also conduct these Vessel Safety Checks. (Find out more at www.safetyseal.net.)



A VSC is **not** a law enforcement action; however, in some states qualified marine law enforcement personnel may conduct Vessel Safety Checks. Qualified examiners will come to your vessel and conduct a courtesy examination of safety equipment carried or installed and certain aspects of the vessel's overall condition. VSC requirements parallel federal and state requirements with regard to equipment and vessel condition. Those vessels that pass will be awarded a VSC decal indicating a successful check.

The items checked during a VSC are:

- Navigation lights.
- Sound producing devices/bell.
- Voice communications.
- Life jackets and throwable flotation devices.
- Fire extinguishers.
- Visual distress signals.
- Backfire flame control.
- Overall vessel condition, including electric-fuel systems, galley-heating systems, deck free of hazards/clean bilge.
- Ventilation.
- Proper display of numbers.
- Pollution placard (oily waste discharge).
- MARPOL trash placards (garbage dumping restriction).
- Marine sanitation device.
- Registration/documentation.
- Navigation Rules book.
- State and/or local requirements.

Other recommended equipment

While not required, the following are also strongly recommended:

- VHF-FM Marine Radio with Digital Selective Calling System.
- Dewatering Device and Backup.
- Mounted Fire Extinguishers.
- Anchor and Line.
- First Aid Kit.
- Person-in-Water (PIW) Kit.
- Capacity Plates.

During the Vessel Safety Check, the vessel examiner will discuss with the recreational boater the purpose of specific marine safety equipment, will clarify federal and state regulations, will discuss certain safety procedures, and will answer any boating-related questions. Some of the topics discussed are:



- Accident reporting/owner responsibility.
- Charts and Aids to Navigation.
- Offshore operation.
- Inflatable life rafts.
- Immersion suits.
- Survival tips.
- First aid.
- Float plans.
- Weather and sea conditions.
- Insurance considerations.
- Fueling and fuel management.
- Boating checklist.
- Availability of boating safety classes.
- America's Waterway Watch.

For More Information

To schedule a Vessel Safety Check, or for more information on the Vessel Safety Check Program, contact your local U.S. Coast Guard Auxiliary or United States Power Squadrons, state boating agency, or visit the Vessel Safety Check website at www.safetyseal.net.

SAFETY AND SURVIVAL TIPS

Safe Boating Education

Training is important for boaters of all experience levels, but especially for the beginning boater. In a typical year, approximately 70 percent of accidents involving fatalities occur on boats where the boat operator has had no formal instruction on how to operate the vessel. As a result, more than half of all states have enacted legislation mandating boater safety education as a requirement for boat operators.



Boating safety is no accident. To further develop your boating knowledge, proficiency, and confidence, take a boating safety course.

To locate local course offerings, or for more information on recreational boating and boating safety, contact your state boating agency, U.S. Coast Guard District office, or one of the organizations listed below:

United States Coast Guard Auxiliary
National Headquarters
www.cgaux.org

United States Power Squadrons®
National Headquarters
(888) 367-8777
www.usps.org

National Association of State Boating Law Administrators
(859) 225-9487
www.nasbla.org

National Safe Boating Council
(703) 361-4294
www.safeboatingcouncil.org

BoatU.S. Foundation
(800) 245-2628
www.boatus.com/foundation

U.S. Coast Guard District Offices are listed on the inside back cover.

***Take Time to Reflect on Safety
Safe Boating Begins Here ... with You!***

Operator's Responsibilities

Your degree of enjoyment on the water depends on you, your equipment, and other people who, like yourself, boat responsibly.

As a boat operator, you should:

- Make sure that everyone on board is wearing a U.S. Coast Guard-approved life jacket at all times while on the water.
- Take a boating safety course.
- Never operate a vessel while under the influence of alcohol or dangerous drugs.
- Make sure your boat is in top operating condition. It should be free of tripping hazards and fire hazards, and have clean bilges.
- Make sure the required safety equipment is on board, maintained in good working order, and that you know how to use these devices.
- Always file a float plan with a relative or friend.
- Have a complete understanding of the operation and handling characteristics of your boat.
- Know your location, where you are going, and how to return.
- Maintain a safe speed at all times to avoid collision.
- Keep an eye out for changing weather conditions, and act accordingly.
- Know and follow the "Rules of the Road" (Navigation Rules.)
- Know and obey federal and state regulations and waterway markers.
- Be sure to maintain a proper lookout. Scan the water back and forth. Stay alert. Most boating accidents are caused by operator inattention.

Remember, you are the key to safe boating!

Carbon Monoxide Hazards

Carbon Monoxide (CO) can be a silent killer on houseboats and other recreational vessels. Each year, boaters are injured or killed by carbon monoxide. Virtually all such poisonings are preventable.

Carbon monoxide is a by-product of the combustion of carbon-based material, such as gasoline, propane, charcoal, or wood. Common sources aboard boats include main and auxiliary engines, generators, cooking ranges, space heaters, and water heaters. Note that cold and poorly tuned engines produce more carbon monoxide than warm, properly tuned engines.

CO can collect within a boat in a variety of ways. Exhaust leaks – the leading cause of carbon monoxide fatalities – can allow CO to migrate throughout the boat and into enclosed areas. Even properly vented exhaust can re-enter a boat if it is moored too close to a dock or another boat, or if the exhaust is pushed back by prevailing winds. Exhaust can also re-enter boats when cruising under certain conditions, especially with canvas in place, which produces the “station wagon” effect. Exhaust can also collect in enclosed spaces near the stern swim platform.

What To Do

Schedule regular engine and exhaust system maintenance inspections by experienced and trained mechanics.

Be aware that dangerous concentrations of CO can accumulate when a boat, generator, or other fueled device is operated while the boat is at a pier, near a seawall, or alongside another boat. Do not run engines or equipment for extended periods of time under these conditions without continuous monitoring.

Keep forward-facing hatches open to allow fresh air to circulate in accommodation spaces, even in inclement weather.

Keep people clear of the rear deck area and swim platform of the boat while the generator or engines are running. Always monitor the swimming area.

Another dangerous practice to avoid is the towed water sport of “teak” surfing (also referred to as “drag” or “platform” surfing). Teak surfing is an activity where participants hang on to the boat’s swim platform while the boat moves forward slowly through the water and the participants surf in its wake. This is dangerous on two levels: it places individuals in close proximity to the vessel’s propeller, and it exposes them to dangerously high levels of carbon monoxide created by the vessel’s exhaust. Individuals can lose consciousness in seconds. Teak surfing is a dangerous practice that has been prohibited by law in many states.

Do not confuse carbon monoxide poisoning with seasickness or intoxication. If someone on board complains of irritated eyes, headaches, nausea, weakness, or dizziness, immediately move the person to fresh air, investigate the cause, and take corrective action. If necessary, seek medical attention.

Install a carbon monoxide detector in each accommodation space on your boat. Check the detectors periodically to be sure they are functioning properly.

Carbon Monoxide Checklist

Each Trip:

- Make sure all exhaust clamps are in place and secure.
- Look for exhaust leaking from the exhaust system components, as evidenced by rust and/or black streaking, water leaks, or corroded or cracked fittings.
- Inspect rubber exhaust hoses for burned or cracked sections. All rubber hoses should be pliable and free of kinks.
- Confirm that cooling water flows from the exhaust outlet when the engines and generator are started.
- Listen for any change in exhaust sound that could indicate a failure of an exhaust component.
- Test the operation of each carbon monoxide detector.
- **Do not** operate the vessel if any of these problems exist.

Annual Maintenance to be Performed by a Qualified Marine Technician:

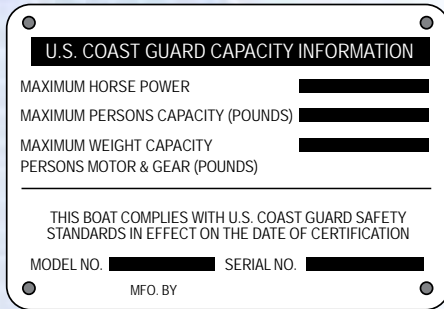
- Replace exhaust hoses if any evidence of cracking, charring, or deterioration is found.
- Inspect each water pump impeller and inspect the condition of the water pump housing. Replace if worn or cracked (refer to the engine and generator manuals for further information).
- Inspect each of the metallic exhaust components for cracking, rusting, leaking, or looseness. Pay particular attention to the cylinder head, exhaust manifold, and water injection elbow.
- Clean, inspect, and confirm the proper operation of the generator cooling water anti-siphon valve (if so equipped).

Regular maintenance and proper operation of the boat are the best defenses against poisoning from carbon monoxide. To find out more about how you can prevent carbon monoxide poisoning on recreational boats, visit the U.S. Coast Guard Boating Safety Division website at www.uscgboating.org/command/co.htm.

Overloading

Never load your boat with passengers and cargo beyond its safe carrying capacity. Too many people and/or too much gear can cause the boat to become unstable. Always balance the load so that the boat maintains proper trim. When loading your boat:

- Distribute the load evenly fore and aft and from side to side.
- Keep the load low in the boat.
- Keep passengers seated; avoid standing in small boats.
- Secure gear to prevent shifting.
- Do not exceed the load specified in the U.S. Coast Guard Maximum Capacities information label, commonly called the “capacity plate,” required by federal law on motorized mono-hull boats less than 20 feet in length.



If there is no capacity plate, use the following formula as a guide to determine the maximum number of persons you can safely carry in calm weather. The formula is applicable only to mono-hull boats less than 20 feet (12 meters) in length. A mono-hull is a boat that makes a single “footprint” in the water when loaded to its rated capacity; catamarans, trimarans, and pontoon boats are not mono-hull boats.

Boat Length (in feet)	Boat Width (in feet)							
	2.5	3	3.5	4	4.5	5	5.5	6
6	1	1	2	2	3	3	4	4
8	1	2	2	3	3	4	4	5
10	2	2	3	3	4	4	5	5
12	2	3	3	4	4	5	5	6
14	3	3	4	4	5	5	6	6
16	3	4	4	5	5	6	6	7

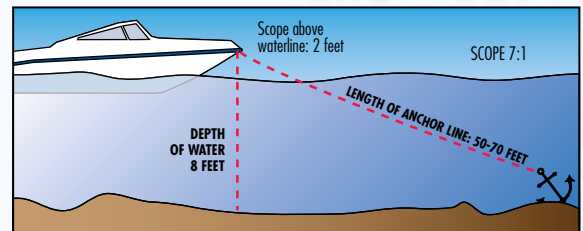
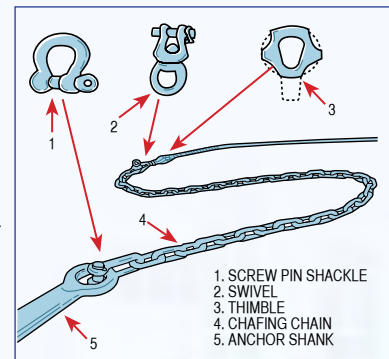
$$\text{Maximum Number of Persons} = \frac{\text{Boat Length} \times \text{Boat Width}}{15}$$

Anchoring

Anchoring is done for two principal reasons: 1) to stop for fishing, swimming, lunch, or an overnight stay, and 2) to keep the boat from running aground in bad weather or as a result of engine failure.

Anchoring can be a simple task if you follow these guidelines:

- Make sure you have the proper type of anchor (Danforth/Plow/Mushroom).
- Attach a 3-6 foot length of galvanized chain to the anchor. A chain will withstand abrasion by sand, rock, or mud on the bottom much better than a fiber line.
- Attach a length of nylon anchor line to the end of the chain using an anchor swivel, a combination called the “Rode.” The nylon will stretch under the impact of heavy waves or wind, cushioning the strain on the boat and the anchor.
- Select an area that offers maximum protection from wind, current, and boat traffic.
- Determine the water depth and type of bottom (preferably sand or mud).
- Calculate the amount of anchor line you will need to let out. The general rule is five to seven times as much line as the depth of water plus the distance from the surface of the water to where the anchor will attach to the bow. For example, if the water is eight feet deep and it is two feet from the surface of the water to your bow cleat, you would multiply 10 feet by 5 or 7 to get the amount of anchor line to put out. (See diagram below.)



- Secure the anchor line to the bow cleat at the point you want it to stop.
- Bring the bow of the vessel into the wind or current.
- When you get to the spot you want to anchor, place the engine in neutral.
- When the boat comes to a stop, slowly lower the anchor. Do not throw the anchor over, as throwing tends to foul the anchor line.
- When all of the line has been let out, back down on the anchor with the engine in idle reverse to help set the anchor firmly on the bottom.
- When the anchor is set, take note of reference points (landmarks) in relation to the boat. Check these points frequently to make sure you are not drifting.

Do not anchor from the stern!!

Anchoring by the stern has caused many boats – small boats especially – to capsize and sink. The reason is that the transom is usually squared off and has less freeboard than the bow. In addition, the stern may be carrying the added weight of a motor, fuel tank, or gear brought on board. In a strong current, the force of the water can pull the stern under. Anchoring at the stern also makes the boat vulnerable to swamping by wave action.

Vessels Operating Offshore

If you operate your vessel offshore, you should consider carrying additional safety equipment beyond the minimum federal requirements. This equipment should include appropriate communications gear, an inflatable life raft, an Emergency Position Indicating Radio Beacon (EPIRB), and a means of accurately determining your location. In cold waters, you should also carry an immersion suit for everyone on board. Do not underestimate the danger of hypothermia.

Communications

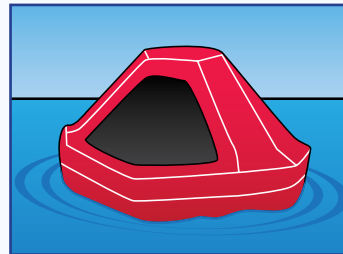
Carry communications gear – a marine VHF-FM and/or HF transceiver(s) – appropriate to your operating area. Cellular phone coverage is available in many coastal areas, but **should not** be considered a substitute for VHF-FM marine band radios for emergency purposes.

Improper use of a radio-telephone is a criminal offense. The use of obscene, indecent, or profane language during radio communications is a federal offence. Penalties exist for misuse of a radio, such as issuing a false distress call.

Channel 16 is the primary VHF-FM marine radio calling and distress channel. It is not to be used for general conversation or radio checks. Such traffic should be conducted on another authorized working channel.

Inflatable Life Rafts

An inflatable life raft can provide a survival platform for an extended period of time. Make sure the life raft is large enough for everyone on board when the boat operates offshore.

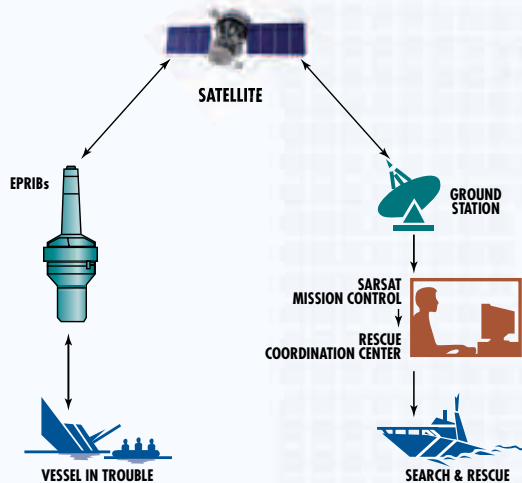


Life Raft

It should have the appropriate emergency equipment pack, and should be professionally serviced periodically, according to the manufacturer's instructions. U.S. Coast Guard-approved life rafts must meet a number of stringent material and performance standards.

Satellite EPIRBs

406 MHz Satellite Emergency Position Indicating Radio Beacons (EPIRBs) are designed to quickly and reliably alert rescue personnel, indicate an accurate distress position, and guide rescue units to the distress scene, even when all other communications fail. (See page 75.)



Immersion Suits

Immersion suits will delay the effects of hypothermia in cold water. (See page 63.) They should be properly stowed and maintained in accordance with the manufacturer's instructions.

Determining Your Location

It is advisable to carry on board a device to determine your position, such as a Global Positional System (GPS). These devices can be mounted or hand-held and will provide the boater with an accurate location to aid rescue agencies in the event of an emergency.

Small Boats, Hunters, Anglers, and Paddlers

Many hunters, anglers, and paddlers do not think of themselves as boaters, yet they use semi-V hull vessels, flat-bottom jon boats, or canoes and kayaks in pursuit of their sport. These boats tend to be less stable and can easily capsize. Capsizings, sinkings, or falls overboard from small boats account for 70 percent of all boating fatalities. Operators need to be fully aware of their boat's limitations and possess the skill and knowledge to overcome them.

Standing in a small boat raises the center of gravity and risks capsizing the boat. Standing for any reason, even changing seating position, can be dangerous, as is sitting on the gunwales or seat backs, or on a pedestal seat while underway. A raised center of gravity means that a wave, wake, or sudden turn can capsize the boat or result in a person falling overboard.

Staying Afloat

If the boat capsizes, or you fall overboard, follow these rules to stay afloat:

- Remain calm: do not thrash about or try to remove clothing or footwear. It is a common belief that persons dressed in heavy clothing or waders will sink immediately if they fall overboard. This is not true. Air trapped in clothing provides considerable flotation, and bending the knees will trap air in waders, providing additional flotation. Thrashing in the water leads to exhaustion and increases the loss of air that keeps you afloat.
- If you are wearing a life jacket, keep it on.
- Keep your knees bent.
- Float on your back and paddle slowly to safety.

Cold-Water Survival

Sudden immersion in cold water can induce rapid, uncontrolled breathing, cardiac arrest, and other physical conditions that can result in drowning. In an unexpected plunge, or in situations where you must enter cold water, here are a few guidelines to follow:

- Button up your clothing.
- Cover your head if possible; about 50 percent of body heat is lost from the head.
- If entering the water voluntarily, enter slowly.
- Keep your head out of the water if possible.
- If you cannot immediately get out of the water and rescue is not imminent, draw your knees to your chest and wrap your arms across your chest, hugging your life jacket in the Heat Escape Lessening Posture (H.E.L.P.) This will protect the major areas of your body from heat loss.
- If your boat has capsized and there are others in the water with you, huddle together with your arms around each other. These huddles are good for morale, keep everyone together, and make a larger target to spot in the water – all of which increase your chances of being seen and rescued.



H.E.L.P. Position

Hypothermia

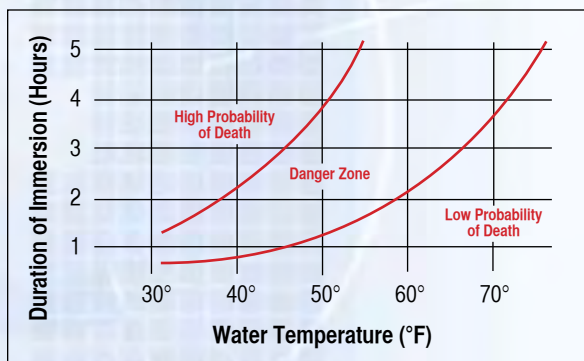
Immersion in cold water speeds the loss of body heat and can lead to hypothermia. Hypothermia is the abnormal lowering of internal body temperature. If your vessel capsizes, it will likely float on or just below the surface. Outboard-powered vessels, built after 1978, are designed to support you even if full of water or capsized. To reduce the effects of hypothermia, get in or on the boat. Try to get as much of your body out of the water as possible. If you do not get in the boat, a life jacket will enable you to keep your head out of the water. This is important because about 50 percent of body heat loss is from the head.

Cold water survival can be broken down into three phases:

- **Cold Shock:** an initial deep and sudden gasp followed by hyper-ventilation. Cold shock will pass in about one minute.
- **Cold Incapacitation:** in the next 10 minutes you will lose the effective use of your fingers, arms, and legs for any meaningful movement. Concentrate on self-rescue.
- **Hypothermia:** Depending on the temperature of the water, loss of consciousness may occur in as little as one hour.

For more information, see Cold Water Boot Camp at www.watersafetycongress.org.

It may be possible to revive a drowning victim who has been under water for considerable time and shows no signs of life. Numerous documented cases exist where victims have been resuscitated with no apparent harmful effects after long immersions. Start CPR immediately and get the victim to a hospital as quickly as possible.



The Danger Zone indicates conditions where safety precautions and appropriate behavior (adopting H.E.L.P.) can make the difference between death and survival.



Trailing

Legal Requirements

Be sure your boat trailer has current state registration and license plates, and working lights. Also, if your boat is more than 8.5 feet wide, it may require a special permit from your state Department of Transportation before transporting it on the highway.

Safety

A boat hull is designed for even support on the water. When transported on a trailer, your boat should be supported as evenly as possible across the hull to allow for even distribution of the weight of the boat and any contents. Your trailer should be long enough to support the full length of the hull, but short enough to allow the boat engine – secured and in the full “up” position – to extend freely.

Before towing:

- Be sure the tow ball and coupler are the same size and that all bolts with washers are tightly secured. The coupler should be completely over the ball and the latching mechanism locked.
- Balance the load evenly from front to rear and side-to-side. Too much weight on the hitch will cause the rear wheels of the tow vehicle to drag and may make steering difficult. Too much weight on the rear of the trailer will cause the trailer to “fishtail.”
- Check that safety chains are attached, trailer lights function properly, tires (including the spare) are adequately inflated, brakes are fully functional, and side mirrors are large enough to provide an unobstructed view on both sides of the vehicle.
- Secure all equipment inside the boat. Secure the boat cover, if used, so that it will not blow off or tear while towing.

Pre-Launching Preparations

- To save time, prepare your boat for launching away from the ramp. Remove engine supports and tie-downs, and make sure the winch is properly attached to the bow eye and locked in position. Disconnect the trailer lights to prevent shorting of the electrical system or burning out a bulb.
- Install the drain plug. Make ready dock lines, fenders, and boat hooks. Attach a line to the bow and the stern of the boat so the

boat cannot drift away after launching and can be easily maneuvered to the docking area.

- Visually inspect the launch ramp for hazards, such as a steep drop off, slippery area, and sharp objects. Proceed slowly to the ramp, remembering that your boat is just resting on the trailer and attached only at the bow. Have one person in the boat and one at the water's edge to help guide the driver of the tow vehicle.
- Double-check that you have installed the drain plug.

Launching

- Keep the trailer's rear wheels (and the boat's exhaust pipes) out of the water. If the exhaust pipes become immersed in the water, the engine may stall.
- Set the parking brake and place tire chocks behind rear wheels. Check boat systems, blower, bilge, pumps, and lights. Lower the motor. Start the boat engine and make sure water is passing through the engine cooling system.
- Make sure someone on shore is holding the lines attached to the boat. Release the winch and disconnect the winch line from the bow when the boat operator is ready. Launch with a light shove or by backing off the trailer under power.

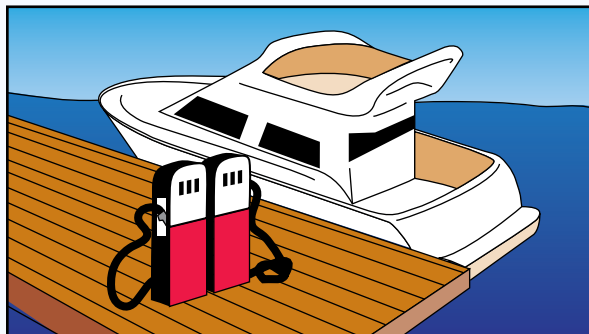
Retrieval

- As you approach the takeout ramp, note any changes in the current, tide, wind direction and/or velocity, and any increases in boating traffic that could make retrieval more difficult. Maneuver the boat carefully to the submerged trailer and raise the lower unit of the engine.
- Winch the boat onto the trailer and secure it. Drive the trailer with boat aboard carefully out of the ramp to a designated parking area for cleanup, reloading, and an equipment safety check.
- Remove the drain plug. Wash the trailer and boat, and flush the engine with fresh water. This will help prevent the transfer or spread of invasive species. In some areas special washing stations are provided and must be used. Check with your local marine patrol agencies.

Fueling Precautions

Most fires and explosions happen during or shortly after fueling. To avoid an accident, follow these safety guidelines.

- Refuel any portable tanks ashore.
- Close all hatches and other openings before refueling. Extinguish all smoking materials. Turn off engines, all electrical equipment, radios, stoves, and other appliances. Remove all passengers.
- Keep the fill nozzle in contact with the tank and wipe up any spilled fuel.
- After fueling, open all ports, hatches, and doors to ventilate. Run the blower for at least four minutes. Check the bilges for fuel vapors before starting the engine. Do the "sniff test" to make sure there is no odor of gasoline anywhere in the boat.



Do not start the engine until all traces of fuel vapors are eliminated!

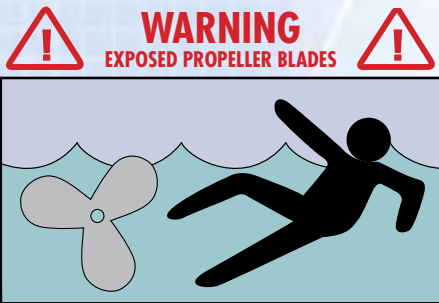
Fuel Management

Practice the "One-Third Rule" by using:

- One-third of the fuel to go out.
- One-third to get back.
- One-third held in reserve.

Propeller Blade Warning

Never forget the danger to persons in the water and injuries that boat propellers can inflict. Most propeller injuries and fatalities involve open motorboats from 16 to 25 feet in length and result from operator inattention, inexperience, and carelessness.



People in the water can be severely injured or killed!

Be alert! Remember to shut off your engines when approaching swimmers or other persons in the water. Keep those in the water on the operator's side of the boat, always in view. Propeller guards are helpful but are not suitable for all types of boats. The best and safest action when people are in the water near your boat is to **shut off** your engines.

Weather

You should never leave the dock without first checking the local weather forecast. You can get the weather information from the TV, radio, local newspaper, online, or from one of the weather channels on your VHF-FM radio.

At certain times of the year, weather can change rapidly and you should continually keep a "weather eye" out. While you are out in a boat, here are a few signs you can look for that indicate an approaching weather change:

- Flat clouds getting lower and thicker.
- Puffy, vertically rising clouds getting higher.
- Dark, threatening clouds, especially to the west/southwest
- A sudden drop in temperature.
- A halo around the sun or moon.
- Increasing wind or a sudden change in wind direction.
- Flashes on the horizon.
- Seas becoming heavy.
- Heavy AM radio static, which can indicate nearby thunderstorm activity.

If you have a barometer on board, check it every two to three hours. A rising barometer indicates fair weather and a rise in wind velocity; a falling barometer indicates rain approaching.

What to Do in Severe Weather

- Reduce speed, keeping just enough power to maintain headway.
- Make sure everyone on board is wearing their life jacket.
- Turn on your running lights.
- If possible, head for the nearest shore that is safe to approach.
- Head the boat into the waves at a 45 degree angle.
- Keep the bilges free of water.
- Seat any passengers on the bottom of the boat, near the center line.
- If the engine fails, trail a sea anchor from the bow of the boat to keep it headed into the waves (A bucket can work as a sea anchor in an emergency.)
- Anchor the boat, if necessary.

Float Plans

Play it safe; keep a stack of Float Plan forms on hand. Leave a copy with a friend, relative, or the local marina before heading out on the water. In case of an emergency, pertinent information will be right at their fingertips to enable them to contact the local marine police or Coast Guard with necessary details. A word of caution: if you are delayed and it is not an emergency, inform those with your Float Plan, and be sure to notify them when you return so the Float Plan can be "closed out" and an unnecessary and costly search avoided. A sample Float Plan Form is provided on page 73. The Coast Guard also makes Float Plan Forms available online at www.uscgboating.org.



BOATER'S PRE-DEPARTURE CHECKLIST

Know your vessel. Before departure, always be sure your vessel is in good working order and properly equipped for emergencies. Avoid inconvenience and potential danger by taking a few minutes to check the following:

Minimum Federal Required Equipment	Page	Yes	No
State Registration (Certificate of Number)	5		
State Numbering Display	5		
Certificate of Documentation	6		
Life Jackets: one for each person on board	9		
Throwable Type IV Device	14		
Visual Distress Signals	17		
Fire Extinguisher (Fully Charged)	21		
Proper Ventilation	23		
Backfire Flame Control	25		
Sound Producing Device	25		
Navigation Lights	27		
Oil Pollution Placard	32		
Garbage Placard	34		
Marine Sanitation Device	35		
Copy of Navigation Rules (Inland Waters)	36		
Any Additional State Requirements			

Besides meeting the federal requirements, prudent boaters carry additional safety equipment and supplies. The following additional items are suggested depending on the size, location, and use of your boat:

Recommended Equipment and Supplies	Yes	No	N/A
VHF-FM Marine Radio			
EPIRB/PLB			
Anchor and Line			
Chart(s) of the Area and Navigation Tools			
Magnetic Compass			
Fenders and Boat Hook			
Mooring Lines and Heaving Line			
Manual Bilge Pump or Bailing Device			
Tool Kit			
Spare Parts (Fuses, Spark Plugs, Belts, etc.)			
Spare Battery (Fully Charged)			
Spare Propeller/Shear or Cotter Pins			
Extra Fuel and Oil			
Alternate Propulsion (Paddles/Oar)			
Flashlight and Batteries			
Search Light			
First Aid Kit			
Sunscreen (SPF 30+)			
Mirror			
Food and Water			
Extra Clothing/Foul Weather Gear			
AM-FM Radio			
Cellular Phone			
Binoculars			

Safety Checks and Tests

Yes No N/A

Safety Checks and Tests	Yes	No	N/A
Test VHF Marine Radio (Voice Call)			
Test Navigation and Anchor Lights			
Test Steering (Free Movement)			
Test Tilt/Trim			
Test Bilge Pump			
Check for Excessive Water in Bilges			
Check Fuel System for Leaks			
Check Engine Fluids			
Ensure Boat Plug is Properly Installed			
Check Electrical System			
Check Galley/Heating Systems			
Check Gauges (i.e., Battery)			
Check Fuel Amount			
Ensure Anchor is Ready for Use			
Check Load of Vessel and Secure Gear			
Ensure Passengers Know Emergency Procedures and Equipment Location			
Check that all Life Jackets Fit Properly			
Check the Weather Forecast			
File a Float Plan with Relative or Friend			

You can also download a Pre-Departure Checklist from the U.S. Coast Guard website at www.uscgboating.org.

SAMPLE FLOAT PLAN

The Coast Guard makes Float Plan forms available online at www.uscgboating.org. Complete a Float Plan before boating and leave it with a person who can be depended upon to notify the U.S. Coast Guard or other marine rescue organization, should you not return as scheduled.

Remember: Do not file this plan with the U.S. Coast Guard.

Contact your friend in case of a delay, and always when you return.

1. Person Reporting Vessel Overdue

Name _____ Phone _____

Address _____

2. Description of Boat

Name _____

Registration/Documentation No. _____ Length _____

Make _____ Type _____

Hull Color _____ Trim Color _____

Fuel Capacity _____ Engine Type _____

No. of Engines _____

Distinguishing Features _____

3. Operator of Boat

Name _____ Age _____

Health _____ Phone _____

Address _____

Operator's Experience _____

4. Survival Equipment (Check as Appropriate)

___ Life Jackets

Flares

Mirror

Smoke Signals

Paddles

Raft or Dinghy

Flashlight

Water

Food

Anchor

EPIRB

Others

5. Marine Radio: Yes No

Type _____ Freqs. _____

Digital Selective Calling (DSC): Yes No

6. Trip Expectations

Depart from _____

Departure Date _____ Time _____

Going to _____

Arrival Date _____ Time _____

If operator has not arrived/returned by: Date _____ Time _____

call the Coast Guard or local authority at the following number:

7. Vehicle Description

License No. _____

Make _____ Model Color _____

Where is vehicle parked? _____

8. Persons on Board

Name _____

Age _____ Phone _____

Medical Conditions _____

EMERGENCY NOTIFICATION/COMMUNICATION

Satellite EPIRBs (Emergency Position Indicating Radio Beacons)

Emergency distress beacons are essentially specialized radio transmitters that are designed for use in situations of grave or imminent danger or when lives are at risk.

How the System Works



EPIRBs operate as part of a worldwide distress system. An international satellite constellation maintains a vigilant, global “listening” watch for satellite EPIRB distress signals. The National Oceanic and Atmospheric Administration (NOAA) operates satellites, ground stations, and an alert-distribution system serving the United States and a large segment of the international community.

When activated, the satellite EPIRB transmits a distress signal with a beacon-unique identifying code. The system detects the signal, calculates an accurate distress position, checks the unique identifying code against the EPIRB registration database (vessel and point of contact information supplied by the owner) and routes the distress alert with registration information to the responsible U.S. Coast Guard (or international) Rescue Coordination Center (RCC).

406 MHz EPIRBs with GPS capability – either internally or externally supplied positional information – also provide an immediate GPS position in the information passed to the RCC and geostationary satellites make detection almost immediate. If the EPIRB does not have the ability to provide a GPS position, the process to determine a position takes about one hour on average and almost always less than two hours.

Satellite EPIRBs also include a homing beacon and strobe to help rescue forces quickly locate the distress scene. Satellite beacons have significant coverage, with alerting timeliness, position accuracy, and signaling advantages over other devices. Before purchasing or using other than a 406MHz EPIRB, be sure you understand its capabilities and limitations.

Mount the EPIRB to float free, according to the manufacturer's instructions, if possible. Otherwise, make sure it is readily accessible. Register the EPIRB with NOAA, according to the instructions provided with the beacon or at the NOAA website: www.sarsat.noaa.gov. Registration is mandatory, improves response time, and reduces false alarms.

Radio Regulations

Most recreational vessels less than 65.6 feet (20 meters) in length are not required to carry a marine radio. Any vessel that carries a marine radio must follow the rules of the Federal Communications Commission (FCC).

Licensing

The FCC does not require most operators of recreational vessels to carry a radio or to have an individual license to operate VHF-FM marine radios, EPIRBs, or any type of radar. Operators must however follow the procedures and courtesies that are required of licensed operators specified in the FCC rules. You may use the name or registration number of your vessel to identify your ship station.

Recreational Vessels that may be required to be licensed:

- Power-driven vessels more than 65 feet (20 meters) in length.
- Any vessel, including a recreational vessel, on an international voyage.

Radio Listening Watch

Vessels not required to carry a marine radio – for example, recreational vessels less than 65.6 feet (20 meters) in length, but which voluntarily carry a radio – must maintain a watch on Channel 16 (156.800 MHz) or VHF Channel 9 (156.450 MHz), the boater-calling channel, whenever the radio is operating and not being used to communicate.

VHF Marine Radio Channels

The chart below contains a partial listing of channels recreational boaters should be familiar with. For a complete listing of VHF channels and frequencies visit the U.S. Coast Guard Navigation Center website at www.navcen.uscg.gov.

Channel	Type of Message and Use
06	Inter-ship Safety: Used for ship-to-ship safety messages and search messages and for ships and aircraft of the Coast Guard.
09	Boater Calling: the FCC has established this channel as a supplementary calling channel for recreational boaters in order to relieve congestion on VHF Channel 16.
13, 67	Navigation Safety (also known as the Bridge-to-Bridge Channel): Ships greater than 20 meters in length maintain a listening watch on this channel in U.S. waters. This channel is available, to all ships. Messages must be about ship navigation – i.e., passing or meeting other ships. You must keep your messages short. Your power output must not be more than one watt. This is also the main working channel at most locks and drawbridges. Channel 67 is for the lower Mississippi River only.
16	International Distress, Safety, and Calling: Use this channel to get the attention of another station (calling) or in emergencies. Ships required to carry a radio maintain a listening watch on this channel. The U.S. Coast Guard and most coast stations also maintain a listening watch on this channel.
21A, 23A, 83A	U.S. Coast Guard only.
22A	U.S. Coast Guard liaison and Maritime Safety Information Broadcasts: Announcements of urgent marine information broadcasts and storm warnings on Channel 16.
24,25, 26,27 28, 84 85, 86	Public Correspondence (Marine Operator): Use these channels to call the marine operator at a public station. By contacting a public coast station, you can make and receive calls from telephones on shore. Except for distress calls, public stations usually charge for this service.
70	Digital Selective Calling: Use this channel for distress and safety calling and for general purpose calling, using only digital selective calling (DSC) techniques.

Digital Selective Calling (DSC)

Digital Selective Calling (DSC), allows boaters to instantly send an automatically formatted distress alert to the Coast Guard or other rescue authority anywhere in the world. Digital Selective Calling also allows boaters to initiate or receive distress, urgency, safety, and routine radiotelephone calls to or from any similarly equipped vessel or shore station, without requiring either party to be near a radio loudspeaker. DSC acts like the dial and bell of a telephone, allowing you to “direct dial” and “ring” other radios, or allowing others to “ring” you, without having to listen to a speaker. New VHF and HF radiotelephones have DSC capability.

All DSC-equipped radios, and most GPS receivers, have a data interface connector. The interface allows most models of GPS to be successfully interconnected to DSC-capable radios, regardless of manufacture. The Coast Guard recommends that you interconnect your GPS and DSC-equipped radio. Doing so may save your life in an emergency situation.

Users of a VHF-FM marine radio equipped with Digital Selective Calling will also need to obtain a Maritime Mobile Service Identity (MMSI) number. These are available from BoatU.S., Sea Tow, the FCC and the United States Power Squadrons®. More information on Digital Selective Calling is available online at www.navcen.uscg.gov/MARCOMMS/gmdss/dsc.htm.

When properly registered with an MMSI number and interfaced with GPS, the DSC radio signal transmits vital vessel information in an emergency. With one push of a button, your DSC radio sends an automated digital distress alert containing your MMSI number, position, and the nature of the distress (if entered) to other DSC-equipped vessels and rescue facilities.

Rescue 21

Rescue 21 is the advanced command, control, and communications system created to improve search and rescue with stronger VHF-FM marine radio signals, direction-finding capabilities, tracking of ships and aircraft, and better communications with state and local first-responders. The system is currently being installed in stages across the contiguous 48 states, Alaska, Hawaii, Guam, Puerto Rico, and the Great Lakes. When fully deployed, it will form the backbone of the U.S. Coast Guard's short-range communications system.

With increased communications coverage, advanced direction finding capabilities, and Digital Selective Calling, Rescue 21 helps take the “search” out of search and rescue.

Capabilities:

- Incorporates direction-finding equipment to improve locating vessels in distress.
- Enhances the clarity of distress calls.
- Upgrades playback and recording feature of distress calls
- Allows simultaneous channel monitoring.
- Provides full coverage out to 20 nautical miles from the coastline
- Reduces coverage gaps for coastal communications and along navigable rivers and waterways.
- Supports Digital Selective Calling.
- Portable towers for restoration of communications during emergencies or natural disasters.
- Improves interoperability among federal, state, and local agencies.

To take full advantage of Rescue 21, boat operators should upgrade to a DSC-capable VHF-FM marine radio, obtain a Maritime Mobile Service Identity (MMSI) number, enter the number into their radio, and connect the radio to a GPS receiver.

For Vessels Equipped with DSC-Capable Radios

If your vessel is equipped with a DSC-capable radio, and you have obtained and registered an MMSI number and it is properly connected to a GPS receiver, you need only press the red DSC Emergency Call Button for 5 seconds. Your vessel information and position will automatically be transmitted, including the nature of the distress (if entered), and a DSC reply should be received. Upon receipt of this acknowledgement, your radio should automatically shift to Channel 16 to continue voice communications with rescue assets. If no reply is received, switch the Channel 16 and use the procedures below.

SOS: Ships in Distress

Channel 16 is the primary radio channel for ships in distress. To make a distress call on marine VHF-FM Channel 16:

1. Make sure radio is on.
2. Select Channel 16 for standard marine VHF.
3. Press/hold the transmit button.
4. Clearly say: MAYDAY, MAYDAY, MAYDAY.

5. Also give:

- Vessel name, number and/or description.
- Position and/or location.
- Nature of emergency.
- Number of people on board.

6. Release transmit button.

7. Wait for 10 seconds. If no response, repeat "MAYDAY" call as above.

*****Make sure all persons are wearing their life jackets*****

Maritime Search and Rescue

To report Maritime Search and Rescue Emergencies, call the following numbers:

For the Great Lakes, Gulf and East Coasts:

Atlantic Area Command Center:

(757) 398-6700

For the Hawaiian, Alaskan and Pacific Coasts:

Pacific Area Command Center:

(510) 437-3701

False Distress Alerts

It is unlawful to intentionally transmit a false distress alert, or to unintentionally transmit a false distress alert without taking steps to cancel that alert. Boaters who transmit a false distress alert are required to immediately cancel the alert.

If you inadvertently transmit a false DSC alert:

1. Reset the equipment immediately.
2. Tune for radiotelephony on the associated distress and safety frequency in each band in which a false distress alert was transmitted.
3. Transmit a broadcast message to "All Stations" giving the ship's name, call sign, time the alert was transmitted and MMSI, and cancel the false alert on the distress and safety frequency in each band in which the false distress alert was transmitted.

Please post these guidelines near your radio.

OTHER RESPONSIBILITIES

Regulated Navigation Areas/Limited Access Areas (33 CFR 165)

In the aftermath of the September 11, 2001, terrorist attacks on the World Trade Center and the Pentagon, and the earlier attack on the USS Cole in Aden Harbor, Yemen, the United States Coast Guard established Safety and Security Zones to prevent further attacks on U.S. Naval vessels, cruise ships and commercial vessels, and critical infrastructure – such as petroleum facilities and nuclear power plants situated on or near the water. As a boater, not knowing how to act in certain areas or situations may put you in legal jeopardy or, worse, at risk of personal injury.

Help protect our country by learning the new rules:

Naval Vessel Protection Zones

Do not approach within 100 yards, and slow to minimum speed within 500 yards, of any U.S. Naval vessel. If you need to approach within 100 yards in order to ensure a safe passage in accordance with the Navigation Rules, you must contact the U.S. Naval vessel or the U.S. Coast Guard escort vessel on your VHF radio (Channel 16) for authorization.



If a Naval vessel is passing near where you are operating your boat, you may be asked to move your vessel to maintain the 100-yard distance. The U.S. Coast Guard will make an announcement ahead of time to alert boaters in the area.

Violations of the Naval Vessel Protection Zone are a felony offense, punishable by up to 6 years in prison and/or up to \$250,000 in fines.

Be aware that both the U.S. Navy and the U.S. Coast Guard are authorized to use deadly force to protect themselves.

Commercial Shipping Safety Zones

In addition to the Naval Vessel Protection Zone requirements, you must also avoid operating your vessel near all military vessels, cruise liners, and certain commercial vessels.



Observe and avoid all security zones and commercial port operations. Areas that have large marine facilities – including military, commercial/ cruise, or petroleum facilities – should be avoided. There are also restrictions near most dams, power plants, and other facilities located near water.

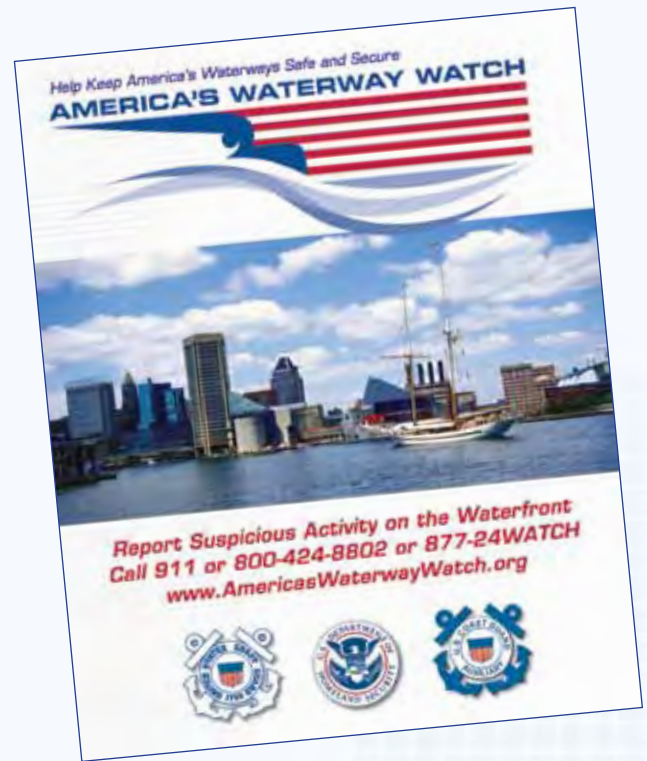
Bridges and Shipping Channels

Do not stop or anchor beneath bridges or in shipping channels. If you do, you can expect to be asked to move and/or be boarded by law enforcement officials.



America's Waterway Watch

If you operate a towboat, marina, recreational vessel, fishing vessel, or otherwise live, work, or engage in recreational activities on or near the nation's waterways, the United States Coast Guard would like your help in keeping these areas safe and secure. You can do this by participating in America's Waterway Watch (AWW), a nationwide initiative similar to the well-known and successful Neighborhood Watch program that asks community members to report suspicious activities to local law enforcement agencies.



We ask boaters to call 877-24WATCH if they notice suspicious activity or behavior on or near the water. Things to report include:

- Someone taking pictures, video, or making sketches of facilities like bridges, tunnels, ferry transport systems, fuel docks, or power plants.
- Someone asking questions about access to one of these facilities.

- Someone anchoring, fishing, or diving in an area not typically used for that activity.
- Unattended vessels in unusual locations.
- Unusual transfer of personnel or cargo while underway.
- Seeing a hole in a security fence around an industrial facility.



Do not take matters into your own hands. Call 877-24WATCH. In cases of immediate danger to life or property, call the Coast Guard on Channel 16 VHF-FM, or dial 911 for emergencies.

America's coasts, rivers, bridges, tunnels, ports, ships, military bases, and waterside industries may be targets for terrorist activity. Although waterway security is better than ever, with more than 95,000 miles of shoreline and more than 290,000 square miles of water, the U.S. Coast Guard and local first responders cannot do the job alone.

To find out how you can become involved, visit the America's Waterway Watch website at www.americaswaterwaywatch.org.

USCG INFORMATION

**United States Coast Guard
Boating Safety Division (CG-5422)
2100 2nd Street SW, STOP 7581
Washington, D.C. 20593-7581
(202) 372-1062
www.uscgboating.org**

District Recreational Boating Safety Specialists:

First District: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont
(617) 223-8464

Fifth District: Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, District of Columbia
(757) 398-6204

Seventh District: Florida, Georgia, South Carolina, Puerto Rico, U.S. Virgin Islands
(305) 415-7057

Eighth District: North Dakota, South Dakota, Wyoming, Nebraska, Minnesota, Iowa, Illinois, Indiana, Ohio (shared with Ninth District), Pennsylvania, West Virginia, Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida (shared with Seventh District) Louisiana, Arkansas, Missouri, Oklahoma, Kansas, New Mexico, Colorado, Texas.
(504) 671-2157

Ninth District: Michigan, Minnesota, Ohio, Wisconsin
(216) 902-6094

Eleventh District: Arizona, California, Nevada, Utah
(510) 437-5364

Thirteenth District: Idaho, Montana, Oregon, Washington
(206) 220-7257

Fourteenth District: Hawaii, Guam, American Samoa, Northern Marianas
(808) 535-3424

Seventeenth District: Alaska
(907) 463-2297

The U.S. Coast Guard thanks
the following partners for their support:

U.S. Coast Guard Auxiliary
www.cgaux.org

United States Power Squadrons®
(888) 367-8777
www.usps.org

National Association of
State Boating Law Administrators
(859) 225-9487
www.nasbla.org

National Safe Boating Council
(703) 361-4294
www.safeboatingcouncil.org

National Water Safety Congress
(440) 209-9805
www.watersafetycongress.org



For more information, please contact:

PROPER VHF RADIO ETIQUETTE, REMEMBER THE '5 CS' – BASIC OPERATIONAL REQUIREMENTS – HOW TO USE VHF

SEE VHF FREQUENCIES AND DESCRIPTIONS AT END OF DOCUMENT

PROPER VHF RADIO ETIQUETTE

Good radio communication can be expressed using four “C” words that are easy to remember: CLEAR, COMPLETE, CONCISE, and CORRECT. There is a fifth “C” word, that is in a category all its own because of its often overlooked importance, “COURTEOUS.”

CLEAR: There is also a proper “Radio Voice.” It is lower and slower with very clear pronunciation, especially with the consonants. Mumbling, after it gets transmitted and received through all the electronics, can be unintelligible.

COMPLETE: Federal regulation requires that every ship and shore station identify themselves by the appropriate call sign at the beginning and end of every transmission. There is provision that the vessel, or authorized shore station’s name can be substituted for the call sign, but only on VHF Channel 13. The most common protocol is to start the transmission with the vessel’s name that you are calling to get their attention, followed by your identity. Example:
“Tug *Captain Henry T. O’Brian*, this is the tanker *Sinclair Ohio*.”

Every transmission should include at least one complete sentence. With radio transmissions, brevity is good, but you still must express a complete thought, i.e. “*Henry T.*” is too brief. “*Captain Henry T.* acknowledges one whistle meeting the vessel’s name” is better.

Federal regulations CFR Title 47, Subpart C, 80.89 states, in part, that every VHF transmission is only allowed between two ship stations or a ship station and a shore station with the exemption of general safety calls, urgent calls, or distress calls. General safety calls are prefaced by the French word “sécurité,” which almost everyone incorrectly pronounces as “security,” repeated three times. Urgent calls, which are rarely used, are prefaced by the word group “pan-pan,” commonly pronounced “pon-pon” from the French word “panne,” repeated three times. Distress calls are prefaced by the word “mayday,” repeated three times. Radio

checks are allowed, but strongly discouraged on VHF Channel 13, and only by authorized personnel on VHF Channel 16. Radio traffic between vessels and aircraft are allowed in very limited situations.

General safety calls on VHF Channel 13 are routinely used when leaving a berth or anchorage, approaching a blind turn, or about to enter or block a main navigational channel. Also, some ports have established suggested locations where vessels broadcast general safety calls when passing, i.e., inbound at Norton Point in New York Harbor, eastbound in the C&D canal at Biddle Point. Generally these are just common sense, but sometimes they are published in the appropriate Coast Pilot or other local knowledge publications. General safety calls are very important and should be used, but not overused. All vessels listen when they hear “sécurité, sécurité, sécurité,” or “security, security, security.”

CONCISE: If you want to discuss something at length, wait until you are face to face, call on a cell phone or use another channel. VHF Channel 13 communication is for short and focused communication. An example of a communication that is too long and complex is: “This is the tug *Bridgett T.* answering the outbound ship. I intend to meet you on one whistle on the straightaway. To do that, I am going to slow down to 600 rpm at buoy 7 and then slow down to clutch at buoy 8. At buoy 8, I’ll proceed over to the red side of the channel to meet you on one whistle, over.” The pertinent information can be transmitted more concisely as: “This is the tug *Bridgett T.* I will meet the outbound ship on one whistle. I’ll slow down so that we will meet on the straightaway.” The shorter the better as long as you get your basic point across without leaving something important out or sounding too abrupt.

CORRECT: It used to be the accepted practice to fib, just a little. Position reports were ahead of where you really were and speeds were on the high side using optimistic calculations. Now with GPS, chart plotters and particularly AIS, this just isn’t necessary. Other vessels are relying on the information you are giving them, especially with regards to your intentions, so keep it as accurate as possible.

COURTESY: When I start a discussion with other professionals about this subject, this aspect of communication always prompts some interesting conversations. There is a lot that can be said about this subject, but the following simple guideline is the most important.

Every VHF Channel 13 radio communication has one very simple objective: a positive outcome. No matter if the person that you are communicating with happens to be an archrival, your best friend or a complete stranger, it still comes down to the fact that what you discuss and decide has to work out right. The very best way to do this is with courteous radio communication. Sarcasm, cynicism, disdain, condescension or contempt are almost always counterproductive. If you want to argue with someone, join a blog, or call them on a cell phone. Radio communication, especially on VHF Channel 13, is a business-only medium.

Before pushing the push to talk button to start communication, take a moment to think through what you are going to say. Does it have a disrespectful tone to it? Could it be taken the wrong way? If you are courteous during your transmission you will prompt a courteous reply and, most important, a good conclusion.

Over the past several years, recreational and other non-required vessels have been encouraged to monitor and answer when called on VHF Channel 13 when navigating in or close to main shipping channels. This has been working out very well and should be encouraged as it has avoided some close-call situations, especially at night and during reduced visibility. This means that there are many more vessels monitoring VHF Channel 13, making good radio etiquette all the more important.

HIGH FREQUENCY RADIO BASICS

THERE IS A DIFFERENCE BETWEEN USING YOUR CELL PHONE AND THE VERY PUBLIC HIGH FREQUENCY RADIO—OR AT LEAST THERE SHOULD BE!



Part 80 of the FCC Rules, plus those International Radio Regulations to which the US is a party, are the rules that govern radio use.

Because these same radio frequencies are used by commercial ships, and planes with licensed operators and call signs and monitored by USCG life-saving authorities, the FCC has limitations on what and how things should be said. Anyone can talk on the radio within these confines and pleasure boaters are not required to have an FCC permit to do so, but because this has to do primarily with safety there are certain fundamentals, i.e. protocols, that everyone must follow.

Here are some radio basics that all boaters should know:

- Radio transmission should be in English.
- The captain of the ship has ultimate control of the ship's radio.
- **Distress** traffic (grave and imminent danger requesting immediate assistance) in radiotelephony is expressed by speaking the word "Mayday" 3x at the beginning of the message, followed by the call sign and or name of the vessel. Then the particulars that would facilitate rescue such as position, length, color, and type of vessel, number of persons onboard, and nature of distress are given.
- After **Distress** (see above), the next message priority is **Urgent**, which involves the safety of ship or person onboard. This is conveyed by speaking the word "Pan" 3x.
- **Safety** is the next message priority, which conveys a navigational or weather warning by speaking the word "Security" 3x.
- These three are the only messages that are general broadcast. All others should be directed to a specific vessel or station.
- Channel 16 (156.8 Mhz) should be monitored at all times. It is reserved for hailing and emergencies. Most radios have dual monitor switches that allow you to hear channel 16 and another channel at the same time. Commercial ships will monitor 16 and use channel 13 for hailing. You MUST switch to another channel for basic communications.
- When attempting to contact other vessels on ch 16, limit calling to 30 seconds. If no answer is received, wait 2 minutes before calling again.
- When you call another vessel, say the name three times and then ALWAYS identify your vessel. e.g., "BYC launch, BYC launch, BYC Launch, this is motor vessel *Albacore* channel 68, over."
- The word "over" lets the other party know we are done talking and it is their turn to talk. "Clear" ends a transmission without further response. "Wilco" says that the message is received and will be complied with. "Roger" tells the other operator that all of a transmission has been received.
- If you hear other people talking on your frequency, let them finish! Don't talk over or "step on" other radio traffic, and always listen before transmitting.
- Cursing and swearing is not allowed.
- Make it short and sweet. Get to the point. Remember the safety nature of the medium. If you want to talk about how the fish are biting or how great the weather is, make sure you are on a "non-working frequency" (those routinely monitored by harbor masters or marinas for instance). Or better yet have these private conversations on your cell phone. Needless or superfluous radio communications are not authorized in maritime service. The primary purpose of bridge to bridge communications is for navigational communication.
- Most cruising guides will provide the frequencies routinely monitored by harbor masters, marinas and yacht clubs.
- Radio checks are a way of knowing your radio is sending and receiving properly. Again identify yourself, "radio test, radio test, radio test, M/V *Albacore* ch 68." The proper response being, "M/V *Albacore*, loud and clear, (your location) Nantucket Harbor." Better yet, use the new automated radio check system on ch. 28.
- Sign off properly when your call is complete: "This is M/V *Albacore* going back to 16/13, off and clear."

HOW TO USE VHF

Standby:

In general, you should stay on standby on Channel 16 at all times. The US Coast Guard monitors 16 for distress calls, and also to broadcast storm warnings and other crucial marine information or warnings. And by the way, when the VHF is turned on, it will tune automatically to Ch.16.

Remember. Ch. 16 is the international calling and distress frequency, and it should be used essentially for that purpose. Usually, charter companies have a permanent working channel, which they use to communicate with charterers without having to call on ch. 16. Ask instructions at the skippers briefing before the start of your cruise. Many people think that every time they step on their boat they need to ask for a radio check. This is rarely needed—perhaps after installing a new system—and should certainly not be done on channel 16. So if you want to do it, do it on the charter company's working channel.

Hailing (or Raising):

Other than being in standby, Channel 16 is for hailing and distress purposes only, which in some areas, seems to be a long-forgotten rule! So make your initial hailing call clear and short!

The correct hailing procedure is to state one to three times in succession the name of the boat or station you are calling, followed once or twice by the name of your boat, then "Over." Any additional words are unnecessary and incorrect procedure. Once your party replies, you instruct him/her to switch to a working channel and clear out of channel 16.

Example: Vessel Moondance: "*Windstar, Windstar, Windstar ... this is Moondance*"

Note: Wait for a reply. If you do not get a reply within 15/20 seconds, you may try a second and third time. If no response, try again later, but do not stay on Ch 16 calling endlessly.

Vessel Windstar: "*Moondance, this is Windstar, over*"

Note: The word "over" is necessary to signal you have finished your sentence, since only one person at a time can talk.

Vessel Moondance: "*Windstar, switch to channel 68, over*"

Note: It is usually considered safer to announce double-digit numbers one at a time. Here, instead of saying "channel sixty eight", say: "Channel six eight". Ch. 68 is one of the working channels you may use.

Vessel Windstar: "*Six eight over*"

Vessel Windstar (on Ch.68): "*Moondance, this is Windstar*"

Vessel Moondance: "*Windstar, bla bla bla... .*"

When finished:

Vessel Moondance: "*Moodance out, back to 16*"

Examples of what you should **NOT** do:

"Passing Wind ... hey ... Passing Wind ... YOO HOO!! ... you guys out there? Hellooooooo"

Or "Helloooo ... anybody out there?"

Note: Any non-emergency sustained conversation on Ch. 16 will usually trigger strong language from other boats or from the USCG station. Also, clogging the channel or using it for a hoax, false MAYDAY or something similar, are a felony and subject to serious fines. Similarly, foul language user may get fined severely and even jailed. And the USCG will find the culprits.

Sending a Distress Call:

You may only have a very short time to send a distress call. Here is the procedure in this order:

1. Tune your VHF to channel 16.
2. Repeat the word "MAYDAY," three times.
3. "This is (name of boat)" Repeat boat name three times.
4. Describe your boat, such as, size, rig type, color and tell the number of persons aboard.
5. Indicate the nature of distress (sinking, fire, etc.)
6. Give position by latitude and longitude or by bearing and distance to a well-known landmark or navigational aid, or in any terms that will assist a responding station in locating the vessel in distress. Include any information, such as, vessel course, speed, and destination.
7. Indicate the kind of assistance desired.
8. End with "over."
9. If you do not receive any answer, repeat your call every 2 minutes.

Note: If you are NOT in a life-threatening situation but still are in real need of assistance, use the same procedure as above, EXCEPT that in step 2, you replace the word MAYDAY by the words "Pan Pan" (pronounce PAHNN PAHNN).

Hearing a Distress Call:

When you hear one, give first the Coast Guard or the local equivalent a chance to respond. If they do not, and if you are in position to help, answer the distress call, get the details of the emergency and figure out what to do. If they do respond or if you're not in position to help, just listen and do not press your mike button.

A Few Tips:

- Other members of the charter party should definitely learn how to use the VHF. You never know: something might happen that could leave the skipper unable to take charge. To this effect, a) give a crash course with a demo on how to switch channels, transmit and listen to everyone aboard; b) post a short, simple list of instructions, including proper channels to use, next to the radio.
- For boat owners: The name you choose for your boat should be easily understood in radio communications. This is an aspect often overlooked. If you choose a suite of impossible ancient French words known only to a professional linguist, you've got a problem. You could spend the rest of your days on the water repeating that name to the person at the other end of the transmission trying to figure out what you're saying, let alone an emergency call! It is cool to be original, but I mean, really, be serious, OK?
- Always listen before you start transmitting to ascertain a clear channel. If others are talking, wait until they're finished. Everyone will appreciate your courtesy.
- Before calling another vessel on a hailing frequency, be sure in advance that you have a free working channel available to switch to.

- Be sure to depress the button on the microphone before you start to speak. It's common for transmissions to be truncated at the beginning or at the end because the sender does not depress the button in sync with his speech.
- Remember that the only legal channels that boaters can use to communicate among themselves are: 9, 16, 68, 69, 71, 72, and 78. All other channels are designated for other uses (see below).
- Lastly, as usual, use your common sense, proper etiquette and remember that VHF use is not a game.

U.S. VHF CHANNELS

Channel Number	Ship Transmit MHz	Ship Receive MHz	Use
06	156.300	156.300	Intership Safety
07A	156.350	156.350	Commercial
08	156.400	156.400	Commercial (Intership only)
09	156.450	156.450	Boater Calling. Commercial and Non-Commercial.
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial. VTS in selected areas.
12	156.600	156.600	Port Operations. VTS in selected areas.
13	156.650	156.650	Intership Navigation Safety (Bridge-to-bridge). Ships >20m length maintain a listening watch on this channel in US waters.
14	156.700	156.700	Port Operations. VTS in selected areas.
15	--	156.750	Environmental (Receive only). Used by Class C EPIRBs.
16	156.800	156.800	International Distress, Safety and Calling. Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel.
17	156.850	156.850	State & local govt maritime control
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port Operations (duplex)
20A	157.000	157.000	Port Operations
21A	157.050	157.050	U.S. Coast Guard only
22A	157.100	157.100	Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts announced on channel 16.
23A	157.150	157.150	U.S. Coast Guard only
24	157.200	161.800	Public Correspondence (Marine Operator)

25	157.250	161.850	Public Correspondence (Marine Operator)
26	157.300	161.900	Public Correspondence (Marine Operator)
27	157.350	161.950	Public Correspondence (Marine Operator)
28	157.400	162.000	Public Correspondence (Marine Operator)
65A	156.275	156.275	Port Operations
66A	156.325	156.325	Port Operations
68	156.425	156.425	Non-Commercial
69	156.475	156.475	Non-Commercial
70	156.525	156.525	Digital Selective Calling (voice communications not allowed)
71	156.575	156.575	Non-Commercial
72	156.625	156.625	Non-Commercial (Internship only)
73	156.675	156.675	Port Operations
74	156.725	156.725	Port Operations
77	156.875	156.875	Port Operations (Internship only)
78A	156.925	156.925	Non-Commercial
79A	156.975	156.975	Commercial. Non-Commercial in Great Lakes only
80A	157.025	157.025	Commercial. Non-Commercial in Great Lakes only
81A	157.075	157.075	U.S. Government only - Environmental protection operations.
82A	157.125	157.125	U.S. Government only
83A	157.175	157.175	U.S. Coast Guard only
84	157.225	161.825	Public Correspondence (Marine Operator)
85	157.275	161.875	Public Correspondence (Marine Operator)
86	157.325	161.925	Public Correspondence (Marine Operator)
87	157.375	157.375	Public Correspondence (Marine Operator)
88A	157.425	157.425	Commercial, Internship only.
AIS 1	161.975	161.975	Automatic Identification System (AIS)
AIS 2	162.025	162.025	Automatic Identification System (AIS)

[VHF Maritime Spectrum Chart](#)

NOAA Weather Radio Frequencies

Channel	Frequency (MHz)
WX1	162.550
WX2	162.400
WX3	162.475
WX4	162.425
WX5	162.450
WX6	162.500
WX7	162.525

Channel numbers, e.g. (WX1, WX2) etc. have no special significance but are often designated this way in consumer equipment. Other channel numbering schemes are also prevalent.

The order of channels shown is the order they were established and is slowly becoming less "popular" over time than a numerical ordering of channels.

See [NATIONAL WEATHER SERVICE MARINE PRODUCTS VIA NOAA WEATHER RADIO](#) and the [NOAA Weather Radio Homepage](#) for more information.

Additional Information, Frequencies, & Charts

Frequencies are in MHz. Modulation is 16KF3E or 16KG3E.

Note that the letter "A" indicates simplex use of the ship station transmit side of an international duplex channel, and that operations are different than international operations on that channel. Some VHF transceivers are equipped with an "International - U.S." switch for that purpose. "A" channels are generally only used in the United States, and use is normally not recognized or allowed outside the U.S. The letter "B" indicates simplex use of the coast station transmit side of an international duplex channel. The U.S. does not currently use "B" channels for simplex communications in this band.

Boaters should normally use channels listed as Non-Commercial. Channel 16 is used for calling other stations or for distress alerting. Channel 13 should be used to contact a ship when there is danger of collision. All ships of length 20m or greater are required to guard VHF channel 13, in addition to VHF channel 16, when operating within U.S. territorial waters. Users may be fined by the FCC for improper use of these channels. See [Marine Radio Watch Requirements](#) for further information.

Also available are [International VHF Maritime Radio Channels and Frequencies](#), [Narrowband VHF Maritime Channels and Frequencies](#), [Radio Information for Boaters](#) , and [U.S. Coast Guard VHF Distress and Safety Coverage Charts](#).

WSP
Man Overboard (MOB) Rescue SOP

SCOPE

This procedure establishes a standard structure and guideline for all WSP personnel involved in incidents involving water rescue operations. A person in the water is a serious situation and potentially fatal event. Clearly defined procedures, training and planning are paramount to recovering a person successfully.

After a person falls into the water these steps must be followed:

Immediately

1. Upon witnessing or realizing a person overboard (POB), pass the word – Shout “Man overboard”. Send a distress call for help to get assistance on scene as soon as possible (other boats, people on shore, and emergency response). The skipper has discretion whether immediate distress call is made or delayed based upon the situation.
2. Throw a highly visible, floatation device such as a “life ring” or throwable floatation cushion. The float can be a visible marker for maneuvering and provide support for the person in the water if they are conscious.
3. One person must point and keep their eyes on the person that is in the water at all times until they are rescued. This duty is critical to help locate the person and provide the rescue direction. This person should also note any landmarks or reference points on the waterbody to help with the location of the victim.

Subsequent Actions

4. Quickly respond and initiate a turn. On large vessels, that turn may be toward the side the “Man Overboard” (MOB) fell over. This action moves the propeller away from the MOB.
5. The skipper of the boat works to get the boat in a position to help with the rescue.
6. The skipper or incident command will communicate the recovery actions to ensure all are aware of their duties. Delegation of crew to take action is clearly communicated.
7. If the person cannot be saved via the REACH, THROW or ROW method then it may be necessary to perform a water rescue, by sending in a rescue swimmer to retrieve the MOB (ie., GO). GO shall be implemented if the Rescue person has accessed the hazards in the area and it safe to GO safe the person.

THE RESCUE PLAN

Rescue operations should be conducted with as little risk to the rescuers as necessary to affect the rescue. Low-risk operations may not always be possible but should be considered first. The order of rescue from low-risk to high-risk are:

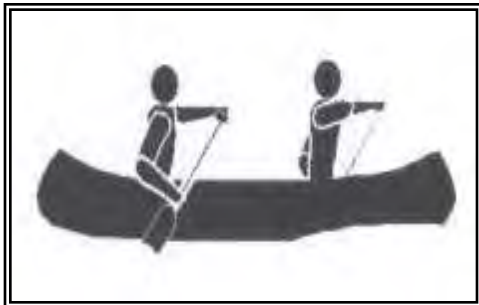
- A. TALK – if water is calm or slow moving, try to talk the victim into self-rescue if possible. Self-rescue to swim ashore or boat or stand if possible.
- B. REACH – extend an arm, pike pole, rescue hook, or any other such object to reach the victim and pull from the water.



- C. THROW – attempt to throw the victim(s) a throw-bag rescue line or some other type of approved safety flotation device and “pendulum-belay” or “haul” the victim(s) to the bank.



- D. ROW - If it is determined that a boat-based operation shall be utilized, move the boat into a position upstream of the person in the water. (the boat will drift faster than the MOB.)
1. Always bring the vessel to the windward side (up wind) of the MOB to drift toward the person and protect them from wind and waves in the lee of the vessel.
 2. Stop the vessel. Turn off the engine when MOB is alongside during the recovery operations.
 3. Be mindful the shift of vessel stability when loading the person back into the boat. Balance the vessel to avoid capsizing. See Victim Recovery below.



E. GO - If it is not possible to row to the victim, rescue persons should consider putting a rescuer or rescuers in the water to reach the victim. Prior to entering the water, rescue personnel shall be briefed on the plan, the back-up plan and emergency procedures. No one should enter the water without training on water rescue and equipment to prevent additional victims.



Methods of recovery:

Ensure rescue equipment is available and operational prior to beginning work on or near the water. (e.g. throwable life ring with line, long pole, scoops, slings, back board/ stretcher, towels, blankets, space blankets, boarding ladder, first aid kit, radios/ cell phone).

Assess the condition of the POB and the degree of assistance required.

- A. Consider the effects of inclement weather and water conditions on the hazard profile, the victim(s), and the rescuers, with particular attention to the effects of hypothermia.
- B. Physical conditions of the person in the water.
 - Did they hit their head and black out?
 - Did they sustain injury that would hamper their ability to grab a pole/life ring or swim to shore?

Caution:

- Wet clothes are considerably heavier than dry.
- Different body shapes and weights can make rescue more or less challenging.
- Personal Floatation Devices (PFDs) and other work equipment can be cumbersome.
- Sea sickness, water temperature, swimming fatigue, time in the water, water and treading water can exhaust a person to the point of making self-rescue impossible.

On vessels with low freeboard recovery can be from the gunwale via:

- Self-rescue can be facilitated with use of a boarding ladder or a stern platform.
- With the MOB facing away from the vessel. The vessel crew puts their hands under the armpits of the MOB to lift onboard. This method is often easier because of PFD buckles/straps, however, may be uncomfortable to the MOB.
- The MOB facing toward the vessel. This method can cause more soft tissue injury and can be painful.
- Larger vessels or helicopter rescue may require a basket and hoist to reach the MOB from the water to the deck.

- Unconscious or hypothermic victims are best recovered horizontally on a back board to minimize additional injuries. Some constraints may preclude a horizontal lift. Specialized recovery equipment may not be available and expedience to get them on board and provide medical attention may take precedence.
- In-water assistance may only be attempted by a trained water rescue life saver who is fully equipped with PFD, thermal protection, etc.
 - Consider tethering the rescue swimmer to the vessel.
 - Consider prop injury from vessel maneuvering
 - Consider prop line fouling
 - Consider line entanglement

Missing person

WSP utilizes the buddy system especially when working on and around water. In the event of a missing person during operations the following actions are to be implemented:

1. Confirm the person was on site and involved in the water activities.
2. Conduct a search of the work area.
3. If on board and underway, turn the vessel around and follow a reciprocal course.
4. Initiate assistance of first responders and the Coast Guard and other vessels in the work area. Establish an expanding square or parallel track search pattern when the initial position of the person is unknown.
5. Consider the current and weather conditions for where a person may drift.

Post Rescue

1. Cancel distress call upon rescue.
2. Monitor the victim's condition. Watch for shock and hypothermia. Warm victim slowly.
3. Provide medical care including first aid, promote comfort and safety for the victim and rescuers, and transport for further medical treatment as necessary. Rescuers and people who recover MOB may require assistance for emotional and physical problems as well.
4. Complete incident report forms. Conduct an investigation and implement corrective actions.

APPENDIX N

WSP Expectations for Health,
Safety, and Wellbeing Management

Expectations for Health, Safety and Wellbeing Management

January 2021



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Our Commitment to Health, Safety and Wellbeing

As a recognized global leader in our industry, WSP must adhere to the highest international standards for health, safety and wellbeing (HSW), constantly striving to exceed these standards in all we do. Ensuring the health, safety and wellbeing of our employees, as well as others who may be affected by our activities, is a core value at WSP and is essential for our success.



Renae Walter
Global Director of Health,
Safety & Security

Our *Expectations for Health, Safety and Wellbeing Management* (“Expectations”) fosters a holistic approach to addressing HSW risks and provides a foundation for all our regions to strive towards as they implement HSW into all aspects of their work. They enhance our industry leading HSW culture to ensure we can effectively monitor, prevent, reduce or mitigate the risks associated with our business. They also ensure that we provide a safe work environment for our people, which includes addressing physical as well as psychological health needs.

The *2021-2023 Zero Harm Roadmap* (“Zero Harm Roadmap”) details the specific activities to be achieved by each WSP business line by 2023, under our six core HSW pillars. Senior leadership in each region will champion the roadmap as we continue to strengthen our HSW culture. The roadmap has been updated to further address our focus on various wellbeing initiatives as we aim to better identify, mitigate and prevent certain factors and conditions that have the potential to harm employee psychological wellbeing. By setting out mandatory expectations, we will ensure that high-calibre practices will remain integral to our culture. This in turn will inform how we deliver work for our clients and enable our employees to work in an environment, and for a company, that continually strives to keep them and others safe from harm.

Our *Making Health, Safety and Wellbeing Personal* approach has proved very successful. It will therefore continue to drive our Zero Harm Vision over the next three years. This means that each of us is held accountable for our personal health, safety and wellbeing and that of others.

We look forward to your continued collaboration and support as we extend our vital practices in health and safety to wellness.

A handwritten signature in black ink that reads "R. Walter".

Zero Harm

Everywhere We Operate, We Will Make Health, Safety and Wellbeing Personal

Our Zero Harm Vision is a commitment shared by WSP and all employees to consider and effectively reduce or mitigate health, safety and wellbeing risks from our activities by seeking new and innovative solutions via the six Zero Harm Pillars. Our goal is to ensure that our activities result in:

- Zero fatalities
- Zero permanently disabling injuries
- Zero injuries to members of the public
- Zero long-term harm to health



What is Our Shared Commitment?

Eliminating Fatal Risks

All our businesses will identify fatal risks and establish Zero Harm design, management and behavioral protocols to eliminate them.

Eliminating Hazards

All our businesses will identify and plan according to hazards in all the activities we undertake.

Maintaining Zero Harm Day to Day

All our businesses will establish processes that effectively manage Health, Safety and Wellbeing, through monitoring, review, audit and assurance systems geared to Zero Harm.

Keeping the Public Safe from Harm

We will manage and maintain our levels of separation, security, monitoring and stewardship to safeguard members of the public from exposure to our hazards.

Keeping our People Healthy

Our businesses will ensure that we do not expose our employees to any hazards that may affect their health.

Working with our Clients

All our businesses will enlist the support of our clients and work with them to ensure that our activities do not expose our employees or theirs to risks.

Overview

At WSP, we embrace health, safety and wellbeing (HSW) as a fundamental part of our business practice. We ensure that this aspect is given the same emphasis as our commercial and operational activities at the level of our Global Leadership Team, as well as being regularly considered by the WSP Global Inc. Board of Directors.

The purpose of this document is to set out WSP's "Expectations for Health, Safety and Wellbeing Management". These Expectations are based on international best practices, including ISO 45001: Occupational Health and Safety Management System; and ISO 45003: "Occupational Health and Safety Management - Psychological Health and Safety at Work: Managing Psychological Risks - Guidelines".

They are supported by our Zero Harm Vision; Global Health, Safety and Wellbeing Policy and associated HSW management arrangements (see Figure 1 below).

These Expectations form the minimum mandatory HSW requirements required by WSP. However, we encourage our businesses to surpass these requirements. The term "Organization" is used in this document to refer to each WSP business, as well as joint ventures, partnerships and associated companies in which WSP has a controlling interest or where, with the agreement of our partners, the Zero Harm Vision and the Expectations are adopted.

It also includes programs and projects in which WSP may be able to influence the HSW standards established by our clients.

These Expectations are to be cascaded down to the programs and projects managed by WSP. For instances in which HSW requirements are led by the client, these Expectations remain applicable, with project teams required to ensure that equivalent arrangements and standards are established.

Compliance with the specific clauses detailed in these Expectations will be assessed by periodic reviews and audits conducted by WSP's regional HSW teams and will be reviewed by the Global Head of Health, Safety & Security at least annually.

Figure 1

Our Approach to Health, Safety and Wellbeing



Expectations for Health, Safety and Wellbeing Management

1. Our Organization

1.1 WSP's Global Board of Directors (the "Board")

The Governance, Ethics and Compensation Committee of the Board, together with the Board, provide leadership and oversee health, safety and wellbeing policies and practices. At each quarterly meeting, directors receive and consider a report prepared by the Global Head of Health, Safety & Security.

1.2 Regions

Regional Leadership Teams will conduct an annual review of HSW to:

- Endorse the vision for HSW and the strategy for achieving it.
- Review performances, trends and progress.
- Review the effectiveness of the arrangements for managing HSW.
- Review specific incidents and actions taken to prevent reoccurrence.

A review chaired by the Global Head of Health, Safety & Security, on behalf of the Board, will be conducted for all employee fatalities and selected serious incidents to ensure that lessons learned are communicated across the business.

1.3 Global Safety Committee

The Global Safety Committee is established and chaired by the Global Head of Health, Safety & Security. The committee is formed from the lead HSW appointees in each region and major business, and meets at least once a year to monitor and review:

- The core business principles and commitments regarding HSW.
- HSW policies and performance and how compliance

is ensured across regions and businesses.

- *Zero Harm Roadmap* progress, sharing best practices and innovation in support of a positive safety culture.
- Lessons learned from adverse events and measures to avoid them in the future.

1.4 Regional Health, Safety and Wellbeing Forums

Each region and business should convene an HSW forum, chaired by the regional HSW lead with members from local senior management and HSW teams across the business sectors, at least annually.

The primary role of the regional HSW forums is to share and consult on best practices, promote excellence, prompt new safety initiatives, and highlight HSW concerns and lessons learned.

2. Organizational Context

2.1 Internal and External Factors

Each Organization shall determine relevant internal and external issues, which may affect its ability to achieve health, safety and wellbeing outcomes, and ensure arrangements are in place to mitigate associated risks.

Internal factors may include:

- a. Organizational restructuring.
- b. Employee relations.
- c. Resource limitations.

External factors may include:

- a. Political change.
- b. Social and economic factors.
- c. Health crises such as pandemics.



2.2 Stakeholder Management

Each Organization shall ensure that arrangements are in place for managing and consulting with stakeholders on appropriate controls for HSW.

2.3 System Scope

Each Organization shall specify the boundaries and applicability of the HSW management system to establish its scope (e.g. country/region), taking into consideration internal and external factors.

3. Leadership

3.1 Commitment

Each Organization shall ensure that senior management is accountable for performance and is able to demonstrate clear leadership to establish:

- a. Compliance with the Expectations for Health, Safety and Wellbeing Management.
- b. Fulfillment of HSW objectives.
- c. Implementation of HSW management arrangements.

3.2 Senior Management Appointment

Each Organization shall appoint a member of its leadership team (non-HSW personnel) to lead HSW matters. This individual shall be responsible for supporting the activities of HSW personnel and supporting commitment to the Zero Harm Vision.

3.3 Health, Safety and Wellbeing Policy

Each Organization shall maintain a documented health, safety and wellbeing policy, incorporating project-specific references as applicable, which communicates its commitment to HSW and sets out arrangements for implementing the policy.

The Organization's policy shall:

- a. Provide a clear statement of overall HSW objectives concerning the Zero Harm Vision.
- b. Establish commitment to improvement.
- c. Pledge compliance with all applicable HSW legal obligations.

The policy shall be approved and signed by the regional CEO/MD.

Furthermore, each Organization shall:

- a. Communicate its HSW policy requirements to all employees and other affected parties.
- b. Review its HSW policy on an annual basis and after significant change.

3.4 Roles and Responsibilities

Each Organization shall incorporate HSW roles and responsibilities within job descriptions.

Each Organization shall ensure that HSW roles and responsibilities are clearly communicated.

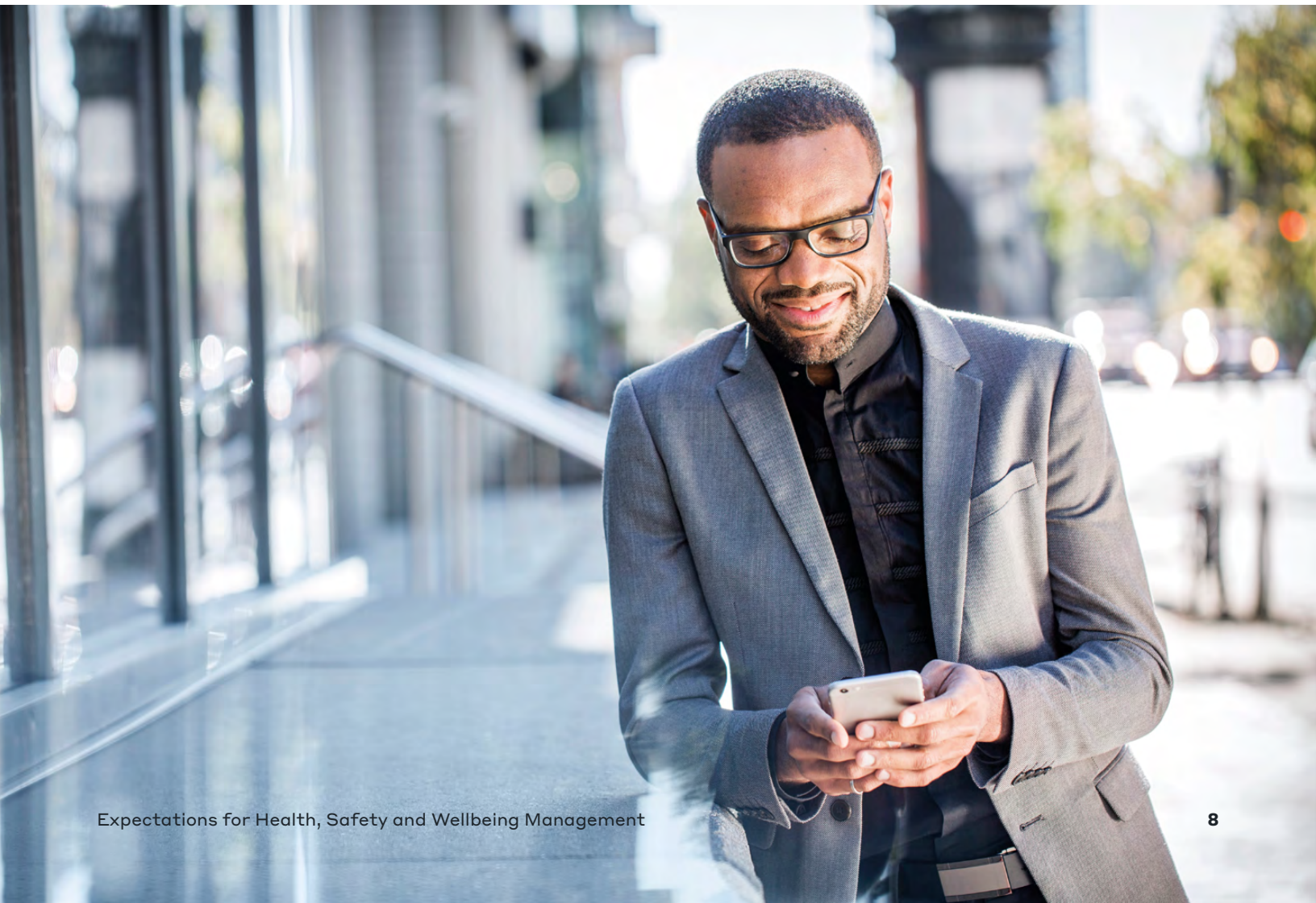
4. Employee Wellbeing

4.1 Wellbeing Programs

Each Organization shall establish a structured program to help identify and control work-related hazards that could harm employees' psychological health and wellbeing.

Each Organization shall provide support to plan, implement and manage initiatives for promoting positive wellbeing for employees, which should include as a minimum:

- a. Clear ownership and responsibilities for the management and execution of mental health and



wellbeing programs, with leadership reviews of progress taking place at least annually.

- b. Employee access to professional support for mental health and stress issues, whether personal or work-related.
- c. Guidance and training for line managers and supervisors on recognizing, managing and reducing work-related stress and supporting work/life balance that meets or exceeds local statutory requirements.
- d. Removal of any related stigma and promoting the understanding that mental wellbeing is of equal importance to physical wellbeing.
- e. Reinforcement of our zero-tolerance approach to any form of discrimination, abuse, harassment or bullying within each Organization.

5. Planning

5.1 Horizon Scanning

Each Organization shall undertake horizon scanning to help increase awareness of developments, trends and other potential changes that may affect its ability to achieve HSW outcomes, and ensure arrangements are in place to mitigate associated risks.

Issues to consider during horizon scanning may include:

- a. Remote and agile working arrangements.
- b. Increased globalization.
- c. Outsourcing and other non-standard patterns of employment.
- d. Technological change.
- e. Demographic issues.

5.2 Fatal Risks and Opportunities

Each Organization shall maintain a documented HSW risk assessment process that:

- a. Identifies all foreseeable HSW hazards and risks that may arise during its activities.
- b. Provides for the necessary planning, research and innovation to eliminate or reduce fatal hazards.
- c. Determines HSW risks to stakeholders (including members of the public).

- d. Assesses HSW risks using an appropriate methodology.
- e. Identifies opportunities that may have a positive impact on HSW outcomes.
- f. Establishes operational controls and safe methods of working to eliminate or reduce HSW risks to an acceptable level.
- g. Ensures HSW risk assessments are documented and reviewed on a periodic basis, taking into consideration residual risks.
- h. Communicates the findings of HSW risk assessments to those who may be affected.

5.3 Health, Safety and Wellbeing in Design

Each Organization responsible for program or project management, or involved in the management of design work, shall maintain a documented process for:

- a. Designing in accordance with applicable codes and standards.
- b. Eliminating or reducing foreseeable HSW risks to those involved in the construction and/or use of the asset.
- c. Bringing to the attention of clients any foreseeable design risks.
- d. Co-operating with relevant parties (e.g. clients, contractors and end users), to improve the ways in which HSW risks are managed and controlled.

5.4 Health, Safety and Wellbeing Plan

Each Organization responsible for program or project management, or involved in the management of design work, shall maintain a specific Health, Safety and Wellbeing Plan detailing how it will manage associated HSW risks. Where this requirement is applicable, the Organization shall ensure the HSW Plan is:

- a. Developed to a level commensurate to the risks involved during phases of work.
- b. Submitted for approval by an appropriate person(s) prior to the commencement of the works.
- c. Subject to internal review on a periodic basis and in accordance with significant change by an appropriate person(s).

- d. Subject to external review on a periodic basis and in accordance with significant change by an appropriate person(s).

5.5 Health, Safety and Wellbeing File

Each Organization responsible for program or project management, or involved in the management of design work, shall provide information necessary for compiling or updating the Health, Safety and Wellbeing File or its equivalent.

Each Organization responsible for the construction phase of a project shall compile a Health, Safety and Wellbeing File (or equivalent) containing HSW information needed by end users to enable future work (including cleaning, maintenance, refurbishment and demolition) to take place in consideration of HSW issues. Where this requirement is applicable, the Organization shall:

- a. Ensure that all information provided in the HSW File is accurate.
- b. Submit the HSW File for approval by an appropriate person(s) on completion of works (or handover) in an agreed format.

5.6 Change Management

Each Organization shall maintain a documented process to manage HSW risks associated with change, including but not limited to:

- a. New or modified technology.
- b. New or revised procedures or working practices, design specifications or standards.
- c. Changes to legislation.
- d. Organizational changes.
- e. Rapid recruitment and on-boarding.

5.7 Health, Safety and Wellbeing Legal and Other Requirements

Each Organization shall maintain a documented process for identifying and evaluating compliance with HSW legal and other requirements applicable to their activities.

Each Organization shall maintain a register of HSW legal and other requirements, including:

- a. The Expectations for Health, Safety and Wellbeing Management.
- b. Health and safety contractual requirements.
- c. Industry best practices for HSW management.

5.8 Health, Safety and Wellbeing Objectives

Each Organization shall maintain documented HSW objectives that:

- a. Take into account the Zero Harm Vision and the Expectations for Health, Safety and Wellbeing Management.
- b. Relate to significant health, safety and wellbeing risks.
- c. Include measurable targets for tracking progress.
- d. Are developed by way of a consultative process involving relevant stakeholders.
- e. Are aligned with *Zero Harm Roadmap* objectives and reviewed at least annually.

5.9 Health, Safety and Wellbeing Programs

Each Organization shall maintain documented programs for achieving HSW objectives that:

- a. Have clearly defined objectives.
- b. Assign appropriate responsibilities.
- c. Establish timeframes for completion of related activities.
- d. Are aligned with *Zero Harm Roadmap* objectives and reviewed at least annually.

6. Support

6.1 Resources

Each Organization shall allocate sufficient resources for the management of HSW, including a budget to cover staffing and specific items/equipment.

Each Organization shall employ an adequate number of competent HSW professionals to provide advice and guidance on HSW legal and other requirements, as well as assist in the implementation of management arrangements.

6.2 Competence and Awareness

Each Organization shall maintain a documented process to identify and analyze the HSW competencies necessary to undertake specific roles.

Each Organization shall:

- a. Establish and document HSW training requirements for each role.
- b. Ensure that individuals are competent to discharge their duties and undertake their work activities.
- c. Provide necessary information, training, instruction and supervision for employees and other parties to meet their responsibilities and complete their work in line with requirements.
- d. Assess the required skills, technical experience and

knowledge of the processes to be applied.

- e. Ensure that the delivery of HSW training is planned, assessed and evaluated.
- f. Retain and ensure the availability of individual HSW training records.

6.3 Communication

Each Organization shall maintain a documented process for communicating HSW information.

Each Organization shall ensure that a range of mechanisms (e.g. newsletters, intranets, emails) are used to communicate HSW information (e.g. alerts and briefings).

Each Organization shall convene on at least an annual basis a Health, Safety and Wellbeing Forum chaired by a member of senior management (non-HSW personnel) to



facilitate sharing and dissemination of HSW information and best practice.

6.4 Involvement

Each Organization shall:

- a. Consult with its workforce on significant HSW issues.
- b. Involve its customers, sub-contractors, suppliers and partners in achieving the Zero Harm Vision.
- c. Seek voluntary involvement of stakeholders in HSW to encourage development of a positive HSW culture.

6.5 Documents

Each Organization shall maintain a process for document control, ensuring that:

- a. HSW documents are consistently reviewed, updated and approved prior to use.
- b. Hard copies of HSW documents remain legible and identifiable.
- c. Uncontrolled use of obsolete HSW documents is prevented.

6.6 Records

Each Organization shall maintain a documented process for the control of records to:

- a. Identify, store and retrieve HSW records, including arrangements for retention and disposal in accordance with local statutory requirements (WSP's Global Records Management Policy should be adhered to if local statutory requirements are not available).
- b. Ensure HSW records are legible, identifiable and traceable.

7. Operations

7.1 Operational Planning and Control

Each Organization shall maintain specific documented operational controls to manage HSW risks for its areas and activities in consideration of:

- a. Risk assessments.

- b. Consultation with employees and relevant stakeholders.
- c. Findings from active monitoring (e.g. inspections, audits).
- d. Results from reactive monitoring (e.g. reportable occurrences).

7.2 Supply Chain Selection and Management

Each Organization shall maintain a specific documented process that ensures HSW requirements are assessed during supply chain selection and management, including outsourced operations.

Each Organization shall:

- a. Determine HSW performance criteria required of the organizations that they engage.
- b. Establish relevant HSW competency standards.
- c. Assess areas of performance that will have an impact on HSW.
- d. Pre-qualify and select approved suppliers who meet the Expectations for Health, Safety and Wellbeing Management.
- e. Monitor and review performance.

7.3 Emergency Preparedness and Response

Each Organization shall maintain a documented process to manage emergency situations, in line with the requirements of WSP's internal *Standard 105 - Crisis Management*, which:

- a. Details mitigation measures for emergencies, including roles and responsibilities; emergency evacuation arrangements; escalation; and incident response procedures, including liaison with external authorities and other relevant parties.
- b. Incorporates testing on a periodic basis and in accordance with significant changes, including drills and full site evacuations.
- c. Ensures all relevant persons are trained, competent and familiar with the requirements of site-specific emergency arrangements.



7.4 Overseas Working and International Travel

Each Organization shall maintain documented operational controls in line with the requirements of WSP's internal *Standard 104 - International Travel*, to manage and mitigate the significant risks associated with working overseas, which consider:

- Identifying the need to travel.
- Risk assessments and destination risk factors.
- Pre-trip planning, mitigation and risk control.
- Personal risk factors of the traveller.
- Safe travel and employee competencies.
- Reporting of incidents.

8. Performance Evaluation

8.1 Health, Safety and Wellbeing Inspections

Each Organization shall maintain a documented process

to conduct periodic HSW inspections, which takes into consideration potentially fatal risk activities.

Each Organization shall ensure the frequency of inspections takes into consideration the nature of the work and HSW risks involved.

8.2 Senior Management Health, Safety and Wellbeing Tours and Interaction

Each Organization shall ensure that its senior management (non-HSW personnel) undertakes HSW tours on a periodic basis.

8.3 Health, Safety and Wellbeing Key Performance Indicators

Each Organization shall maintain a documented process for the measurement of HSW performance that addresses, but is not limited to:

- a. Personal injury.
- b. Occupational illness.
- c. Training.
- d. Inspections.
- e. Audits.
- f. Work related ill-health.

8.4 Reporting

Each Organization shall maintain a documented process for HSW reporting, in order to:

- a. Inform management and HSW teams of prescribed incidents, as defined in the internal *Standard 103 - Reporting Requirements*.
- b. Notify relevant authorities as applicable.

The following incidents must be reported in the integrated Safety Management System (iSMS) in accordance with *Standard 103 - Reporting Requirements*:

- a. All injuries to employees, including fatalities*, major permanently-disabling injuries*, lost time, medical treatment beyond first aid and first aid injuries.

* Fatalities and major permanently disabling injuries must be reported to Renae Walter, Global Director of Health, Safety & Security at renae.walter@wsp.com and zero.harm@wsp.com within 24 hours.



- b. Work-related illness incidents.
- c. All injuries to contractors, third parties and members of the public where WSP has a legal or contractual responsibility for health, safety and wellbeing.
- d. High-potential events (i.e. incidents and near misses with the potential for fatality).
- e. Hours worked.
- f. Legal and regulatory incidents.
- g. Management safety walks.
- h. Near-miss events.
- i. Observations (positive and negative).
- j. Rail events.
- k. Road traffic incidents.
- l. Utility strikes, e.g. underground power cables.

8.5 Investigation

Each Organization shall investigate HSW incidents in line with WSP's internal *Standard 102 - Incident Investigation*, in order to:

- a. Establish underlying and root causes of occurrences.
- b. Identify opportunities for improvement actions.
- c. Determine possibilities for continual improvement.
- d. Communicate the results of investigations.

8.6 Health, Safety and Wellbeing Audit

Each Organization shall maintain a documented process that:

- a. Ensures audits are undertaken and documented.
- b. Assesses implementation and safety management arrangements, including compliance with the Expectations for Health, Safety and Wellbeing Management.

- c. Evaluates any projects operating under an alternative HSW management system against the Expectations for Health, Safety and Wellbeing Management.

8.7 Independent Audit

Each Organization shall ensure that an external, independent audit of HSW management arrangements is conducted at least annually, to establish and confirm effectiveness. Each Organization shall:

- a. Communicate key findings to its senior management, including the regional COO/MD.
- b. Notify major non-compliance to the Global Head of Health, Safety & Security.
- c. Record audit findings and associated corrective actions and track to closure.
- d. Ensure Safety Management Systems are assessed by an external verifier to confirm they meet the requirements of ISO 45001.
- e. Ensure Safety Management Systems achieve certification to ISO45001 by 2023*.

8.8 Management Review

Each Organization shall ensure that senior management contributes to a documented review at least annually or if a significant change occurs, which considers:

- a. HSW performance in line with stated objectives.
- b. The adequacy of the Organization's HSW management arrangements versus those defined in the Expectations for Health, Safety and Wellbeing Management.

Each Organization shall ensure that management review meetings:

- a. Are attended by senior management representatives.

- b. Consider HSW occurrences and monitoring activities, as well as benchmarking with similar Organizations.
- c. Have formal minutes, with action items identified and tracked to closure.

9. Continuous Improvement

9.1 Action Plans

Each Organization shall maintain a documented process for managing the close-out of improvement actions that:

- a. Identifies improvement actions to ensure the adequacy and continual improvement of the Safety Management System.
- b. Ensures timely close out of improvement actions stemming from HSW inspections, audits and other sources.
- c. Evaluates improvement actions for effectiveness.

* Newly acquired businesses will be required to achieve certification to ISO45001 within two years of acquisition, or will operate under an existing WSP Safety Management System if this is not feasible. All businesses with fewer than 50 employees may opt not to become ISO45001 certified but must fully comply with WSP's Zero Harm Roadmap and the Expectations for Health, Safety and Wellbeing Management.

Zero Harm *Roadmap* 2021-2023

The Roadmap sets out the specific activities that each region must undertake, with support from Group resources. It aims to develop HSW excellence and a positive safety culture to reduce the likelihood that employees, sub-contractors or others will be subjected to harm.

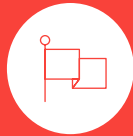
The philosophy underpinning the Roadmap is to involve all stakeholders in initiatives and ways of working which reduce risks, in addition to promoting the six Zero Harm Pillars to continuously improve our processes.

Each Organization shall develop its own annual action plan, including the Zero Harm Roadmap requirements. The plan must set out the specific actions to be taken to achieve the Roadmap requirements, and be agreed with the Leadership Team of that Organization.

Each Organization will be required to report progress on a quarterly basis to the Global Head of Health, Safety & Security, who will review progress with the Organization's leadership.

Annual progress reviews will be undertaken, which will be supported by the Global Head of Health, Safety & Security.

Zero Harm Pillars



LEADING

We ensure each leader commits to Zero Harm and inspires our people to make it their personal priority.



SIMPLIFYING

We make sure our health, safety and wellbeing systems and processes are simple yet effective.



RE-THINKING

We look at what we do with fresh eyes, challenge the status quo, and re-engineer how we do our work to eliminate risks.



INVOLVING

We engage everyone who works for us to Make Health, Safety and Wellbeing Personal – contributing to Zero Harm through everything that they do.



LEARNING

We seek out and share what works well, adapt it for our environment then make it what we do.



IMPROVING

We identify where we can improve, how to close the gaps and when we have achieved success.

2021–2023 Zero Harm Roadmap

The elements under the six Roadmap Pillars are mandatory requirements and represent the minimum expectations that each Organization shall achieve by the end of 2023.

	LEADING	SIMPLIFYING	RE-THINKING
Objectives	We ensure each leader commits to Zero Harm and inspires our people to make it their personal priority.	We make sure our health, safety and wellbeing systems and processes are simple yet effective.	We look at what we do with fresh eyes, challenge the status quo, and re-examine how we do our work to eliminate risks.
Each Region /Organization shall:	Develop and promote annual HSW targets linked to a performance review process.	Ensure HSW Systems are regularly reviewed to ensure that they are simple to navigate, effectively implemented and easily accessible by all employees.	Conduct an HSW risk review at least annually with the sole purpose of identifying and implementing methods to mitigate/remove key risks including potentially fatal risks.
	Ensure HSW is a demonstrable consideration in management decisions and meetings, on a par with commercial matters.	Ensure employees are set to work with clear and effective work instructions that support the removal/reduction of risks.	Acknowledge the benefits of good mental wellbeing to the business and develop a program to promote work/life balance that goes beyond local statutory requirements.
	Ensure members of senior management are visible to employees and undertake regular safety-focused engagements within a structured regime.	Ensure employees are empowered to change or stop site work if HSW arrangements are inadequate or not understood.	Ensure an effective process is in place to identify, monitor and control the risks associated with working overseas.
	Develop and implement an effective and structured program to promote, implement and manage initiatives for positive mental health and wellbeing for its employees.	Provide access for employees to professional support on mental health and stress issues, whether personal or work-related.	Ensure method statements/ project safety plans meet or exceed local statutory requirements to eliminate potentially fatal risks from our work practices.
	Ensure line managers demonstrate their accountability for HSW performance.	Ensure employees are given the opportunity to provide input to local HSW system modifications to improve system effectiveness.	Ensure all Hi-Potential severity incidents are subjected to Human Factor Analysis and Classification System Analysis to determine organizational influences or human factors.

INVOLVING

LEARNING

IMPROVING

We engage everyone who works for us to Make Safety Personal – contributing to Zero Harm through everything that they do.

We seek out and share what works well, adapt it for our environment then make it what we do.

We identify where we can improve, how to close the gap and when we have achieved success.

Seek employee, client and supply chain feedback on HSW performance via a structured process.

Ensure all employees are trained in the business requirements for HSW via a structured process, with records maintained.

Review and publish its HSW performance monthly and quarterly and report findings to the senior management team.

Share findings and lessons learned from incidents and accidents with all employees and if applicable, with our supply chain partners.

Ensure line managers are trained in the HSW requirements appropriate to their role, in support of ensuring the safety of those employees under their supervision.

Ensure that actions arising from adverse events, audit findings, Hi-Potential incidents and accidents are completed within agreed due dates.

Employee/project exceptional safe performance will be regularly identified and recognized by management through an established rewards process.

Provide guidance and training to line managers and supervisors on recognizing, managing and reducing work-related stress from their work and those under their supervision.

Review the content in iSMS on a regular basis to ensure it supports the business to identify the need for, and to make continuous improvements to, working practices and processes.

Identify HSW subject matter experts as a resource for all employees to engage with for advice and guidance.

Conduct business-wide HSW stand down or focused events to share HSW performance, lessons learned, or to communicate a significant theme or initiative.

Review progress of its mental health and wellbeing program annually as part of a structured and documented process.

Work to remove the stigma associated with mental illness across the Organization and communicate to all employees about its mental health and wellbeing program.

Provide training to their HSW team and operational management in incident and accident investigation.

The Global Head of Health, Safety & Security and regional senior management will conduct an annual review of progress against this Roadmap and the effective implementation of the Expectations for Health, Safety and Wellbeing Management.

As one of the world's leading professional services firms, WSP provides engineering and design services to clients in the Transportation & Infrastructure, Property & Buildings, Environment, Power & Energy, Resources and Industry sectors, as well as offering strategic advisory services. WSP's global experts include engineers, advisors, technicians, scientists, architects, planners, surveyors and environmental specialists, as well as other design, program and construction management professionals. Our talented people are well positioned to deliver successful and sustainable projects, wherever our clients need us.

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Self-isolation and quarantine update

Our understanding of COVID-19 continues to evolve as the pandemic evolves. This means we continually review and adapt our guidance as we learn. Developed with consideration for new national and international guidelines, this is our latest guidance on self-isolation should you test positive for COVID-19.

DAY 0	Self-isolate at home following the onset of symptoms and/or a positive test COVID-19 test result.	
DAY 1		
DAY 2		
DAY 3		
DAY 4		
DAY 5	On day 5 begin home testing with a rapid antigen test.	
DAY 6	On day 6, self isolation can end, and you can return to work, if able, on two negative tests have been confirmed, at least 24 hours apart, and you have no fever. For the following five days, when in the workplace, please wear a medical grade mask or higher, at all times. The mask you are required to wear is dependent on your role and location. Use a risk assessment to determine this.	
DAY 7		
DAY 8		
DAY 9		
DAY 10		

You can now return to the usual control measures used in the workplace. Note – If jurisdictional self-isolation requirements are more stringent, then these must be followed.



Self-isolation and quarantine update

If you identified as a close contact to someone who has tested positive for COVID-19, and you are in a location where rapid antigen tests/lateral flow tests are readily available, then the following applies.

DAY 0	Contact with individual	
DAY 1	You can attend the workplace, unless jurisdictional quarantine requirements including fully vaccinated status are more stringent, provided you wear at least a medical grade surgical or procedural mask or higher (FFP2/N95) at all times and monitor for symptoms.	
DAY 2	On Day 2, test at home with a rapid antigen/lateral flow test. If negative - continue to attend the workplace wearing a face mask at all times and monitor for symptoms If positive - start self-isolating at home and advise line manager of positive result.	
DAY 3	Monitor for symptoms and self-isolate if any develop	
DAY 4	Monitor for symptoms and self-isolate if any develop	
DAY 5	On day 5, home test again with a rapid antigen/lateral flow test If negative - continue to attend the workplace wearing a face mask at all times. If positive - start self-isolating at home and advise line manager of positive result	
DAY 6	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 7	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 8	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 9	If attending the workplace monitor for symptoms and self-isolate if develop	
DAY 10	If attending the workplace monitor for symptoms and self-isolate if develop	

You can now return to the usual control measures used in the workplace. NOTE - if more rigorous jurisdictional testing requirements are in place then these must be followed. If rapid antigen testing/lateral flow tests are not readily available then the current quarantine times of 10 days remains.



Self-isolation and quarantine update.

For close contacts the guidance has also changed for both those fully vaccinated and not.

Definition: Fully vaccinated means that you have been vaccinated with approved vaccines in accordance with the **immunization schedule of the jurisdiction that you live, are up to date with the immunization schedule and at least 14 days have passed since you've received the recommended doses of the vaccines. For some jurisdictions that WSP operates in, this now requires a booster to be considered up to date or fully vaccinated.**

A close contact means anyone who during the infectious period of the case, which is from 48 hours before the onset of symptoms or if asymptomatic, has...

	<p>Lived with or was within two meters of a person who has COVID-19 for 15 minutes or more of cumulative contact, i.e., multiple interactions for a total of 15 minutes or more, even if a mask was worn during that contact.</p>
	<p>Had direct contact with infectious bodily fluids of a person who has COVID-19 (e.g., shared items such as drinks, personal hygiene items, cigarettes, vapes, lipstick, eating utensils, etc.) or was coughed or sneezed on.</p>
	<p>Provided direct care for a person who has COVID-19, had physical contact with a person who has COVID-19, such as handshake, hugging, kissing, etc</p>
	<p>Contact within two meters of a person who has COVID-19 without wearing a mask.</p>