AECOM

Americas

Sediment Trap Sampling Project-Specific HASP Addendum

Location:	Portland Harbor Sediment Traps Sampling Area	**Date:**	~~March 21~~April ~~5~~12, 2018~~, 2018~~
Prepared By:	Linda Howard, Glen Mejia, Anthony Palmieri, Nicky Moody	**Approved By:**	Jennifer Pretare (AECOM), Fred Merrill (AECOM)

Summary of Sediment Trap Sampling

Four sediment traps will be installed upriver of the Site, which requires the use of commercial divers over four (1 to 3 day) events in April, June, September, and December 2018. Gravity is subcontracting with Global Diving to provide commercial divers for the sediment trap activities. The dive operations and sediment trap sampling will be conducted from Gravity's RV *Tieton* [32-foot].

Installation: The Global dive team, with support from Gravity, will install the sediment trap in two steps: 1) installation of the helical anchor, and 2) installation of the trap assembly. The helical anchor measures 28 inches in length and is spun/augured into the seabed manually by the diver. The helical anchor has a custom top mount that connects directly to the sediment trap assembly. Once the anchor is installed, the sediment trap assembly is lowered by the diver to the seabed and connected with four bolts to the helical anchor. The sediment trap assembly comprises four glass cylinders that are 6 inches in length and 30 inches in height with a HDPE plastic adapter plate to safely hold the cylinders. Prior to deployment of the cylinders, sodium azide at a concentration of 0.05 micromole (µmol) will be added to each tube to prevent biofouling. Cylinders will be capped until they are settled on the bottom, after which point caps will be removed.

Sampling: The Global dive team, with support from Gravity, will collect the sediment traps in June, September, and December 2018. The diver will cap each tube and remove the trap assembly from the anchor, which will remain in place. The assembly will be brought to the surface where the field team will process the samples. Tubes will first be decanted of water using a siphon hose. Then 1 quart of laboratory grade deionized (DI) water will be added, and sediments mixed into the water column, at which point the tubes will be removed from the assembly and the sediment/water mix will be poured into a glass carboy. The glass carboy will be transported to the processing facility for sample processing. After sampling is complete, the tubes will be decontaminated, re-installed, sodium azide prepared, and re-deployed.

Retrieval: The sediment traps will be processed identical to the quarterly sampling, as described above. For the final retrieval in December 2018, the dive team will reverse auger the helical mooring out of the seabed by spinning counter clockwise. The full assembly, including anchor, will be rinsed and stored.

Task Leads and Supervisors

Organization	Job Title/Role	Name	Cell Phone
AECOM	Task Lead Site Safety Officer Project Field Coordinator	Nicky Moody	(b) (6)
AECOM	Site Safety Officer Project Field Coordinator	Dave Hose	
Geosyntec	Project Field Coordinator	Keith Kroeger	
Geosyntec	Project Chemist	Julia Klens-Caprio	
AECOM	Project Chemist	Amy Dahl	
AECOM	Commercial Diving Safety Officer	Paul Patterson	

Supplemental List of Personnel, Short-Service Employees, Subcontractors and their Safety Officers

(*from Programmatic HASP Summary: the Project-Specific HASPs will list all short-service employees, including subcontractors that are scheduled to participate in Project activities*)

Organization	Job Title/Role	Name	Cell Phone	SSEs and Safety Officers
Gravity	Gravity Project Manager	Shawn Hinz	(b) (6)	Safety Officer
Gravity	Captain	Mike Duffield		
Gravity	Captain	Rene Trudeau		
Gravity	Captain	Peter Jenkins		
Gravity	Captain	John Schaefer		
Gravity	Deckhands/Scientist	Jeff Wilson		
Gravity	Deckhands/Scientist	Jeff Schut		
Gravity	Deckhands/Scientist	Chad Furulie		
Global Diving	Dive Supervisor	Erik Woltjen		Safety Officer
Global Diving	Diver/Tender	Kyle Pellett		
Global Diving	Diver/Tender	Jon Potts		
AECOM	Scientist	Mark Tauscher		
AECOM	Scientist	Michaela McCoog		

Organization	Job Title/Role	Name	Cell Phone	SSEs and Safety Officers
AECOM	Scientist	Jeremy Haney	(b) (6)	SSE (Mentor: Nicky Moody)
AECOM	Scientist	Bruce Cassem		
Geosyntec	Scientist	Alison Clements		

Supplemental List of Hazard Materials

(from Section 3.7 Hazard Communications: Hazardous materials that may be encountered as existing environmental or physical/health contaminants will be addressed in the Project-Specific HASPs that will be appended to this Programmatic HASP, The Supervisor or Safety Officer will maintain copies of all SDS on-site and in Project-Specific HASPs appended to this HASP. SDS may not be available for locally obtained products, in which case an alternate form of product hazard documentation will be acceptable)

Hazardous Materials
Sodium azide
Nitric acid
Methanol
Alconox

Housekeeping and Personal Hygiene

(from Section 3.9 Housekeeping and Personal Hygiene: Designated Safety Officer for individual study (to be designated in Project-Specific HASPs)

Designated Safety Officer	Organization	Cell Phone
Nicky Moody	AECOM	(b) (6)
Dave Hose	AECOM	

Supplemental List of Competent Persons
(*from Section 5.3.1 Competent Persons: To be identified in the Project-Specific HASP Addendum*)

Operations	Organization	Job Title/Role	Name	Cell Phone
Safe Vessel Operations	Gravity	Captain	Mike Duffield	(b) (6)
Safe Vessel Operations	Gravity	Captain	Rene Trudeau	
Safe Vessel Operations	Gravity	Captain	Peter Jenkins	
Safe Vessel Operations	Gravity	Captain	John Schaefer	
Safe Diving Operations	Global Diving	Dive Supervisor	Erik Woltjen	
Safe Diving Operations	Global Diving	Diver/Tender	Kyle Pellett	
Safe Diving Operations	Global Diving	Diver/Tender	Jon Potts	

Supplemental List of CPR/First Aid Trained Personnel
(*from Section 12.4 CPR/First Aid Trained Personnel: CPR/First Aid Trained Personnel that will be on-site will be identified in the Project-Specific HASPs for each study*)

Organization	Job Title/Role	Name	Cell Phone	Training
AECOM	Site Safety Officer Project Field Coordinator	Nicky Moody	(b) (6)	CPR, First Aid, and AED
AECOM	Site Safety Officer Project Field Coordinator	Dave Hose		CPR, First Aid, and AED
AECOM	Scientist	Mark Tauscher		CPR, First Aid, and AED
AECOM	Scientist	Michaela McCoog		CPR, First Aid, and AED
AECOM	Scientist	Bruce Cassem		CPR, First Aid, and AED
Geosyntec	Scientist	Alison Clements		CPR, First Aid, and AED

Organization	Job Title/Role	Name	Cell Phone	Training

HASP Addendum Attachments:

Attachment 1. AECOM Pre-Job Hazard Assessment
Attachment 2. Gravity Health and Safety and Environmental Plan
Attachment 3. Sodium Azide Hazard Assessment and Operating Procedure
Attachment 4. Global Diving Health and Safety Plan and Job Safety Analysis Form
Attachment 5. Vessel Diagrams
Attachment 6. Safety Data Sheets

Pre-Job Hazard Assessment

S3AM-209-FM4

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
List principal activities involved in the scope of work	Identify each safety or health hazard		Identify engineering and administrative controls and any specific Personal Protective Equipment (PPE) that is required	
ACTIVITY 1 – Mobilize personnel and equipment to study area.	Traffic/driving hazards	10	• All AECOM drivers must have current driver awareness training (available on AECOM University) • All drivers must have current, valid driver's license on their person. • Complete pre-use visual inspection. Walk around the vehicle to inspect for potential hazards or mechanical issues before driving. • Practice defensive driving and drive in a courteous manner. • Seat belts must be worn by the driver and all passengers. • Obey all speed limits. • Drivers must not use cellular telephones or other communication devices such as two-way radios unless safely parked. • Window surfaces must be cleared of any materials such as ice, frost, mud, or water that can impair visibility. • Travel with headlights on at all times. • Travel during daylight hours when possible. • Equip vehicles with first aid kit, fire extinguisher, flares or triangle, spare tire and jack, cell phone. • The project goal is to limit activities to no more than 10 hours/day; contact project manager if work days extend beyond the 10 hours.	5
	Fatigue	15	• Extended workdays can be granted; however, workdays shall not exceed 14 hours and extended work weeks, 60 hours/week.	3

Formatted: List Paragraph,Attachment, Indent: Left: 0", Hanging: 0.14", Space Before: 2.5 pt, After: 2.5 pt, Bulleted + Level: 1 + Aligned at: 0" + Indent at: 0.25"

Formatted: Default Paragraph Font

Formatted: List Paragraph,Attachment, Indent: Left: 0", Hanging: 0.14", Space Before: 2.5 pt, After: 2.5 pt, Bulleted + Level: 1 + Aligned at: 0" + Indent at: 0.25"

Formatted: Font: 8 pt

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			• For emergency work, a single shift should be limited to 16 hours, and an employee should be off work for at least 12 hours before the next shift starts. If shift work is required, employees should be given sufficient time to get a continuous 7- to 8-hour period of sleep in each 24 hours, and at least 50 hours every 7 days. • Safety Officer and team members will watch and intervene when individuals appear to be fatigued; contact the project manager if a team member appears fatigued. • Night work will not occur on this project. • A journey management plan will be established for team members traveling >250 miles.	
	Parking hazards	10	Park in a clear location, and back in to parking location to avoid backing out upon departure.	3
	Lifting hazards/muscle strain	10	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. • No personnel should lift more than ~~40~~ 50 pounds without assistance or mechanical aid. Request assistance below 50 pounds as necessary. Know what items weigh before lifting or test them carefully.	3
ACTIVITY 2 – Load personnel and equipment onto vessel.	Lack of knowledge of tasks being performed	10	• Discuss tasks to be performed by personnel, potential hazards, and control measures.	1
	Water hazards	10	• Follow all appropriate water safety rules and regulations. • Wear Type III or V Personal Flotation Device (PFD) or life jacket.	4
	Severe weather	9	• Assess severe weather hazards using National Oceanic and Atmospheric Administration (NOAA) resources before on-water work: • Stop work if lightning is <6 miles away (<30 seconds between lightning flash and hearing thunder). If storm is approaching, do not wait for it to arrive before implementing stop work action. • Stop Work during wind gusts sustained at 25 mph, and at all times where debris is visible flying in air. • Stop work during hail storms; seek shelter inside building or wheelhouse/vessel cabin.	1

Formatted: No bullets or numbering

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
	Vessel boarding hazards	10	• Receive vessel operator's training prior to boarding vessel. • Follow vessel operator's instructions for boarding vessel. • Wear a Type III or V PFD or life jacket. Maintain three points of contact when boarding vessel. • Follow vessel operator's instructions for loading equipment onto vessel.	4
	Pinch points/hand injuries	8	Be aware of hands, feet, arms, and position of all personnel during tool use and equipment handling. Never position a hand where it can be pinched. Examples of pinch point hazards include: • Between lines under tension and hard surfaces • Between vessel and dock • Between equipment and hard surfaces on vessel	4
	Slips, trips, and falls	8	• Wear appropriate safety-toed boots with non-slip soles. • Ensure pathways are clear and free of obstruction prior to initiating work, ensure all lines are secure prior to initiating work, and adhere to proper housekeeping practices. • Maintain three points of contact when boarding vessel.	4
ACTIVITY 3 – Work aboard a research vessel on water.	Slips, trips, and falls	8	• Wear appropriate safety-toed boots with non-slip soles. • Ensure pathways are clear and free of obstruction prior to initiating work, ensure all lines are secure prior to initiating work, and adhere to proper housekeeping practices. • Maintain three points of contact at all times.	4
	Fatigue	12	• Extended workdays can be granted; however, workdays shall not exceed 14 hours and extended work weeks, 60 hours/week. • For emergency work, a single shift should be limited to 16 hours, and an employee should be off work for at least 12 hours before the next shift starts. If shift work is required, employees should be given sufficient time to get a continuous 7- to 8-hour period of sleep in each 24 hours, and at least 50 hours every 7 days. • Safety Officer and team members will watch and intervene when individuals appear to be fatigued; contact the project manager if a team member appears fatigued. • Night work will not occur on this project.	2

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
	Lines and equipment under tension creating line of fire or pinch point	9	• Keep body away from lines under tension. • Keep as much distance as possible between you and any source of potential energy release.	2
	Moving parts/pinch points/hand injuries	9	• Be aware of hands, feet, arms, and position of all personnel during tool use and equipment handling. • Never position a hand where it can be pinched if a hatch closes, a load releases, or a tool slips.	2
	Water hazards	10	• Vessel operator will provide a SH&E Orientation on boating operations prior to departing dock, which will cover the following: man overboard, power loss/disabled boat, fire onboard, medical emergency. • Vessel operator will perform a vessel inspection prior to departure. • Vessel operator will submit a float plan to the Project Manager (Jenny Pretare) and follow the float plan and communication plan identified in the float plan. • Passengers will obey Vessel Operator's orders at all times. • Adhere to all federal, state, and local boating and licensing laws. • Work must be performed in accordance with the "Buddy System." • PPE: US Coast Guard (USCG)-approved Type III or V PFD or life jacket, sized and adjusted to the wearer, shall be worn by all workers when aboard the research vessel. Section • Confirm vessel has secondary means of propulsion such as oars or paddles or backup motor. • Workers are to remain seated when vessel is in motion. Avoid standing in vessel whenever possible.	2
	Man overboard (MOB)/incapacitated person	10	Vessel operator will provide a SH&E Orientation on boating operations prior to departing dock, which will cover the following: man overboard, power loss/disabled boat, fire onboard, medical emergency. Vessel operator will review USCG MOB procedures: • No low visibility/night operations will occur. • When deploying equipment, do not lean over the boat. • When boat is underway, all people must remain in the cabin, seated or standing, while maintaining four points of contact; no work on deck may occur.	3

Formatted: List Paragraph,Attachment, Indent: Left: 0", Hanging: 0.12", Space Before: 2.5 pt, After: 2.5 pt, Bulleted + Level: 1 + Aligned at: 0" + Indent at: 0.25"

Formatted: Arial 8

Formatted: List Paragraph,Attachment, Indent: Left: 0", Hanging: 0.12", Space Before: 2.5 pt, After: 2.5 pt, Bulleted + Level: 1 + Aligned at: 0" + Indent at: 0.25"

Formatted: Arial 8

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			• All staff aboard vessel will be trained in MOB recovery training. • Perform safety briefing prior to departure and discuss MOB recovery procedure. • Wear Type III or V PFD AT ALL TIMES on board a boat or on dock. • Person who observes person fall overboard must keep their eyes on him/her. • Immediately cease work operations and commence a rescue procedure. • Bring the vessel to the position of the person in the water (as opposed to having the person swim to the boat). • Immediately mark MOB location on GPS by "one-button *MOB* press." • Throw a MOB pole marker/raise a MOB flag into the water to denote the location of the person overboard and to alert other boat traffic. • Throw PFDs or other floatable items into the water to assist the person overboard. • Send a distress call on VHF Channel 16 if person is un-responsive or severely injured.	
	Vessel in danger of sinking	10	Vessel operator will be responsible for emergency actions and notifications; however, if the vessel crew is incapacitated, the following procedure shall be followed: • Send a distress call: PAN call over VHF Channel 16 if boat is not in imminent danger. • Send a Mayday distress call and repeat until message is received over VHF Channel 16 if boat is in imminent danger. o Provide name of vessel o Provide description of vessel o Provide location of vessel (e.g., latitude/longitude, river mile, landmark, etc. o Provide count of onboard passengers. o Provide nature of distress. o Describe kind of assistance needed. • Turn on the bilge pump to begin pumping water to outside of boat. • Assemble the emergency pump and begin pumping water.	4
	Vessel fire	10	• Remove all flammable material from ignition sources. • Communicate with Safety Officer and vessel	3

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			operator if there will be any new flammable material brought onboard; store only in approved containers. Review SDS for firefighting procedures. • Review fire extinguisher location and quantity and confirm fire extinguishers are charged prior to leaving dock • Remember P.A.S.S: o Pull the Pin o Aim the fire extinguisher at the base of the fire o Squeeze the handle o Sweep the base of fire side to side • Send a Mayday distress call and repeat until message is received over VHF Channel 16 if boat is in imminent danger. o Provide name of vessel o Provide description of vessel o Provide location of vessel (e.g., latitude/longitude, river mile, landmark, etc. o Provide count of onboard passengers. o Provide nature of distress. o Describe kind of assistance needed. • Inflate life raft/abandon vessel if necessary (e.g., risk of explosion).	
	Medical emergency	8	Vessel operator will review location of first aid kit and AED prior to departing the dock. The vessel operator or his/her designee will review how the AED operates with the crew prior to departing dock. • Review first aid kit location and contents prior to departure. • If a severe injury occurs, initiate a MAYDAY call. • Travel to Swan Island or location identified by responding EMS. • After emergency has been addressed, contact project manager and AECOM reporting line (1-800-348-5046).	2
	Heat stress/cold stress	9	• Begin heat stress/cold stress monitoring as applicable and continue throughout duration of task. • Implement heat stress/cold stress prevention procedures, as applicable. • Heat stress: Drink 8 oz water/hour and use appropriate work/rest schedule as specified in Heat Stress AECOM SH&E Procedure. • Cold Weather PPE (<50 degrees F): o Layers of non-cotton clothing; examples include down wool or other synthetic materials to	5

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			provide insulation when wet o Outer layer to break the wind o Hat or hardhat liner o Insulated footwear/extra socks if boots allow o Gloves that allow for insulation and dexterity o Hand warmers o Emergency set of dry clothing stored in waterproof bag	
	Severe weather hazards	9	Assess severe weather hazards using NOAA resources before on-water work: • Stop work if lightning is <6 miles away (<30 seconds between lightning flash and hearing thunder). If storm is approaching, do not wait for it to arrive before implementing stop work action. • Stop Work during wind gusts sustained at 25 mph, and at all times where debris is visible flying in air. • Stop work during hail storms; seek shelter inside building or wheelhouse/vessel cabin.	1
	Other commercial/recreational vessel traffic hazards	10	Adhere to all federal, state, and local boating and licensing laws.	3
ACTIVITY 4 – Deploy and retrieve sediment traps. Sediments traps consist of four glass cylinders placed in protective PVC sleeves, which commercial divers will mount vertically to rebar or pipe anchored to the river bottom. At retrieval, the divers will return to the traps, cap the glass cylinders, and transfer the cylinders to the vessel for processing. Once the processing is complete, the divers will return the glass cylinders to the PVC sleeves that remain fixed to the river bed. Sediment trap deployment and retrieval will be conducted from Gravity research vessels.	Scientific diving hazards (refer to Gravity and Global Diving Documentation for list of hazards)	10	Gravity and Global Diving will prepare the Dive Safety Plan. Global Diving will maintain a dive safety officer on-site. The dive plan will provide the following information: • List of Personnel • List of training, qualifications, certifications • ADCI certifications • Medical screening • First Aid/CPR+AED • Oxygen provider • First aid kit inventory • List of equipment to be used on job • Proof of annual maintenance • Maintenance records on all equipment • Hats – make/model • Umbilicals (pull test date) • Compressors (air certification) • ~~Wet suits~~ • Dry suits • Air samples (certification) • Job description:	3

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			○ Estimated depth ○ Estimated currents ○ Estimate visibility ○ Estimated temperatures ○ Drawings, diagrams, photos of study area ○ Task Hazard Analysis/Job Hazard Analysis ○ Project-Specific Safe Work Plan/Dive Plan and Emergency Action Plan ○ Dive manual ○ Dive tables ○ Float plan ○ Acknowledgement of plans by personnel	
ACTIVITY 5 – Application of sodium azide to each glass cylinder on the vessel deck	WARN NG: Chemical is highly toxic. Chemical hazards and potential for exposure (fatal if swallowed, may cause damage to organs through prolonged or repeated exposure) Inhalation exposure may occur when working with sodium azide. Survivors of serious sodium azide poisoning may have heart and brain damage.	10	• Follow Attachment 3 Standard Operating Procedure (SOP) for ~~S~~sodium ~~A~~azide. • HAZCOM Training on sodium azide; Gravity Safety Officer and sodium azide competent person will review SDS and Attachment 3 with field crew. • Only those personnel involved in the task and that have been trained in HAZCOM usage/application of sodium azide will be in the exclusion zone when sodium azide is being applied. • Person applying sodium azide and bystanders shall always remain upwind of the application area; • Sodium ~~A~~azide will be applied in a pre-diluted form to reduce dermal ingestion and inhalation exposure. • All ~~S~~sodium ~~A~~azide dilutions will occur under a laboratory hood in a laboratory with appropriate ventilation. • When applying diluted sodium azide in the field~~-~~, ~~A~~appropriate field PPE includes: • Long Nitrile gloves to protect forearms when • Chemical Goggles ~~•~~ • Additional hazard controls include: ○ Keep away from open flames, hot surfaces, and sources of ignition. ○ Do not get in eyes, on skin, or on clothing. ○ Wash face, hands and any exposed skin thoroughly after handling. ○ Keep in a dry, cool and well-ventilated place. ○ Keep container tightly closed.	3

Formatted: Table bullet, Space Before: 0 pt, After: 0 pt, Add space between paragraphs of the same style, No bullets or numbering, Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto

Formatted: Table bullet, Space Before: 0 pt, After: 0 pt, Add space between paragraphs of the same style, No bullets or numbering, Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			IF EXPOSED • According to the CDC and SDS, if you are sure someone incidentally ingested sodium azide, **do not attempt CPR using mouth to mouth. USE POCKET MASK WITH ONE-WAY VALVE.** Performing CPR on someone who has ingested sodium azide could expose you to the chemical. • Simultaneously call 911 and have team member contact Poison Control Number at (800) 222-1222. • Mobilize immediately to dock.	
ACTIVITY 6 – Decontaminate equipment.	Lifting hazards/muscle strain	10	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. • No personnel should lift more than ~~40~~ 50 pounds without assistance or mechanical aid. Know what items weigh before lifting or test them carefully.	3
	Potential contaminant exposure	9	• The decontamination procedure described in the field sampling plan and summarized below will be followed: o Rinse equipment with river water. o Any water or sediment will be washed into the surface waters near the vicinity of the collection site before proceeding to the next station. o Liquinox (or alternate phosphate-free detergent-bearing liquid wastes from decontamination) will be used to decontaminate equipment that contacts sediment and will be washed overboard. o Rinse with distilled water. • Remove and dispose of nitrile gloves following decontamination procedure. • If non-aqueous phase liquids (NAPLs) ~~is~~are encountered the following procedure will be followed o Rinse equipment with river water. Any water or sediment contaminated with significant NAPL (more than sheen) will be collected and containerized. o Liquinox (or alternate phosphate-free detergent-bearing liquid wastes from decontamination) will be used to decontaminate equipment and drysuits.	3

Formatted: Indent: Left: 0.25"

Formatted: Table bullet, Space Before: 0 pt, After: 0 pt, Add space between paragraphs of the same style, No bullets or numbering, Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto

Formatted: Indent: Left: 0.25"

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			○ Drysuits, boots, and other PPE ~~which~~that cannot be thoroughly decontaminated with Liquinox (or alternate equivalent solution) may be discarded as investig~~ative~~ation-derived waste. ○ Rinse equipment with 0.1 N ~~N~~itric ~~A~~acid ~~R~~inse (for equipment only). ○ Rinse equipment and PPE with distilled water. ○ Remove and dispose of nitrile gloves following decontamination procedure. ○ Investig~~ative~~ation-derived waste will be managed in accordance with the SOP outlined in Appendix B of the Surface Water and Sediment Trap Field Sampling Plan. ○ Remove and dispose of nitrile gloves following decontamination procedure. ~~○~~ • ~~PPE:~~ PPE: safety glasses, hard hats if overhead hazard exists, nitrile gloves, abrasion-resistant gloves when handling heavy items and rubber safety toed boots. Boot covers can be worn over leather safety-toed boots. If a splash hazard exists, use disposable Tyvek or other impermeable clothing which can be washed and rinsed. Wear Type III or V PFD. ~~Nitrile gloves and chemical goggles. If splash hazard exists, disposable Tyvek or other impermeable clothing (e.g., rubber raingear) can be used, washed, and rinsed during the decontamination process.~~ • Additional information ~~is~~ for decontamination is found in the Task-Specific Field Sampling Plan.	
	Safety and spill equipment	9	• A spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (i.e., speedy dri, absorbent pads, etc.), will be available on the project study area and positioned for quick and easy access.	2
ACTIVITY 7 – Load/transport samples to on-shore facility for processing and shipping to lab.	Lifting hazards/muscle strain	9	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. • No personnel should lift more than ~~40~~ 50 pounds	3

Formatted: Indent: Left: 0.5", No bullets or numbering

Formatted: Table bullet, Indent: Left: 0.25", Space Before: 0 pt, After: 0 pt, Add space between paragraphs of the same style, No bullets or numbering, Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			without assistance or mechanical aid. Request assistance below 50 pounds as necessary. Know what items weigh before lifting or test them carefully.	
	Driving hazards	10	• All drivers must have current, valid driver's license on their person. • Complete pre-use visual inspection. Walk around the vehicle to inspect for potential hazards or mechanical issues before driving. • Practice defensive driving and drive in a courteous manner. • Seat belts must be worn by the driver and all passengers. • Drivers must not use cellular telephones or other communication devices such as two-way radios unless safely parked. • Window surfaces must be cleared of any materials such as ice, frost, mud, or water that can impair visibility. • Equip vehicles with first aid kit, fire extinguisher, flares or triangle, spare tire and jack, and cell phone. • Ensure all loads are properly secured.	5
ACTIVITY 8 – Sample processing at warehouse	Lifting hazards/muscle strain	6	• Practice proper lifting and manual handing of materials and equipment, lift with the knees, avoid twisting, and seek assistance or employ additional handling equipment as needed. • Wear abrasion gloves when moving equipment. • No personnel should lift more than ~~40~~ 50 pounds without assistance or mechanical aid. Know what items weigh before lifting or test them carefully.	3
	Potential contaminant exposure	9	• Maintain awareness of potential contaminant exposure and implement avoidance procedures. • Use appropriate PPE, including nitrile gloves and safety glasses with side shields. Use proper tools for decontamination. • Use appropriate PPE: ~~(~~safety glasses with side shields or chemical goggles if handling preservatives with nitrile gloves. If handling heavy items, abrasion resistant gloves and rubber safety -toed boots. Boot covers can be worn over leather safety-toed boots. If a splash hazard exists, use disposable Tyvek or other impermeable clothing which can be decontaminated)~~Wear appropriate PPE, including nitrile gloves and safety glasses and/or chemical~~	3

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			~~gogglos.~~ • Use proper tools for decontamination. • Follow other ~~Standard Operating Procedures (~~SOPs~~)~~ for decontamination as specified in the Task-Specific Field Sampling Plan.	
	Risk of inhalation when handling acid and solvents used for cleaning high volume sampling supplies	9	• Project-specific SOPs for high-volume sampling are provided in Appendix B of the Field Sampling Plan. • **Do not allow solvents and acids to sit in ambient air longer than needed for decontamination** • Perform decontamination in area with high ventilation away from ignition sources. • Wear appropriate PPE, including nitrile gloves and safety glasses and/or chemical goggles. • Monitor breathing space using PID. See Programmatic HASP for VOC action levels. • Refer to chemical SDS for chemical specific PPE. • Ensure adequate ventilation: o **Acetone PEL** 1,000 ppm, **ACGIH TWA** 250 ppm o **Methanol PEL** 200 ppm **ACGIH** 200 ppm o **Hexane PEL** 500 ppm **ACGIH** 50 ppm • Confirm emergency eyewash locations are located in proximity to solvent handling area. • Per SDSs, confirm safety shower is present and located near acid and solvent area.	2
ACTIVITY 9 – Demobilize at end of work shift.	Traffic/driving hazards	10	• All AECOM drivers must have current driver awareness training (available on AECOM university) • All drivers must have current, valid driver's license on their person. • Complete pre-use visual inspection. Walk around the vehicle to inspect for potential hazards or mechanical issues before driving. • Practice defensive driving and drive in a courteous manner. • Seat belts must be worn by the driver and all passengers. • Obey all speed limits. • Drivers must not use cellular telephones or other communication devices such as two-way radios unless safely parked. • Window surfaces must be cleared of any materials such as ice, frost, mud, or water that can impair visibility.	5

Attachment 1. AECOM Pre-Job Hazard Assessment

Principal Activities	Potential Safety/Health Hazards	Initial Risk Rating	Control Measures	Final Risk Rating
			• Travel with headlights on at all times. • Travel during daylight hours when possible. • Equip vehicles with: first aid kit, fire extinguisher, flares or triangle, spare tire and jack, cell phone. • The project goal is to limit activities to no more than 10 hours/day; contact project manager if work days extend beyond the 10 hours.	
	Fatigue	15	• Extended workdays can be granted; however, workdays shall not exceed 14 hours and extended work weeks, 60 hours/week. • For emergency work, a single shift should be limited to 16 hours, and an employee should be off work for at least 12 hours before the next shift starts. If shift work is required, employees should be given sufficient time to get a continuous 7- to 8-hour period of sleep in each 24 hours, and at least 50 hours every 7 days. • Safety Officer and team members will watch and intervene when individuals appear to be fatigued; contact the project manager if a team member appears fatigued. • Night work will not occur on this project. • A journey management plan will be established for team members traveling >250 miles.	3

SPECIAL REQUIREMENTS

Step #	Equipment to be Used	Inspection Requirements	Training Requirements
	List equipment to be used in work activity	List inspection/permit requirements for work activity	List training requirements including hazard communication
1.	Research vessel	Perform boat inspection prior to use. Complete and submit float plan prior to use.	USCG-licensed vessel operator or equivalent. MOB recovery with limited assistance. First Aid/CPR Training. Approved boating safety course. HAZWOPER 40–hour initial training with current 8–hour refresher.
2.	Sediment traps	Daily inspection before use.	Employees operating equipment shall be experienced or trained in the specific use of the equipment for the purpose of the sampling effort. HAZWOPER 40–hour initial training with current 8–hour refresher.
3.	Diving equipment	Proof of annual maintenance and maintenance records on all equipment Umbilicals (pull test date) Compressors (air certification) Air samples (certification)	ADCI Certification Medical Screening HAZWOPER 40–hour initial training with current 8–hour refresher.
4.	Emergency equipment provided by vessel operator (Gravity): • First aid kit/AED • GPS • Satellite phone (if cell phone service does not cover entire survey area) • VHF radios will remain on Channel 16 (for hailing/distress calls) at all times to listen for boat traffic, alerts, etc. unless actively keying/ communicating on another channel with another party • Rescue rope in throw bag (commercially available) • Air horns and/or whistles • Waterproof flashlight • *Secondary "kicker" motor and *alternate means of propulsion (oars or paddles) • *Bailer (if bilge pump is not provided, bucket, or similar device should be on board) • *Duct tape • *Length of rope for securing boat on shore or alongside larger vessel • *Functional bilge pump/emergency pump • *Anchor with 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 • *Type 4 throwable ring or cushion • *Type BC fire extinguisher (10 pound) if extra fuel is carried in portable containers.	Inspect all equipment for battery life and integrity during the pre-trip boat inspection.	Personnel should be familiar with all emergency equipment.

	* Required minimum equipment to be provided by vessel provider (chartered boat); project Field Coordinator to ensure remaining equipment is carried on board.		
5.	Emergency eyewash and shower station	Check at beginning of field event that it is present and has not been used.	SH&E Orientation of how to use equipment
6.	Sodium azide	Sodium azide is contained appropriately.	HAZCOM Training on sodium azide

Attachment 1. AECOM Pre-Job Hazard Assessment

INSTRUCTIONS AND RISK MATRIX (PLACEHOLDER)