

NOVEMBER 2020

DRAFT FINAL ACCIDENT PREVENTION PLAN PFAS PHASE I REMEDIAL INVESTIGATION

Fairchild Air Force Base

Spokane County, Washington



U.S. Army Corps of Engineers
Seattle District



U.S. Air Force
Civil Engineer Center



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Accident Prevention Plan

Fairchild Air Force Base

Spokane County, Washington

Prepared for

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Seattle, Washington 98134-2385

and

Fairchild Air Force Base – Air Force Civil Engineer Center
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Prepared by

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November 2020
Version: DRAFT FINAL
EA Project No. 63296.05

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LIST OF ACRONYMS AND ABBREVIATIONS

ABIH	American Board of Industrial Hygiene
AFFF	Aqueous film forming foam
AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COVID-19	Novel Coronavirus
CPR	Cardiopulmonary resuscitation
CSP	Certified Safety Professional
dba	Decibel(s)
DO	Delivery order
EA	EA Engineering, Science and, Technology, Inc., PBC
EM	Engineer Manual
EPA	United States Environmental Protection Agency
FAFB	Fairchild Air Force Base
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDW	Investigation-derived waste
LHG	Licensed Hydrogeologist
NPL	National Priorities List
O&M	Operation and maintenance
OSHA	Occupational Safety and Health Administration
PE	Professional Engineer
PFAS	per- and polyfluoroalkyl substances
PG	Professional Geologist
PhD	Doctor of Philosophy
PM	Project Manager
PPE	Personal protective equipment
PWS	Performance Work Statement
QC	Quality control
RAC	Risk Assessment Code

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

RI	Remedial investigation
RPM	Restoration program manager
SDS	Safety data sheet
SI	Site investigation
SOW	Scope of work
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
TBD	To be determined
TM	Task manager
USACE	U.S. Army Corps of Engineers

1. INTRODUCTION

This Accident Prevention Plan (APP) has been prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) to support the per- and polyfluoroalkyl substances (PFAS) Phase I Remedial Investigation (RI) at Fairchild Air Force Base (FAFB) located in Spokane County, Washington (Figure 1).

Work conducted under this contract will be performed in accordance with applicable federal, state, and local safety and occupational health laws and regulations including: Occupational Safety and Health Administration (OSHA) standards (including 29 Code of Federal Regulations [CFR] 1910 and 1926) and the U.S. Army Corps of Engineers (USACE) Safety and Health Requirements Manual (Engineer Manual [EM] 385-1-1, 30 November 2014). The contents of this APP are subject to review and revision as new or additional information becomes available.

1.1 REVISIONS

Changes in the Performance Work Statement (PWS), field changes, or unanticipated site conditions may require APP/ Site Safety and Health Plan (SSHP) modification and approval in order to retain field safety. The PWS is located in Appendix A of the FAFB Project Management Plan. Changes will be made by the Plan Preparer with input from other qualified personnel familiar with the types of work involved and current site safety issues. The revisions and/or APP addenda will also be submitted to USACE–Seattle District and FAFB for review and acceptance.

1.2 SIGNATURE SHEET

Plan Approvals:

This APP was prepared by a qualified, competent person:

Name:	Dave Cookston	Date
Title:	Competent Person	
Company:	EA	

An American Board of Industrial Hygiene (ABIH)-Certified Industrial Hygienist (CIH) has supervised, reviewed, and approved this APP:

Name:	Peter Garger, CIH (ABIH No. 3118), Certified Safety Professional ([CSP] No. 20560)	Date
Title:	Corporate Health and Safety Officer	
Company:	EA	

Certification/Concurrence:

Project and Program Management has concurred with the elements of this APP. Site worker concurrence will be documented through signature on an APP/SSHP review form.

Name:	Timothy McCormack, LHG	Date
Title:	Project Manager	
Company:	EA	

Name:	James Costello, Professional Geologist (P.G.)	Date
Title:	USACE Program Manager	
Company:	EA	

Figure 1. Site Location

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2. PROJECT BACKGROUND INFORMATION

This section presents a brief description of the project site, project background, and the scope of work (SOW).

Contractor: EA Engineering, Science, and Technology, Inc., PBC
2200 6th Avenue, Suite 707
Seattle, Washington 98121

Contract Number: W912DQ-17-D-3015, Task Order W912DW-20-F-2055

Project Name and Location: PFAS Phase I RI at FAFB

2.1 SITE DESCRIPTION

FAFB is located in northwestern Washington, approximately 12 miles west of the city of Spokane, in Spokane County, and encompasses 4,300 acres. The installation is comprised of one major runway supported by numerous taxiways and support facilities, a medical clinic, housing units, and an elementary school. The City of Airway Heights lies northeast of FAFB. The Airway Heights water systems serves 1,572 customers with a service population of approximately 8,425. A Site Location Map is provided in Figure 1.

2.2 PROJECT BACKGROUND

During the SI Phase at FAFB, several known or suspected aqueous film forming foam (AFFF) release areas were investigated. The Phase I RI will include further investigation of AFFF release locations that exceeded PFAS screening levels in any media (e.g. groundwater, surface water, soil, and sediment), to accomplish RI objectives. The SI investigated a total of five known or potential PFAS release sites including fire training area FT-01 (FT004), an KC-135 aircraft crash location from March of 1987 (SS008), a B-52 crash location from 1994 (RS002), the Fire Station Building (RS001), and the calibration area. All five of these SI sites will be investigated further in the Phase I RI as potential contributors of PFAS impacts to the regional groundwater aquifer.

2.3 SCOPE OF WORK

Brief descriptions of each phase of work associated with the Phase I RI are presented in the following sections. Detailed descriptions of the work are presented in the Uniform Federal Policy-Quality Assurance Project Plan developed for this project. Any significant changes or additional tasks that may be identified in the future will be submitted as addenda to this APP for review and approval by USACE–Seattle District and FAFB.

The site-specific Activity Hazard Analyses (AHAs) and novel coronavirus (COVID-19) are listed in Table 2-1 for tasks associated with the environmental activities and are presented in further detail in Appendix A. Task-specific required equipment is listed in each AHA. Risk

Assessment Codes (RACs) for the AHAs required to complete this task order do not indicate that high risk activities are to be completed.

General SOW includes the following:

- Mobilization and demobilization
- Groundwater sampling and analysis
- Monitoring well installation
- Synoptic groundwater level measurements
- Source area surface and subsurface soil sampling
- Surface water sampling and sediment sampling
- Installation of new monitoring wells
- Data validation and interpretation of all analytical results.

Table 2-1. Phases of Work and Site-Specific Activity Hazard Analyses

Work Phase	Site Mobilization	Well Installation	Groundwater Sampling	Soil Borings	Soil Sampling	Surface Water Sampling	Sediment Sampling	IDW Handling	Site Demobilization
Mobilization/Demobilization	✓								✓
COVID-19 Hazard Mitigation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drilling and Well Installation		✓		✓				✓	✓
Groundwater Sampling			✓					✓	✓
Soil borings				✓				✓	✓
Soil Sampling					✓			✓	✓
Surface Water Sampling						✓		✓	✓
Sediment Sampling							✓	✓	✓
Note: IDW = Investigation-derived waste									

3. STATEMENT OF SAFETY AND HEALTH POLICY

EA's Corporate Safety and Health Policy is as follows:

EA considers the safety and health of its employees, clients, and visitors—as well as the prevention of work-related accidents and illnesses, property loss, and detrimental impact to the environment—to be of the highest priority. Proactively implemented, a comprehensive and systematic safety and health program will result in more efficient and profitable operations by improving employee health and morale, and by reducing Worker's Compensation costs, lost time, fire and liability insurance premiums, and property damage.

The objectives of EA's Safety and Health Program are to ensure:

- Sound safety and health practices and conditions necessary for the protection of the health and welfare of employees, subcontractors, clients, and visitors.
- Compliance with this APP and federal and state safety and health regulations and standards.
- Effective safety, fire prevention, and work practices necessary for protection of company-owned or operated and site property.

EA is committed to the overall goal of having no workplace injuries or safety incidents at FAFB. Copies of EA's OSHA Form 300A – Summary of Work-Related Injuries and Illnesses from 2017 through 2019 can be found in Appendix B.

EA's OSHA-recordable incident and lost-workday rates are comparable with the industry average. In addition, the insurance industry has developed an experience rating system as an equitable means of determining premiums for Workers' Compensation insurance (Experience Modification Rate). This rating is based on a comparison of firms doing similar types of work; with the employer rated against the average expected performance in each work classification. For the past 7 years, EA has been below the industry average. The last 3 years are provided in Table 3-1.

Table 3-1. Summary of EA Safety and Health Data

EA	2019	2018	2017
Experience modification rate	0.66	0.67	0.78
Number of recordable cases	4	2	7
Total recordable incident rate	0.71	0.38	1.31
Total hours worked	1,123,596	1,062,015	1,072,638

EA uses its mishap reports as lessons learned tools. These reports are discussed during weekly corporate and business unit level staff meetings. On a monthly basis, EA's Corporate Health and Safety Officer disseminates this information to safety and health representatives in each office via teleconference. These reports are then subsequently used, as appropriate, during daily safety

meetings on sites where similar activities may be occurring. These reports may also trigger, on a case-by-case basis, revisions to site-specific AHAs that are an integral part of this APP.

3.1 SITE SAFETY

Safety and health information will be maintained onsite by the Site Safety and Health Officer (SSHO). It is not anticipated that a work trailer will be necessary for the site work. Therefore, the information will be contained in a mobile file located in the SSHO's vehicle and available to all workers and oversight personnel. The information will include a map illustrating the route to the nearest hospital, emergency phone numbers, a copy of the APP that includes copies of AHAs, OSHA Form 300A, Safety and Occupational Health Deficiency Tracking Log, and field logbooks, documenting daily health and safety meetings

3.2 NON-COMPLIANCE WITH SAFETY REQUIREMENTS

EA requires that employees and its subcontractors adhere to this APP and associated supplemental plans. Progressive disciplinary action is used to deal with non-compliance issues.

For EA employees, this includes the following:

- First offense will warrant a verbal warning, explanation of why the activity was non-compliant, and reference the section of the APP in which the activity lacking compliance was presented.
- A second offense, if it is of the same nature, will warrant a written warning and may lead to removal from the job site. If the second offense is not the same non-compliance issue as the first, additional explanation of why the activity was non-compliant will be discussed and the employee will be required to re-review the APP.
- A third offense will lead to removal from the job site.
- If additional offenses are perpetrated on other project sites, the employee may be suspended or terminated.

If subcontractors are non-compliant with safety requirements, they will be given verbal and written warnings for the first two offenses. If additional offenses occur, the subcontractor may be removed from the project site.

3.3 COMPANY PROCEDURES FOR MANAGER AND SUPERVISOR ACCOUNTABILITY FOR SAFETY

EA's commitment to safety and health is documented, and requirements addressed, from the time an offer of employment is made to a job applicant. Managers and supervisors are made responsible for enforcing safety and health as part of their job descriptions. They are ultimately

responsible for protecting the health and welfare of the employees, as well as minimizing the potential liability associated with on the job or work-related accidents.

A manager or supervisor has the authority to assign and direct personnel on project tasks. As such, the EA Project Manager (PM) and SSHO will possess knowledge of the correct safe procedures for tasks that will be performed under their supervision. If there is question as to the appropriate safety measures, the SSHO or EA PM will seek assistance from the Corporate Health and Safety Officer. If any task cannot be accomplished safely, it will not be attempted.

At a minimum of once per year, each employee's performance is formally evaluated in the following areas: personal commitment to safe work practices, adherence to established health and safety plans and programs, ability to recognize safety hazards, communication skills, acquisition and proper use of personal protective equipment (PPE) and monitoring equipment, and proper budgeting for safety and health aspects in projects.

Unsatisfactory performance in any of the above areas by supervisors or managers is addressed through implementation of performance improvement plans; mandatory additional training; lower overall compensation; and, if appropriate, termination.

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4. RESPONSIBILITIES AND LINES-OF-AUTHORITY

4.1 STATEMENT OF RESPONSIBILITY TO IMPLEMENT THE SAFETY AND HEALTH PROGRAM

EA is responsible for the implementation of a safety and occupational health program for the protection of all employees, including subcontractors and visitors, in the workplace, and as addressed in this APP, on project sites. As such, EA has established roles and responsibilities for implementing the safety program at the corporate, project management, and field/task level.

This APP presents the site-specific requirements that will ensure compliance with EA's corporate program while maintaining compliance with federal and client requirements. EA retains full responsibility for the implementation of this APP. Site personnel are responsible for adherence to this APP during the performance of their work. No person may work in a manner that conflicts with the intent of, or the inherent safety and environmental precautions expressed in, these procedures. Furthermore, employees working onsite have the authority to stop work if unsafe conditions exist.

4.2 IDENTIFICATION AND ACCOUNTABILITY OF PERSONNEL

Personnel required for completion of the phases of work to be performed under this APP include corporate, management, technical, and safety personnel. The key roles and personnel filling those roles for the proposed work are presented in this section of the APP. As demonstrated in the responsibilities required of each role, and as discussed in Section 4.6, EA maintains separate lines-of-authority for technical task management and safety in order to limit conflicts of interest between the need to maintain project deliverables, budget, schedule, and safety. Contact information for personnel is included in Table 4-1. Competency in performing several of the roles listed below is detailed on resumes and certifications provided in Appendix C.

4.2.1 Program Manager

The Program Manager will provide program management as the point-of-contact for the delivery order (DO) and will review safety plans, ensure client-specific safety and health requirements are followed, periodically monitor field operations, and communicate with safety personnel (listed below).

4.2.2 Project Manager

The PM has the responsibility to manage successful completion of the DO and tasks within budget and schedule and to the satisfaction of USACE and will serve the role of Contract Manager as well. The PM reports directly to the Program Manager on budgetary, technical, and scheduling issues. The PM will be responsible for preparing cost, schedule, and status reports, as well as other documents required by the contract and for approving technical submittals. The PM will make key technical decisions, with input from the project team and with concurrence from USACE. These decisions will be based on performance objectives, risk-based evaluation, regulatory acceptance, and cost. The PM has the authority to assign technical staff. The PM

approves labor, subcontractor, and other direct cost expenditures. The PM has the authority to stop work to resolve technical, safety, and regulatory issues, if necessary. The PM oversees competitive selection and supervision of subcontractors. The PM will coordinate with the Program Manager on subcontractor pre-screening and scope assignments. The PM holds the authority to select and terminate subcontractors, as necessary. The PM is accountable for allocating resources to the project to develop and implement this APP; direct corrective actions, if required; review/investigate work-related injuries and illnesses; and report accidents/incidents in accordance with requirements presented in Section 8. The PM will assist in submission of safety-related documents for acceptance.

4.2.3 Task Manager

The Task Manager (TM) supports the PM with DO execution and is responsible for management of Phase I RI activities at FAFB. Field personnel and subcontractors will report directly to the TM for all field work coordination and the TM shall be responsible for keeping the PM informed of all field activities. The PM is accountable for allocating resources to the project to develop and implement this APP; direct corrective actions, if required; review/investigate work-related injuries and illnesses; and report accidents/incidents in accordance with requirements presented in Section 8. The PM will assist in submission of safety-related documents for acceptance.

4.2.4 Corporate Health and Safety Officer

The Corporate Health and Safety Officer is accountable for development and enforcement of this APP/SSHP through oversight and implementation, audits and inspections, remaining available for project emergencies, modifications, evaluation of exposure monitoring, serving as a quality control staff member, and approval of safety documents. The Corporate Health and Safety Officer is also accountable for providing expertise, opinion, and resolution to safety issues from employees; arranging and providing required safety and health training for workers within their region(s) of responsibility; assisting with investigation of accidents and near misses; ensuring medical surveillance program requirements are followed; ensuring monitoring programs are properly designed; and conducting hazard assessments documented through the generation of site-specific AHAs.

4.2.5 Site Safety and Health Officer

The SSHO is accountable for ensuring adherence to the APP/SSHP by EA employees and all subcontractors; mitigating unsafe work conditions; proper application of monitoring equipment; leading initial onsite investigations of accidents, near misses, and occupational illnesses; providing incident reports to project management; confirming qualifications and training of onsite personnel; coordinating safety-related briefings; coordinating health and safety monitoring and APP compliance with subcontractors and inspections; and investigating onsite hazardous conditions. Resumes and certifications are presented in Appendix C.

4.2.6 Supervisors and Employees

Supervisors are accountable for ensuring employees receive training in hazard recognition and safe work practices, periodically monitoring activities to ensure conformance with training, investigating/reporting incidents, investigating employee reports of hazardous conditions, and mitigating hazardous conditions. Employees, including subcontractors, are accountable for following the training, following safe work practices, notifying the SSHO and supervisors of new hazardous conditions, reporting incidents, and participating in all pre-task, pre-entry, and onsite training. Specific safety responsibilities of subcontractors are addressed in Section 5.

4.3 COMPETENT AND/OR QUALIFIED PERSONS

The following personnel are designated as Competent and/or Qualified Persons to complete the scope of services at FAFB. Proof of competency is provided using resumes and certifications presented in Appendix C. The designated competent/qualified persons are included in the AHAs presented in Appendix A.

- **Mr. Peter Garger, CIH, CSP (Corporate Health and Safety Officer)**—Review and approval of the APP and SSHP, hazard identification, resolution of unanticipated safety issues, and forwarding safety documents and/or resolutions to FAFB and USACE–Seattle for acceptance.
- **Mr. Rick Read (SSHO)**—The SSHO has completed the OSHA 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) class, OSHA 30-hour Construction Safety Training, and has totaled at least 60 months of industry safety experience.

Competent or Qualified Persons provided by subcontractors will be identified prior to the initiation of that task and will be presented in the AHAs. All personnel will need to satisfy the training, certification, and inspection requirements highlighted in Sections 5, 6, and 7. Any additional competent or qualified persons identified prior to initiation of a task will be provided in subsequent addenda.

4.4 REQUIREMENT FOR WORK STOPPAGE WITHOUT COMPETENT PERSON

No work requiring an OSHA-defined competent person shall be performed unless the designated and accepted competent person is present on the job site for the task being conducted. All site personnel have stop-work authority.

4.5 REQUIREMENTS FOR PRE-TASK SAFETY AND HEALTH ANALYSIS

The Corporate Health and Safety Officer has evaluated the activities associated with implementation of the site work and has determined potential hazards associated with the activities. The results of the hazard analysis and hazards are documented using AHAs (Appendix A). In addition, site personnel will be required to review this APP and associated

supplemental plans and will be given a pre-entry/pre-sampling briefing on the contents of the APP and associated supplemental plans.

The SSHO, or designee, will provide the pre-entry/pre-sampling briefing, which will include discussion of the following items:

- Site description
- Site control measures
- Emergency response plan and procedures
- General and task-specific hazards and hazard controls including AHAs
- Task-specific PPE requirements
- Task-specific environmental monitoring requirements and action levels
- Lines-of-authority and communication
- Stop work authority in cases of safety non-compliance
- Hazard Communication Program
- Location of hazardous materials
- Identification and recognition of hazardous materials
- Physical and health hazards of hazardous materials
- Protective measures when working with hazardous materials.

4.6 LINES-OF-AUTHORITY

EA maintains separate lines of reporting for technical task management and safety in order to limit conflicts of interest between the need to maintain safety and maintain project deliverables, budget, and schedule. Safety personnel have the authority to require and implement changes with regard to site safety, and all site personnel maintain stop-work authority. Depending on the phase of work, the SSHO will report safety issues to the Corporate Health and Safety Officer. The Corporate Health and Safety Officer, in addition to the SSHO, can request changes to the APP. The Corporate Health and Safety Officer will inform the Program Manager and EA PM of the required changes.

If there is disagreement between safety and management at the SSHO and project management level, the disagreement will be elevated to the Corporate Health and Safety Officer and the Program Manager for resolution. The Corporate Health and Safety Officer and the Program Manager have the ability to elevate safety issues to EA's President/Chief Executive Officer, if required, for resolution. Work related to the identified safety issue or hazard will not resume until a safe resolution is agreed upon.

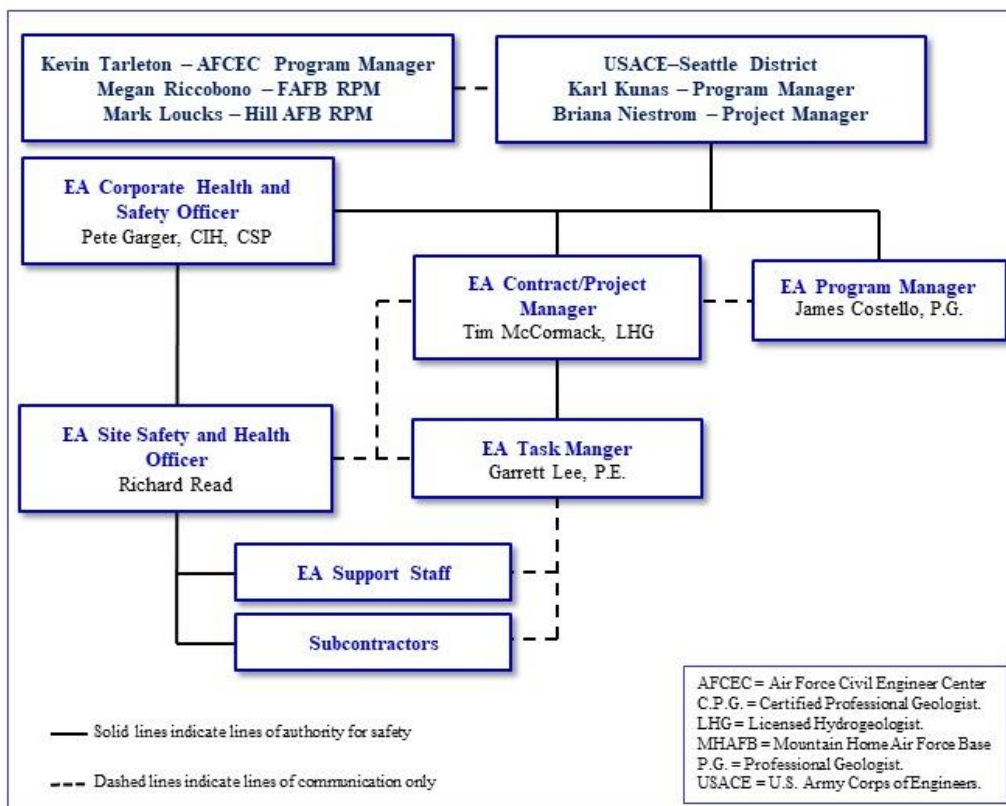
The USACE PM will be notified by the EA PM and FAFB Restoration Program Manager (RPM) of safety issues that result in a work stoppage or that require a change to the APP. Table 4-1 presents project safety personnel, their roles in the project, the organization these individuals represent, and contact information. Figure 2 demonstrates the lines-of-authority for safety at FAFB.

Table 4-1. Contact Information of Key Personnel

Name	Organization (Title)	Telephone
Karl Kunas	USACE (Program Manager)	206-764-3448
Briana Niestrom	USACE (Project Manager)	206-764-3498
Keven Tarleton	AFCEC (Program Manager)	210-264-1855
Megan Riccobono	FAFB (Restoration Program Manager)	509-247-2450
James Costello, P.G.	EA (Program Manager)	443-717-4674
Timothy McCormack, LHG	EA (Project Manager)	425-518-0361
Garrett Lee, P.E.	EA (Task Manager)	206-452-5699
Peter Garger, CIH, CSP	EA (Corporate Health and Safety Officer)	410 790-6338
Richard Read	EA (Site Safety and Health Officer)	503-750-6070

NOTES: AFCEC = Air Force Civil Engineer Center.
CIH = Certified Industrial Hygienist.
CSP = Certified Safety Professional.
EA = EA Engineering, Science, and Technology, Inc., PBC.
FAFB = Fairchild Air Force Base.
LHG = Licensed Hydrogeologist.
P.E. = Professional Engineer.
P.G. = Professional Geologist.
USACE = U.S. Army Corps of Engineers.

Figure 2. Lines-of-Authority



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5. SUBCONTRACTORS AND SUPPLIERS

5.1 IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

Known subcontractors and their respective services are listed below.

- Drilling – Anderson Environmental Contracting, LLC
- Analytical services – Primary: Eurofins Lancaster Laboratories Environmental
Secondary: SGS Group (SGS)
- 3rd Party Validation – Synectics, Inc.
- IDW Disposal – TBD
- Surveying – TBD

Additional subcontractors and associated competent/qualified persons (if necessary) will be identified prior to the start of the activity being performed and will follow the requirements of this document. Coordination and safety responsibilities of subcontractors are presented below. Offsite work conducted by subcontractors is not covered by this APP.

5.2 SAFETY RESPONSIBILITIES OF SUBCONTRACTORS

Subcontractors providing onsite services will be required to review and abide by this APP. Specific responsibilities of subcontractors include:

- Complying with the requirements of their SOW
- Maintaining a safe and healthy work environment
- Complying with contract requirements, laws, regulations, and EM 385-1-1
- Reviewing this APP to ensure that the safety and health requirements of their specific tasks are satisfied
- Performing work in accordance with the APP requirements
- Providing trained and experienced workers for the specific work activities
- Providing documentation of training to EA
- Participating in the Daily Safety Tailgate meetings
- Identifying additional training needs for unique tasks
- Participating in, and documenting, routine equipment and site inspection activities

- Ensuring equipment brought to the site is in good condition, routinely inspected, and maintained in safe working order
- Ensuring the SSHO, or her designee, is aware of materials and equipment brought to the site and that the equipment is in good condition, routinely inspected, and maintained in safe working order.

6. TRAINING

Prior to commencement of field activities, EA employees and subcontractors engaged in field operations will be informed of the nature and degree of exposure to chemical, physical, and biological hazards that are likely to result from participation in field operations. EA will accomplish this by ensuring that personnel entering the site have received the appropriate site-specific training prior to participation in site activities. Training will be conducted prior to site mobilization and will meet all applicable OSHA regulations following ANSI Z490.1. Site-specific training will be held at the time of site mobilization and will be reinforced during the daily safety briefings, which site workers will be required to attend. OSHA-required training will be conducted prior to site mobilization and is documented through the certificates presented in Appendix C.

During the sampling events, EA will conduct daily safety briefings summarizing site-specific activities and the training required to complete the onsite work. Site workers will have received the required training prior to the start of involvement in site activities and are required to attend daily safety briefings. Documentation of training, update frequency of training, time of initial training, training types, and personnel receiving the training are presented in Table 6-1.

The SSHO will ensure that all EA and subcontract personnel are briefed on site hazards and controls. All EA and subcontract personnel will be required to sign a visitor log. Subcontract personnel will be escorted by EA personnel (under the direction of the SSHO or designee), as appropriate, depending on site activity.

Table 6-1. Mandatory Training and Certifications

Personnel	Training	When	Update Frequency ^(a)	Documentation
Personnel ^(b)	Safety and Occupational Health Training (29 CFR 1910.120 (e)-compliant 40-hour HAZWOPER)	Upon hire	8-hour refresher	Corporate files
Personnel ^(b)	Medical clearance (medical monitoring)	Upon hire	Annually	Corporate files
Personnel (including Supervisors) ^(b)	Annual Health and Safety Refresher (29 CFR 1910.120 (e)-compliant 8-hour HAZWOPER refresher training)	One year after initial training	Annually after 40-hour HAZWOPER	Corporate files
At Least 2 onsite employees	First aid/CPR (in person, not online)	Initially	Biannually	Corporate files
First Aid/CPR providers	OSHA 1910.1030-compliant bloodborne pathogens	Prior to onsite work	Annually	Corporate files
SSHO (non-construction)	8-hour Supervisor Training (includes 8-hour HAZWOPER Supervisor Training)	Prior to mobilization	Does not expire	Corporate files Appendix C
SSHO (non-construction)	At least 1 year experience implementing safety and occupational health procedures at HAZWOPER sites	Aggregate training requirement	Minimum 1 year experience	Corporate files

Table 6-1. Mandatory Training and Certifications

Personnel	Training	When	Update Frequency^(a)	Documentation
Selected Personnel	Use of Fire Extinguishers	Annually and prior to onsite work	Annually	Corporate files
Selected Personnel	Personal Protective Equipment	Annually and prior to onsite work	Annually; prior to onsite work; if retraining required ^(c)	Personal Protective Equipment Training form
Selected Personnel	Pre-Entry Site Briefing	Prior to onsite work	Not applicable	APP Review form
Selected Personnel	Daily Tailgate Safety Meeting	Daily	Not applicable	Daily Tailgate Safety form
Visitors and Authorized Entrants	Visitor briefing (by SSHO or designee) (escort by or SSHO or designee)	Prior to observing onsite work	Once per visit	Visitor's Log
a. Currently, EA utilizes an automated system to notify the Corporate Health and Safety Officer and the employee when a training or certification is about to expire. Employees are required to communicate their plan to update the training/certification with the Corporate Health and Safety Officer and will be provided with resources to meet training/certification requirements. b. Retraining requirements are at the discretion of health and safety personnel. NOTES: APP = Accident prevention plan. CFR = Code of Federal Regulations. CPR = Cardiopulmonary resuscitation. HAZWOPER = Hazardous Waste Operations and Emergency Response. OSHA = Occupational Safety and Health Administration. SSHO = Site Safety and Health Officer.				

7. SAFETY AND HEALTH INSPECTIONS

Safety and health inspections will be completed systematically to:

- Identify potential hazards
- Identify potential deficiencies in the implementation of this APP
- Provide management with summary of site conditions and deficiencies
- Aid management in the establishment of abatement priorities based on potential risk.

Periodic safety and health-related inspections are required at FAFB. Inspection will be conducted at the time of drilling and sampling. Each drilling or sampling location will be inspected, and any safety concerns will be noted in the field logbook and appropriate safety filed forms (Appendix D). The SSHO will conduct the required onsite pre-entry briefing, including review of the location of required onsite documentation (i.e., the location of the APP and Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS), directions to the nearest hospital, etc.), and observe site activities to ensure compliance with the APP.

As part of the safety and health program, unscheduled, periodic monitoring of project sites are sometimes conducted by the Corporate Health and Safety Supervisor. The inspections will be random. Findings will be immediately reported to the SSHO, Program Manager, and PM for correction, if necessary.

7.1 INSPECTION DOCUMENTATION

The Health and Safety Logbook will be completed by the SSHO or designee. Pertinent health and safety information, to include the names of subcontracting personnel working onsite and the names of visitors to the site, will be entered. At a minimum, the following information is required to be put in the Logbook on a daily basis:

- Daily Tailgate Health and Safety meeting forms
- Visitors to the site
- Upgrading or downgrading of PPE levels
- Instances of job-related injury or illness
- Health and safety issues
- Health and safety deficiencies (violations)
- Emergencies.

Should a deficiency be identified, the SSHO will perform a follow-up inspection to ensure that it has been corrected and is not recurring. If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document the following:

- Date the deficiency was identified
- Description of the deficiency

- Name of the responsible personnel
- Projected date of correction
- Date the deficiency was corrected.

This information will be documented by the SSHO in the field logbook. The status of resolution will be included in the daily tail gate briefings to ensure site personnel are aware of the deficiency and status in correcting the deficiency. Table 7-1 summarizes inspectors, frequency of the inspections, and documentation. Any mishaps due to deficiencies will be reported according to Section 8. No external inspections or certifications are required to complete the work covered by this contract.

Table 7-1. General Safety and Health Inspection Requirements

Personnel^(a)	Inspection	Timing/ Frequency	Documentation^(b)
SSHO or designee	General site conditions (e.g., vehicles, documents, etc.)	Daily	Tailgate Safety Meeting, Daily Safety Inspection Report
All employees	PPE	Initial and Daily	Tailgate Safety Meeting, Daily Safety Inspection Report
Selected Personnel	Emergency Equipment • Fire extinguisher • First aid kit • Eye wash	Initial	Tailgate Safety Meeting, Daily Safety Inspection Report
All Employees	PPE	Before use	None. Dispose of PPE, if faulty
Corporate Health and Safety Officer	Fire Prevention Plan Survey	Annual	Fire Prevention Plan Audit
Corporate Health and Safety Officer	Safety and Health Audits	Random	EA Corporate Audit forms
All Employees	Tools and equipment	Before Use	None. Dispose of faulty equipment/supplies.
a. Personnel associated with titles are presented in Section 4. b. Field forms provided in Appendix D. NOTES: PPE = Personal protective equipment. SSHO = Site Safety and Health Officer.			

8. MISHAP REPORTING AND INVESTIGATION

8.1 REPORTABLE MISHAPS

A mishap is any unplanned, undesired event that occurs during the course of work being performed. Mishaps include accidents, incidents, and near misses. A mishap investigation will be conducted for the following:

- Job-related injuries and illnesses
- Mishaps resulting in significant loss or damage to property
- Mishaps involving vehicles whether or not they result in damage to property or personnel
- Mishaps in which there may have been no injury or property damage, but which have a high probability of recurring with at least a moderate risk to personnel or property (near miss).

8.2 EXPOSURE DATA

Work-related mishaps occurring to EA employees will be reported for statistical purposes. Recordable mishaps count against EA's USACE-recordable mishap experience whenever they occur to an employee or a subcontractor working under the direct supervision of EA. Personnel person-hours will be defined as hours worked by persons assigned to the project, including subcontractor employees under direct supervision of EA. The SSHO, or designee, will document the potential exposure hours versus the person-hours worked per day by subtracting out the time that personnel were not participating in tasks with the potential for exposure to site media. These person-hours worked will be reported to the FAFB RPM and USACE PM monthly, by the 10th of the subsequent month.

8.3 Mishap Investigation Procedures

During and subsequent to any mishap, the SSHO, or designee, will:

- Render assistance and attempt to limit further injury and damage. Obtain appropriate medical and emergency assistance and notify fire, law enforcement, and regulatory personnel
- Arrange for appropriate medical treatment
- Report the mishap to the EA PM
- Establish the sequence of events that led to the mishap

- Observe the mishap scene and involved property; sketches or photographs will be used, if necessary, to clearly present the sequence of events and possible contributing factors (note: except for rescue and emergency measures, the mishap scene shall not be disturbed until it has been released by the investigating official)
- Complete a mishap/loss report (Appendix D) as soon as possible, no later than 24 hours after the mishap occurred
- Forward the report through his or her supervisor to the Corporate Health and Safety Officer
- Maintain a record of all first aid treatments that include, at a minimum, the affected employee's name, job title, date, type of mishap, and causes and corrective actions taken. Analyze the collected information and develop a corrective action/plan to eliminate future mishaps, if possible.

The Corporate Health and Safety Officer will:

- Review the reports for accuracy and thoroughness.
- If necessary, return the report for further investigation or corrective action.
- After appropriate review and comment, forward Mishap Investigation Report to Program Management. After management review, the Mishap Investigation Report will be forwarded to the FAFB RPM and USACE PM within 24 hours of the mishap.
- Follow-up to see that corrective action has been implemented and forward report to the FAFB RPM and USACE Project Managers within 5 business days.
- Prepare an annual summary of mishaps to be distributed project-wide; the purpose of this summary is to identify mishap trends and to evaluate the effectiveness of the APP.
- Maintain the company OSHA 300A Form.

Mishap investigation procedures will include the following:

- Identify, without placing blame, the basic causal factors that contribute directly or indirectly to mishaps
- Suggest corrective action alternatives for a given mishap
- Identify deficiencies in the APP and supplemental plans
- Provide information needed to identify trends and problem areas

- Satisfy Workers' Compensation, USACE, and OSHA requirements for recordkeeping and reporting.

8.4 Mishap Reporting Procedures

In the event of an accident/mishap, the USACE PM and FAFB RPM will be notified. In addition, employees will immediately report mishaps to their EA supervisor, or if on the project site, to the SSHO or her designee, and will immediately notify the Corporate Health and Safety Officer (410-790-6338) or Director of Human Resources (410-790-3795). No EA supervisor may decline to accept a report of a mishap from a subordinate. The EA Project Manager and Business Unit Director will be notified immediately after the Corporate Health and Safety Officer. The FAFB RPM and USACE PM will be notified by the EA Project Manager as soon as possible and within 24 hours of the mishap. A written report will be forwarded to USACE PM and FAFB RPM within 5 business days. In addition to the reporting requirements identified above, EA will be required to report:

- Property damage (exceeding \$5,000 is recordable)
- Days away from work injuries
- Days away from work illnesses
- Restricted/transfer injuries.

USACE PM and FAFB RPM will be notified immediately of the following mishaps:

- Fatality
- Permanent, partial, or total disability
- Hospitalization of one or more people from a single mishap
- Property damage of \$500,000 or more
- Three or more individuals become ill or have a medical condition that is suspected to be related to a site condition or a hazardous/toxic agent on the site.

OSHA will be notified in accordance with 29 CFR 1904.39 within 8 hours when an employee(s) is fatally injured. OSHA will be notified within 24 hours for inpatient hospitalization of one or more persons as a result of a single incident, an amputation, or the loss of an eye. Subcontractors will be responsible for their reporting to OSHA.

In addition to the above reporting requirements, any mishap occurring in the following high hazard areas applicable to this project shall be immediately reported to USACE PM and FAFB RPM. A written report will be forwarded to USACE PM and FAFB RPM within 5 business days for the following:

- Uncontrolled release of hazardous energy (includes electrical and non-electrical).
- Fall-from-height (any level other than the same surface).

9. SUPPLEMENTAL PLANS

The SOW listed in Table 2-1 have been evaluated to determine the applicability of plans required by Appendix A of EM 385-1-1. Table 9-1 summarizes the findings of this evaluation and indicates the location of required plans.

Table 9-1. Summary of EM 385-1-1 Plan Evaluation

Plans	Rationale for Inclusion or Exclusion	Location (if included)
Fatigue Management Plan	Work shifts at the site will not exceed 10 hours per day for more than 4 consecutive days; therefore, a Fatigue Management Plan is not required.	Not applicable.
Emergency Plans	Applicable to all operations.	9.1
Plan for Prevention of Alcohol and Drug Abuse	Applicable to all operations.	9.2
Site Sanitation and Housekeeping Plan	Applicable to all operations.	9.3
Blood-Borne Pathogen Program	Applicable to all operations.	9.4
Automatic External Defibrillator Program	Defibrillators are located at FAFB, along with operation instructions.	Not applicable.
Site Layout Plan	Not required under the SOW.	Not applicable.
Access and Haul Road Plan	Not required under the SOW.	Not applicable.
Hearing Conservation Program	Applicable to potentially loud operations.	9.5
Respiratory Protection Plan	Not required under the SOW.	Not applicable.
Health Hazard Control Program	Applicable to all operations.	9.6
Hazard Communication Program	Applicable to operations with hazardous chemicals.	9.7
Process Safety Management Program	Not required under the SOW.	Not applicable.
Lead Compliance Plan	Not required under the SOW.	Not applicable.
Asbestos Abatement Plan	Not required under the SOW.	Not applicable.
Radiation Safety Program	Not required under the SOW.	Not applicable.
Abrasive Blasting Procedures	Not required under the SOW.	Not applicable.
Heat Stress Monitoring Plan	Applicable.	Appendix E
Cold Stress Monitoring Plan	Applicable.	Appendix E
Indoor Air Quality Management	Not required under the SOW.	Not applicable.
Mold Remediation Plan	Not required under the SOW.	Not applicable.
Chromium (VI) Exposure Evaluation	Not required under the SOW.	Not applicable.
Crystalline Silica Evaluation	Not required under the SOW.	Not applicable.
Lighting Plan for Night Operations	Not required under the SOW.	Not applicable.
Traffic Control Plan	Not required under the SOW.	Not applicable.
Fire Prevention Plan	Applicable.	9.8
Wild Land Fire Management Plan	Not required; FAFB are not prone to wild land fire. Smoke from wild land fires are a concern at FAFB and the health hazards due to smoke are discussed in Appendix H.	Appendix H
Arc Flash Hazard Analysis	An arc flash plan is not required.	Not applicable.
Assured Equipment Grounding Control Program	All 120-volt, single phase, 15- and 20-ampere receptacle outlets to be used by EA employees and subcontractors, shall have approved ground fault circuit interrupters for personnel protection, therefore an assured equipment ground control plan is not required.	Not applicable.
Hazardous Energy Control Program and Procedures	Not required under the SOW.	Not applicable.

Table 9-1. Summary of EM 385-1-1 Plan Evaluation

Plans	Rationale for Inclusion or Exclusion	Location (if included)
Standard Pre-Lift Plan – Load Handling Equipment	Not required under the SOW.	Not applicable.
Critical Lift Plan – Load Handling Equipment	Not required under the SOW.	Not applicable.
Naval Architecture Analysis – Load Handling Equipment (Floating)	Not required under the SOW.	Not applicable.
Floating Plant Inspection and Certification	Not required.	Not applicable.
Severe Weather Plan for Marine Activities	Not required.	Not applicable.
Emergency Plan for Marine Activities	Not required.	Not applicable.
Man Overboard/Abandon Ship Activities	Not required.	Not applicable.
Float Plan for Launches, Motorboats, and Skiffs	Not required.	Not applicable.
Fall Protection and Prevention Plan	Not required under the SOW.	Not applicable.
Severe Weather Contingency Plan	Applicable.	Appendix E
Demolition/Renovation Plan	Not required under the SOW.	Not applicable.
Rope Access Work Plan	Not required under the SOW.	Not applicable.
Excavation and Trenching Plan	Not required under the SOW.	Not applicable.
Fire Prevention and Protection Plan for Underground Construction	Not required under the SOW.	Not applicable.
Compressed Air Work Plan for Underground Construction	Not required under the SOW.	Not applicable.
Erection and Removal Plan for Formwork and Shoring	Not required under the SOW.	Not applicable.
Precast Concrete Plan	Not required under the SOW.	Not applicable.
Lift-Slab Plan	Not required under the SOW.	Not applicable.
Masonry Bracing Plan	Not required under the SOW.	Not applicable.
Steel Erection Plan	Not required under the SOW.	Not applicable.
Explosives Safety Site Plan	Not required under the SOW.	Not applicable.
Blasting Plan	Not required under the SOW.	Not applicable.
Dive Operations Plan	Not required under the SOW.	Not applicable.
Safe Practices Manual for Diving Activities	Not required under the SOW.	Not applicable.
Emergency Management Plan for Diving	Not required under the SOW.	Not applicable.
Tree Felling and Maintenance Program	Not required under the SOW.	Not applicable.
Aircraft and Airfield Construction Safety and Phasing Plan	Not required under the SOW.	Not applicable.
Aircraft and Airfield Safety Plan Compliance Document	Not required under the SOW.	Not applicable.
SSHP	Applicable.	Appendix E
Confined Space Entry Procedures	Not required under the SOW.	Not applicable.
Confined Space Program	Not required under the SOW.	Not applicable.
NOTES: APP = Accident Prevention Plan FAFB = Fairchild Air Force Base SSHP = Site Safety and Health Plan SOW = Scope of work		

9.1 EMERGENCY PLANS

An emergency is defined as a situation that requires calling outside help onto a job site. Depending on the phase of work, field personnel will immediately stop work and report to the SSHO, or designee, under the following situations: medical emergency, fire emergency, spill emergency, discovery of unanticipated hazards (e.g., drums, heavily contaminated materials), heavy equipment accident, over-exposure of personnel to onsite contaminants requiring Emergency Medical Services, or heat/cold-related injury or stress requiring Emergency Medical Services support.

9.1.1 Procedures and Tests

Prior to work startup, personnel will be familiar with this Emergency Response Plan. A test of cellular phone coverage will be made across the entire work area and will be conducted prior to mobilization to ensure that emergency services can be alerted in the event of an emergency.

In the event of an emergency, the information available at that time will be properly evaluated and the appropriate steps taken to implement the Emergency Response Procedures. The SSHO and/or EA personnel will assume command of the situation and will call the appropriate emergency services and evacuate personnel to the rally points. Onsite emergencies will ultimately be handled by offsite emergency support personnel (i.e., the local fire department, ambulance squad, or police, depending on the nature of the emergency) who will have authority once they arrive.

The following information will be provided when reporting an emergency:

- Name and location of person reporting
- Location of accident/incident
- Name and affiliation of injured party
- Description of injuries, fire, spill, or explosion
- Status of medical aid and/or other emergency control efforts
- Details of chemicals involved
- Summary of accident, including suspected cause and time it occurred
- Temporary control measures taken to minimize further risk.

Information garnered onsite will not be released to parties other than those listed in this section and emergency responders. Once emergency response agencies have been notified, the EA PM will then be notified immediately.

If a neck or back injury is suspected, the victim will not be moved without medical personnel stabilizing the neck and back in accordance with first aid procedures.

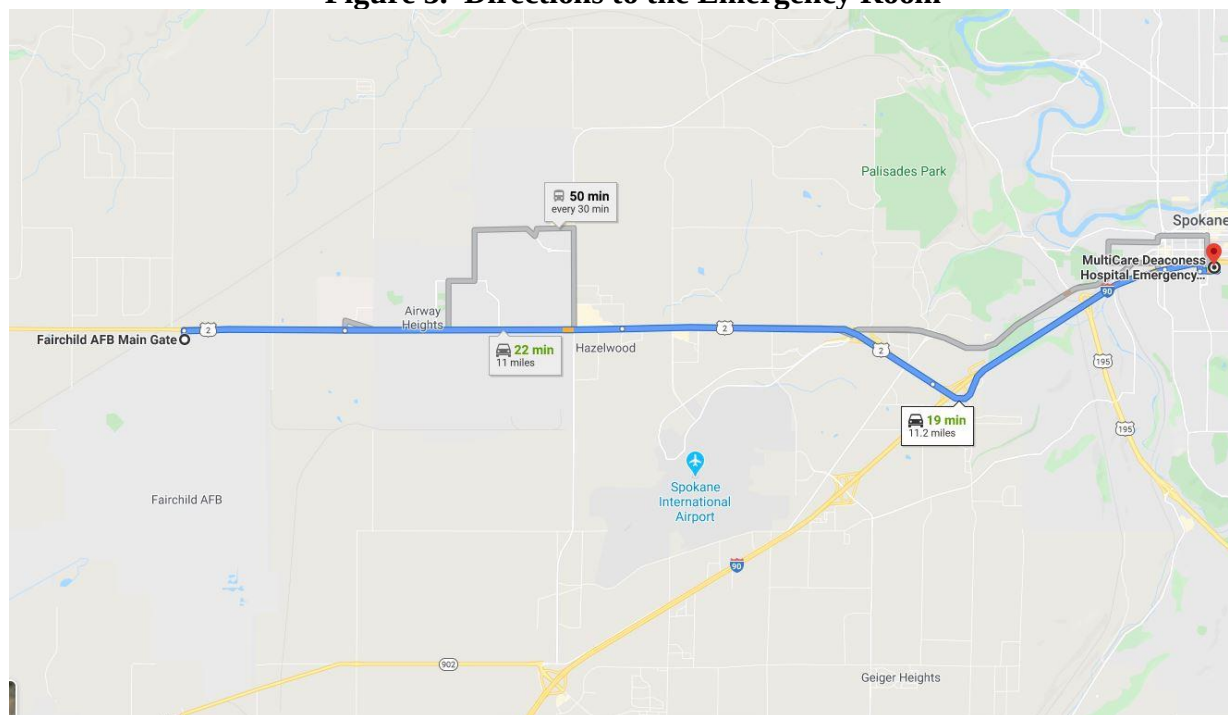
9.1.2 Posting of Emergency Telephone Numbers

Emergency telephone numbers will be kept in site support vehicles. Additional copies will be distributed to site personnel by the SSHO or designee. The SSHO or designee will have the phone numbers readily available on his/her person or in his/her vehicle. Emergency contact information is presented in Table 9-2.

Table 9-2. Emergency Contact Numbers

Contacts	Name	Phone Number(s)
Emergencies (police/fire/ambulance/spills)	--	911
Emergency Room	MultiCare Deaconess North Emergency Center	509-473-3333
On-base Medical Center	FAFB 92 nd Medical Group (Main Number)	509-247-2361
Off base Urgent Care	Providence Urgent Care	509-474-2100
Poison Control	--	800-222-1222
National Response Center	--	800-424-8802
Federal OSHA Hotline	--	800-321-6742
EA Medical Services	AllOne Health Resources	800-350-4511

Figure 3. Directions to the Emergency Room



Directions from FAFB to MultiCare Deaconess North Emergency Center

Head north on Mitchell St.
Follow US-2 E and I-90 E to W. 4th Ave. in Spokane, Washington
Take Exit 280 from I-90 E/US-2 E
Continue on W 4th Ave.
Turn right onto S. Monroe St.
Turn Left onto W 5th Ave.
Turn left and follow hospital signs to the Emergency Room.

9.1.3 Spill Emergency Response Plan

Based on a review of the proposed phases of work at FAFB by the Corporate Health and Safety Officer, emergency response for spills will be conducted by outside emergency responders. No emergency response for spills will be handled by site personnel and emergency response for spills is not part of this SOW.

Small incidental spills of non-hazardous materials less than reportable quantities (e.g., fuel in equipment) that do not cause injury to personnel or the environment are possible and will be cleaned up as quickly as possible. Waste will be containerized and disposed of properly and labeled accordingly. Spill kits will be present onsite in the event of spillage of fluids from site vehicles or during refueling of site vehicles during daily operations. Safety data sheets (SDSs) (Appendix F) will be reviewed prior to addressing any spill. This written plan applies to all employees. No testing of the recovered materials will be required based on the lack of a hazard. No escape routes or procedures will be required nor will critical plant operations (and the related emergency evacuation) be required. No rescue or medical duties are required beyond the first aid/cardiopulmonary resuscitation (CPR) training (and associated bloodborne pathogen training) required onsite for other tasks.

9.1.4 Firefighting Plan/Fire Emergency Response Plan

Site personnel will not attempt to handle a fire/explosion emergency. The SSHO, or designee, will take measures to reduce injury and illness, primarily by evacuating personnel as quickly as possible. The SSHO or designee will then notify the EA PM. Site personnel will evacuate the area and gather/meet at the designated rally points (agreed upon by the SSHO and FAFB RPM). The SSHO or her designee will be responsible for identifying if any site personnel did not gather at the rally point.

The Firefighting Plan will be by site workers as part of the field activities kickoff meeting. In addition, the Corporate Health and Safety Officer, EA's designated authority for fire prevention and emergency response, prepares the fire hazard evaluation program, which is reviewed by EA employees during annual employee safety and occupational health training.

As part of this plan, the Corporate Health and Safety Officer has evaluated the operations and type(s) of equipment/materials to determine potential fire or explosion hazards and will convey

this information to site personnel through the SSHO. Training requirements are listed in Table 6-1. A fire and/or explosion will be immediately recognized as an emergency. Emergency services (fire, police, and ambulance) will be immediately notified by the SSHO, or designee, (emergency numbers are included in Table 9-2). A copy of the emergency numbers will be included in each site support vehicle.

Cleanup after such events may require specialized services and are not covered by this APP/SSHP. The EA PM will establish proper cleanup actions through coordination with the SSHO and emergency services personnel, with input from the FAFB RPM and USACE PM.

9.1.5 Medical Support Agreement

Less than 100 personnel will be required onsite to complete this job; therefore, onsite medical support is not required for this project. At least two people currently trained in first aid/CPR will be present onsite. Training requirements are presented in Section 6. Offsite medical support will be provided by professional medical services presented in Table 9-2.

The medical facilities identified in Table 9-2 have been contacted to confirm that injured employees will be able to receive prompt treatment. No work tasks with a high or extremely high RAC on the AHAs have been identified, therefore arrangements do not need to be confirmed in writing.

9.2 PLAN FOR PREVENTION OF ALCOHOL AND DRUG ABUSE

Employees are strictly prohibited from any activity related to using, possessing, manufacturing, selling, transporting, distributing, storing, concealing, and/or dispensing any controlled or illegal substances, as defined by federal or state law, on the premises of EA, while conducting EA business (including travel), during EA-sponsored activities, or in off-the-job activities. This includes places of public accommodation or recreation, restaurants, and common carriers. Violation of this policy will result in immediate removal from the site and appropriate disciplinary action, up to and including termination of employment. If the employee is observed by another employee as not “fit-for-work” for any reason, contact the employee’s immediate Supervisor or Corporate Human Resources as the situation will be managed as any other performance problem. EA may drug test/screen employees at any time. Drug testing procedures are part of corporate policy and are not covered within this plan. Additionally, EA employees are to have no expectation of privacy with respect to any property brought onto site premises or carried during travel, including air travel. Specific information can be obtained from Corporate Human Resources. No part of this plan grants employees contract rights or changes their status as “at-will” employees.

9.3 SITE SANITATION AND HOUSEKEEPING PLAN

Housekeeping—Site support vehicles will be kept as clean as possible. Work areas will be kept clear of debris, tools, or other potential tripping hazards. Frequently touched surfaces will be

disinfected daily in accordance with the COVID-19 Risk Mitigation AHA using an Environmental Protection Agency (EPA) approved disinfectant.

Drinking Water—Adequate bottled drinking water will be provided to all site workers and will be stored in coolers within site support vehicles; it will be cooled as necessary depending on weather conditions.

Non-Potable Water—All containers used to store non-potable water will be labeled as such. Water for decontamination activities will be obtained offsite.

Toilets—Personnel will utilize restroom facilities onsite.

Washing Facilities—Employees will use hand washing facilities located onsite. Each site support vehicle will be furnished with a bottle of hand sanitizer and eyewash container.

Showers and Food Service—Shower facilities, changing rooms, and clothes drying facilities are not necessary for this SOW. No food service will be provided at FAFB. Food and beverages will be consumed in areas outside of the work areas.

Waste Disposal—All non-investigation waste (municipal wastes) will be removed from the site in EA or subcontractor vehicles or placed in the adequately located waste receptacles to prevent a health hazard.

9.4 BLOOD-BORNE PATHOGEN PROGRAM AND EXPOSURE CONTROL PLAN

Based on a review of the SOW for the project site, only site personnel providing first aid/CPR will potentially be exposed to blood-borne pathogens. Universal precautions and PPE will be used by providers of first aid/CPR to prevent contact with blood or other potentially infectious materials when working with employees who have an injury or in areas where the injury may have contaminated surfaces.

PPE required for the program will include a breathing barrier, nitrile gloves, masks, and eye protectors. First aid/CPR providers will don the appropriate PPE based on the injury or illness prior to administering first aid and/or CPR. No decontamination of PPE will occur; all PPE will be disposed of. Employees using PPE must wash hands immediately or as soon as feasible after removal of gloves or other PPE. Following any potential exposure mishap employees will wash their hands or skin with soap and water and/or flush mucous membranes with water.

Work areas will be kept clean and sanitary and will be decontaminated after contact with blood/potentially infectious materials with a dilute bleach solution (i.e., 10 percent [minimum] solution of chlorine bleach). The bleach solution will be left in contact with the contaminated work surface for at least 10 minutes prior to cleaning.

Information pertaining to the Hepatitis B vaccination series; post-exposure reporting, evaluation, and follow-up procedures; and recordkeeping practices and requirements are presented in the EA

Corporate Blood-Borne Pathogen Exposure Control Plan, which is present online and will be present in site vehicles. Training requirements are presented in Section 6 of this APP.

This site-specific plan will be applied in conjunction with the EA Corporate Blood-Borne Pathogen Exposure Control Plan and OSHA 29 CFR 1910.1030, which will be available for consultation by site employees when necessary. This plan applies to personnel who will potentially be providing first aid/CPR, as the SOW will not expose other site personnel to blood-borne pathogens. OSHA definitions relating to blood-borne pathogens are covered during training.

9.5 HEARING CONSERVATION PROGRAM

EA will evaluate the workplace for noise hazards initially and regularly during the course of work. The hearing conservation program applies to all employees who are exposed to hazardous noise or ototoxic chemicals during work tasks described in Table 2-1.

Workers will be made aware of potential noise hazards prior to the start of tasks with noise hazards. Medical surveillance (Section 4 of the SSHP [Appendix E]) includes pre-employment and end-of-employment testing.

9.5.1 Noise Hazard Identification

Noise measurements shall be made whenever there is difficulty in communicating at distances greater than 2 feet, upon worker complaint of excessive noise, or whenever hazardous noise levels are suspected. Noise assessments and/or measurements shall be performed and documented when any new facility or new equipment is placed in service and when areas that in the past were not noise hazardous become noise hazardous for any reason.

9.5.2 Assessment of Noise Hazards

Workplaces known or suspected to include hazardous noise will be surveyed initially, annually, and whenever site conditions change impacting noise generation. The following will be followed for the assessment of noise hazards:

- For continuous (steady-state) noise and impact (impulse) noise, the instrument settings shall be in accordance with Table 9-3.
- If necessary, while in proximity to pump and treat system operations, dosimeters may be used to measure the entire employee's work shift to be considered full-shift sampling.
- Calibration of noise-measuring equipment shall be in accordance with manufacturer's instructions.

Table 9-3. Settings for Noise Measuring Equipment

Feature	Dosimeter (ACGIH)	Dosimeter (Department of Defense and USACE) ^(a)	Type 2 (or better) Sound Level Meter for Continuous Noise (USACE) ^(a)	Type 1 Sound Level Meter for Impulse Noise (USACE) ^(a)
Criterion time	8 hours	8 hours	8 hours	8 hours
Criterion level	85 dBA	85 dBA	85 dBA	85 dBA
Weighting	A	A	A	Unweighted, linear, or Z
Peak weighting	Unweighted	Unweighted, linear, or Z	Unweighted, linear, or Z	Unweighted, linear, or Z
Threshold level	80 dBA	80 dBA	80 dBA	140 dBA
Upper bound on integration	130 dBA	None	None	None
Time weighting	Slow	Slow	Slow	Impulse
Exchange rate	5 dBA	3 dBA	3 dBA	3 dBA
a. When used for the purposes of delineating noise hazardous areas or evaluating noise exposures to personnel.				
NOTES: ACGIH = American Conference of Governmental Industrial Hygienists. dBA = Decibel. USACE = U.S. Army Corps of Engineers.				

9.5.3 Exposure Standards

Work using heavy equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, or distracted; it can cause physical damage to the ear, pain, and temporary and/or permanent hearing loss; and it can interfere with communication. For impact (impulse) noise, personnel exposures may not exceed 140 decibels (dBA) (unweighted) without effective hearing protection devices.

If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 dBA (decibels on the A-weighted scale), hearing protection will be provided with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and reduce noise levels below 85 dBA. Workers involved in heavy machinery operation activities are likely to be subjected to noise exceeding sound levels of 85 dBA peak sound pressure. At this level, hearing protection will be selected by the SSHO with an appropriate Noise Reduction Rating to reduce noise levels below these values (Table 9-4).

Table 9-4. Non-Department of Defense Continuous Noise Exposures (OSHA Standard)

Duration per day (hours)	Permissible Sound Pressure Level (dBA)
8	85
4	88
2	91
1	94
0.5 = 30 minutes	97
0.25 = 15 minutes	100
NOTES: dBA = Decibel.	

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, the combined effects must be considered. Exposure to different levels for various periods of time shall be computed according to the following formula:

$$C_n = T_1 / L_1 + T_2 / L_2 + \dots + T_x / L_x$$

where

C_n = Combined noise exposure factor.

T = Total time of exposure at a specified sound-pressure level (in hours).

L = Total time of exposure permitted at that level (in hours), from Tables 9-3 or 9-4, as appropriate. If the sum exceeds 1, the mixture of exposure periods exceeds the threshold limit value.

9.5.4 Noise Controls

Hearing protection will be worn whenever noise exposures exceed the standards discussed in this section. PPE specific to hearing protection has been included in SSHP Section 2.4.5.

Noise hazardous areas include all areas where the noise values exceed the standards in this section and will be posted to indicate the presence of hazardous noise levels and the requirements for hearing protection. Equipment identified as noise hazardous will be labeled as a noise hazard requiring the use of hearing protection. If noise hazards impact personnel working in adjacent areas, the individuals in the adjacent areas shall be notified of the noise values and offered hearing protection.

If noise exposure to employees cannot be reduced to below the required standards, operating time limits may be imposed.

9.6 HEALTH HAZARD CONTROL PROGRAM

The presence of hazards will be assessed through identifying phases of work and potential physical, chemical, and biological hazards associated with those phases of work. Physical and chemical hazards are discussed throughout this APP, and biological hazards (biological photograph log) are presented in further detail in Appendix G.

The SOW for this site are listed in Section 2. The hazards and related controls, including engineering controls and PPE, for activities performed during the SOW were assessed by the Corporate Health and Safety Officer during development of this APP and are described in AHAs included in Appendix A. To understand potential hazards associated with each required activity, AHAs are reviewed with onsite personnel prior to performing site tasks.

9.7 HAZARD COMMUNICATION PROGRAM

The purpose of this Hazard Communication Program is to ensure that important information regarding hazardous chemicals used, handled, or stored during the conduct of business is transmitted to employees and other affected persons as appropriate.

It is each individual's "Right-To-Know" the chemical identities and chemical hazards with which they are working. When employees have information about the chemicals being used, they can take steps to reduce exposures, substitute less hazardous materials, and establish proper work practices. Through these efforts and the implementation of this plan, the prevalence of chemically related occupational illnesses and injuries will be minimized. Access to chemical hazard information as outlined in this program is fundamental to protecting the safety, health, and welfare of our employees, subcontractors, and other affected persons.

A hazardous chemical means any chemical that is either a physical hazard or health hazard and includes hazardous chemicals generated during work operations. Chemical hazard information will be made available to employees and other affected persons, as appropriate, through the implementation of this comprehensive program which includes container labeling, and other forms of warning, the collection and compilation of SDSs, and training. A summary of the hazard communication program, as it pertains to this SOW, is presented as follows.

9.7.1 Chemicals Included in the Hazard Communication Program

The program applies to hazardous chemicals that are known to be present in the workplace and used or stored in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

It is the responsibility of the SSHO to ensure that chemical materials meet the provisions of this Hazard Communication Program. If there are any questions regarding the applicability of these program requirements to a particular material or situation, the Corporate Health and Safety Officer will be consulted.

9.7.2 Chemicals and Materials Exempt from the Hazard Communication Program

The following materials are exempt from requirements of the program:

- Hazardous waste as defined by Resource Conservation and Recovery Act when subject to regulations issued under EPA
- Hazardous substances as defined by CERCLA when subject to regulations issued under CERCLA by EPA
- Tobacco or tobacco products

- Wood or wood products that will not be processed (wood treated with a hazardous chemical and wood which may be sawed or cut, generating dust, are covered)
- Articles that are manufactured items other than a fluid or particle; which are formed to a specific shape or design during manufacture; which have end use functions dependent in whole or in part upon their shape or design during end use; and which, under normal conditions or use, do not release more than minute or trace amounts of a hazardous chemical and do not pose a physical hazard or health risk to employees
- Any drug when it is in solid, final form for direct administration such as over-the-counter drugs, and first aid supplies
- Cosmetics
- Any consumer product or hazardous substance, where it can be demonstrated that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended
- Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard
- Ionizing and non-ionizing radiation
- Biological hazards (presented in detail in Appendix G).

9.7.3 Lists of Hazardous Chemicals

The EA PM and/or the SSHO will develop and maintain the hazardous chemical list for the work being performed under the SOW. The list of hazardous chemicals will be kept current and updated by the SSHO. The lists of hazardous chemicals will contain the location, the name of each chemical as referenced on the SDS, the date of the inventory, and the name of the person generating the list. The SSHO, or designee, will conduct an inventory at the start of site operations in order to develop and maintain an accurate list of covered hazardous chemicals. The list will be updated as new hazardous chemicals are brought onsite.

Currently gasoline to fuel equipment and detergent to decontaminate sampling equipment are the only chemicals anticipated for use on this job site and SDSs are provided in Appendix F. Appendix F will be updated as needed (i.e., when new hazardous and non-hazardous chemicals/materials are brought onsite).

9.7.4 Labels and Other Forms of Warning

Site personnel will rely upon the original product labels to the extent practical. When labels must be applied to a temporary container, they will be printed in English and contain the following information:

- Identity of the hazardous chemical(s).
- Appropriate hazard warnings (i.e., any words, pictures, symbols, or combination thereof) that provide employees with specific information regarding the physical or health hazard(s) including primary target organ effect(s).
- The name of the chemical manufacturer, importer, or other responsible party, if appropriate.

Labels and other forms of warning will be legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Note that pictorial labels required by the current OSHA Hazard Communication standard are acceptable labels.

If existing labels already contain the required information, new labels are not required.

9.7.5 Alternatives to Labeling, Tagging, or Marking Requirements

Alternatives to the above-referenced labeling, tagging, or marking requirements include:

- Signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the marking information required above. The written materials will be readily accessible to employees in their work area throughout each work shift. If this alternative system is utilized, it will be done only with approval of the SSHO.
- Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer are not required to be labeled.
- Laboratory-prepared sample collection bottles with sample preservatives (5 milliliters or less) will not be labeled with hazard warnings.

9.7.6 Shipping Hazardous Chemicals

Chemical manufacturers, importers, and distributors must ensure that each container of hazardous chemicals leaving their workplace is labeled, tagged, or marked with specific information, including:

- Identity of the hazardous chemical(s) (i.e., chemical name or common name as listed on the SDS)
- Appropriate hazard warnings (i.e., any words, pictures, symbols, or combination thereof) that provide employees with specific information regarding the specific physical or health hazard(s), including primary target organ effect(s)
- The name and address of the chemical manufacturer, importer, or other responsible party, if appropriate.

In addition to the above, the SSHO will ensure that containers of hazardous chemicals being shipped (if necessary) are marked in a manner that does not conflict with the requirements of the United States Department of Transportation. For the shipment of samples, labeling and SDS requirements outlined herein are not required under this Hazard Communication Program. Personnel should follow proper packaging and shipping requirements as established by the United States Department of Transportation and/or International Air Transport Association/International Civil Aviation Organization.

9.7.7 Safety Data Sheets

Chemical manufacturers and importers are required to obtain or develop an SDS for each hazardous chemical they produce or import. The SSHO will maintain a copy of the SDS for each hazardous chemical and will ensure that they are readily accessible to employees working with or near the chemical. Additionally, applicable information contained in the SDSs has been incorporated into associated AHAs. SDSs for chemicals expected to be used to complete the project are included in Appendix F.

The SSHO, or designee, will inform site workers of the type and location of hazardous chemicals onsite and the location of SDSs. The SSHO will be made aware of new chemicals required at the site by the EA PM and/or subcontractors so that site workers are aware of the chemicals, the chemicals can be added to the site inventory, and the SDSs can be included in the site files. SDSs will be referenced in the event that there is a spill that requires clean up by site personnel.

9.7.8 Employee Information and Training

Training and education is an ongoing essential part of this Hazard Communication Program. It is important that employees not only have access to the technical information regarding the chemical hazards in their workplace but they must understand what it says. Training, information, and education are intended to give employees the skills they need to do their jobs in a way that protects their safety, health, and welfare. Training will be conducted as necessary; at a minimum it will be completed for all employees working on the project site at the pre-entry briefing and whenever a new physical or health hazard the employees have not previously been trained in is introduced into their work scope. Training will include the following topics:

- Requirements of the Hazard Communication Program for the project

- The location of all hazardous or toxic agents for the project
- Identification and recognition of hazardous or toxic agents for the project
- Physical and health hazards of the hazardous or toxic agents pertinent to project activities
- Protective measures employees can implement when working with project-specific hazardous or toxic agents
- The location and content of the SDS for the chemicals; the content and meaning of the information provided on the SDS.

9.8 FIRE PREVENTION AND PROTECTION PLAN

The possible fire hazards and ignition sources expected at this project site include spark hazards during asphalt removal and repair (metal tools and/or equipment against rock or metal parts contacting each other) and exhaust from vehicles and generators creating enough heat to ignite combustibles (i.e., grass). Open flame work and fuel source fires are not expected for completion of this project work. Site work will be conveyed to local fire and police departments by the SSHO prior to the start of any field activities; however, it is anticipated that a potential fire caused by the fire hazards and ignition sources identified above can be effectively extinguished by site personnel.

Based on a review of the potential hazards associated with the SOW, no unusual fire hazards exist at the sites. Smoking is prohibited at the sites and there are no areas with underground fire hazards. No compressed gas cylinders or Department of Transportation-identified incompatible materials are required for completion of the SOW. No hot work, open flame devices, brush-control, steel-cabinets, insulating materials, disposal of combustible materials, burning operations, use of low-density fiberboard, temporary enclosures, temporary building spacing requirements, or fire lanes are required. Nothing will be placed in an area that will impede fire hydrants and there are no hazardous locations onsite with respect to a Fire Prevention Plan. No combustible materials are required to complete this SOW.

The SSHO, or designee, will ensure that onsite personnel are familiar with the Fire Prevention Plan prior to working onsite, and the Corporate Health and Safety Officer will complete an annual survey of the suitability and effectiveness of fire prevention and protection measures at the site. Records of the survey findings and any recommendations will be retained in the project files.

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10. RISK MANAGEMENT PROCESSES

An assessment of the hazards, training, and equipment required to perform the tasks were completed as part of a risk analysis by corporate health and safety management with input from personnel who have previously performed the tasks. As stated in EM 385-1-1 01.A.13, major activities and phases of work to be performed will be covered in an AHA. AHAs will be reviewed with all personnel involved in a task prior to each work activity or phase presenting hazards not experienced in previous project operations.

Upon commencement and throughout the activity, the AHA will be used to verify compliance with the prescribed hazard controls and to note any potential changes in process. The AHAs provide detailed project-specific hazards and controls for each major phase/activity of work. The primary activities and phases of work required to complete the SOW are presented in Section 2. AHAs are included in Appendix A.

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11. PERSONAL PROTECTIVE EQUIPMENT

This section describes the anticipated level of PPE for performing the activities associated with this project. The SSHO will periodically evaluate site conditions and based on changes to expected site conditions may recommend modifications to PPE requirements. The SSHO will coordinate all changes with the PM.

Level D PPE is anticipated to be sufficient for the duration of all field activities. The following equipment will be considered mandatory:

- Gloves rated for full protection for the contaminants of concern when sampling water,
- Steel-toed boots when working around heavy equipment,
- Safety glasses with side shield or face shield when working near heavy equipment or power tools,
- Orange traffic vest when working near traffic,
- Hearing protection, either ear plugs or earmuffs, when working in with loud power tools.

Used PPE will be placed in trash bags for disposal. Personnel will wash hands before eating. Additional information pertaining to PPE is presented in the SSHP (Appendix E).

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Appendix A

Activity Hazard Analyses

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ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	Mobilization and Demobilization	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	August 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	David Cookston		1 Catastrophic	E	E	H	H	M
Reviewed By:	Pete Garger, Corporate Health and Safety Director		2 Critical	E	H	H	M	L
Competent Person:	SSHO		3 Marginal	H	M	M	L	L
		4 Negligible	M	L	L	L	L	
Step 1: Review each "hazard" and determine RAC. Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely. Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible. Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.							<u>RAC Chart</u> E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	

TASK BREAKDOWN, HAZARDS, AND CONTROLS

Work Task Steps	Hazards	Controls	RAC
			Severity/ Probability / RAC
Mobilization and Demobilization	Physical Hazard: Slips, Trips, and Falls	- Keep work area free of excess material and debris. - Remove all trip hazards by keeping materials/objects organized and out of walkways. - Be aware of uneven surfaces while walking around work area. - Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces. - Stay aware of footing and do not run.	3/3/M
Mobilization and Demobilization	Physical Hazard: Material Handling, Moving, Lifting	- Follow proper lifting techniques. - Wear work gloves for materials handling. - Use two or more persons for heavy bulk lifting. - Use mechanical lifting equipment (hand carts, trucks, etc.) to move large awkward loads. - One person will not lift more than 60 pounds.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity/ Probability / RAC
Mobilization and Demobilization	Physical Hazard: Vehicular	- Utilize cones, signs, flags, and/or other traffic control devices as outlined in the Traffic Control Plan; wherever appropriate, use work truck as a safety shield to protect against traffic risk. - Wear high-visibility apparel (fluorescent yellow-green, fluorescent orange-red, or fluorescent red). Select color to provide highest contrast to the work environment. - If exposed to traffic up to 45 miles per hour, high visibility apparel meeting at minimum ANSI/ISEA Class 2 requirements (e.g. fluorescent shirt or vest with retro reflective material) will be worn. - If exposed to traffic above 45 miles per hour, the SSHO will make a determination as to whether high visibility apparel meeting ANSI/ISEA Class 3 requirements (i.e., fluorescent shirt or vest with retro reflective material and similar shorts, pants, coveralls etc.) will be worn.	2/4/M
Mobilization and Demobilization	Physical Hazard: Heat Stress	- Determine appropriate work schedule (resulting from WBGT readings); take regular breaks. - Have adequate water and electrolyte drinks available. - Designate shaded break areas. - Be aware of symptoms of heat-related illness.	3/4/L
Mobilization and Demobilization	Physical Hazard: Cold Stress	- Wear appropriate clothing to protect skin from wind and cold temperatures. Avoid working in extreme conditions. - Designate warm rest areas. - Be aware of symptoms of cold-related illness.	3/4/L
Mobilization and Demobilization	Physical Hazard: Weather	- Monitor weather conditions online or on the radio using a weather station that is part of the National Oceanic and Atmospheric Administration weather radio network or similar notification system. - If unfavorable weather conditions arise, SSHO and Investigation Manager will evaluate the safety hazards and activities will be halted by the Investigation Manager at the discretion of the SSHO. - Approach and stay upwind of potential sources of vapors.	2/4/M
Mobilization and Demobilization	Physical Hazard: Fire/Explosion	- Ensure type ABC, fully charged fire extinguisher is onsite. - Stop work if hazardous conditions are identified.	1/5/M

Work Task Steps	Hazards	Controls	RAC
			Severity/ Probability / RAC
Mobilization and Demobilization	Biological Hazards: Insects, Snakes, Wildlife, Vegetation	• Use insect repellant as necessary. • Stay alert and safe distance away from biological hazards. • Inspect work areas when arriving onsite to identify hazards. • Workers with allergies should carry antidote kits, if necessary. • Wash hands, face, and other exposed areas at the beginning of each break and at the end of the workday. If dermal contact occurs, wash the affected area with soap and water immediately. • Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, or poison ivy is likely. Remove gloves prior to touching exposed areas of the body.	3/3/M

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING:

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Support vehicle • Level of PPE (initial/upgrade): D • Emergency equipment including first aid kit, eye wash, fire extinguishers • WBGT monitor	• Inspect PPE prior to each use • Inspect vehicle daily • Use appropriate PPE • Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher)	• Use and limitations of PPE • APP and AHA review • Valid driver's license • Operation of equipment • Proper lifting • First aid/CPR—at least 2 people on site • Hazardous waste sites require 40 hour HAZWOPER training, annual updates. • SSHO will require 30-hour OSHA Construction Safety Course. • Site Manager will require 8-hour HAZWOPER Supervisor Course

NOTES: AHA = Activity hazard analysis.
 APP = Accident Prevention Plan.
 ANSI = American National Standards Institute.
 CPR = Cardiopulmonary resuscitation.
 HAZWOPER = Hazardous Waste Operations and Emergency Response.
 ISEA = International Safety Equipment Association.
 FAFB = Fairchild Air Force Base.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	COVID-19 Hazard Mitigation	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	23 March 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	D. Wilt, P.G.	1 Catastrophic	E	E	H	H	M	
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L	
Competent Person:	Kent Dixon and AEC Drilling	3 Marginal	H	M	M	L	L	
		4 Negligible	M	L	L	L	L	

Step 1: Review each "hazard" and determine RAC.
 Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.
 Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.
 Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.

RAC Chart
 E = Extremely High Risk
 H = High Risk
 M = Moderate Risk
 L = Low Risk

TASK BREAKDOWN, HAZARDS, AND CONTROLS:

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
All Tasks	Inhalation of virus from infected individual (symptomatic or asymptomatic) by other individuals	- Remain more than 6 feet from each other, unless necessary to perform job function. - Daily safety tailgate meetings will continue to be held in the warehouse but will be limited to no more than 10 people at a time (breaking up groups and staggering meeting times accordingly). - Maintain social spacing of 6 feet for meetings, with preference for tele-meetings. - Stay outside of individual offices (at doorways) when talking. - Use phones to communicate. - Maintain diligent use of personal protective equipment (PPE) including safety glasses to limit contact with eyes and nitrile gloves. Face shields may be worn for work that cannot be completed without maintaining a distance of 6 feet between individuals.	2/4/M

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
All Tasks	Inhalation of virus from infected individual (symptomatic or asymptomatic) by other individuals	- Staff are discouraged from taking breaks and eating lunch in communal settings where it is difficult to maintain a distance of 6 feet from co-workers. Breaks and lunches should be taken in offices, cubicles or personal vehicles. - Staff are encouraged to practice social distancing when not on the jobsite. - Staff are required to comply with all Federal, State, and local requirements and recommendations.	2/4/M
All Tasks	Dermal Contact with contaminated surfaces by individual personnel	- Wash hands often with soap and water for at least 20 seconds especially if in a public place, or after blowing your nose, coughing, or sneezing. - If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of hands and rub them together until they feel dry. - Avoid touching your eyes, nose, and mouth with unwashed hands.	2/4/M
All Tasks	Dermal Contact - Contamination on Surfaces	- Clean AND disinfect frequently touched surfaces daily. This includes field equipment, personal mobile phones, vehicle surfaces (steering wheel, door handles, shift stick), tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks. If surfaces are dirty, clean them: Use detergent or soap and water prior to disinfection. Use disinfectant capable of killing the virus on surfaces including: - Bleach – mix 5 tablespoons (1/3 cup) bleach per gallon of water or 4 teaspoons bleach per quart of water - Alcohol solutions with at least 70% alcohol - Other approved disinfectants listed at https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2 - The field office will be professionally cleaned twice weekly, with a focus on sanitizing/disinfecting all commonly touched surfaces such as doors, doorknobs and hardware, handrails, tabletops, windowsills, light switches, toilets, sinks, etc.	2/4/M

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
All Tasks	Infected individual(s)/ personnel at work	- The following questions below will be asked of each employee/subcontract employee and any potential site/office visitors to help identify people that should be excluded from office/job site. If an employee or subcontractor answers yes to any of the questions below, he/she will be asked to leave the job site immediately and contact their Supervisor and/or appropriate Human Resources Department for further instruction. - Do you currently have fever, chills, a cough, sore throat, or shortness of breath? - Have you been in contact with someone who has been medically diagnosed with COVID-19? - Have you been in contact with anyone, including family members, who have traveled to any of the known COVID-19 “hotspots” within the last 14 days? - The field office will be professionally cleaned if an infected individual is identified onsite, with a focus on sanitizing/disinfecting all commonly touched surfaces such as doors, doorknobs and hardware, handrails, tabletops, windowsills, light switches, toilets, sinks, etc.	2/4/M

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
- Emergency equipment including first aid kit, eye wash, fire extinguishers - Safety glasses, nitrile gloves, face shields - Hand soap or hand sanitizer - Disinfectant	- Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher) - Confirm disinfectant is approved to kill COVID-19	All Personnel: COVID-19 awareness training covering symptoms, routes of transmission, mitigation efforts required

NOTES: AHA = Activity hazard analysis.
PPE = Personal protective equipment.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	Drilling and Well Installation	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	July 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	David Cookston	1 Catastrophic	E	E	H	H	M	
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L	
Competent Person:	SSHO	3 Marginal	H	M	M	L	L	
		4 Negligible	M	L	L	L	L	

Step 1: Review each "hazard" and determine RAC.
 Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.
 Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.

RAC Chart
 E = Extremely High Risk
 H = High Risk
 M = Moderate Risk
 L = Low Risk

TASK BREAKDOWN, HAZARDS, AND CONTROLS:

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Drilling/Well Installation	Physical Hazard: Slips, Trips, Falls	- Keep work area free of excess material and debris. - Remove all trip hazards by keeping materials/objects organized and out of walkways. - Be aware of uneven surfaces while walking around drilling and well installation locations. - Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces. - Stay aware of footing, and do not run.	3/3/M

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Drilling/Well Installation	Physical Hazard: Injury from heavy equipment (drill rig and support vehicles).	• Be aware of the location of equipment, wear high visibility safety colors (fluorescent yellow-green, fluorescent orange-red, or fluorescent red), and establish eye contact with operator. • If exposed to traffic up to 45 miles per hour, high visibility apparel meeting at minimum ANSI/ISEA Class 2 requirements (e.g., fluorescent shirt or vest with retro reflective material) will be worn. • Use spotters when moving in/out of nominal clearance areas. • Heavy equipment should be equipped with back-up alarm or use horn when backing. • Be aware of pinch points, swinging chains, augers, etc. • Wear hard hat, steel or composite toed footwear, and safety glasses with side shields when working in proximity of drill rig.	2/4/M
Drilling/Well Installation	Physical Hazard: Faulty or Inappropriate Equipment	• Qualified driller must inspect drill rig and all associated equipment prior to use; if faulty or inappropriate, do not proceed until repaired or replaced. • Inspect all hand tools prior to use; if faulty or inappropriate, do not proceed until repaired or replaced.	2/4/M
Drilling/Well Installation	Physical Hazard: Moving Equipment/Air Rotary Drilling	• Clear area of obstructions and communicate with all workers involved that drilling is beginning. • Do not exceed manufacturer's recommended speed, force, torque, etc. and penetrate the ground slowly with hands on the controls for at least the first foot of soil to minimize chance of auger kick-out. • Stay clear of rotating auger. • Use long-handled shovel to clear away cuttings when auger has stopped. • Secure loose clothing. • Do not walk under suspended loads. • When possible, remove overhead hazards promptly. • Wear appropriate PPE including hard hats, safety glasses with side shields, and steel/composite-toed footwear.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Drilling/Well Installation	Physical Hazard: Pressure Washing	- Keep work area clear of debris and organize site to minimize walking distance. - Avoid creating wet walking surfaces that may become slippery. Ensure equipment is not leaking. - Wear appropriate PPE including PVC-dipped gloves, hard hats, face shield in addition to safety glasses with side shields, and steel/composite-toed footwear. - Keep hands and clothing arm's length away from the discharge opening of the nozzle. - Use in accordance with manufacturer guidelines and ensure all manufacturer safety devices are in place. - Work so that high pressure spray is directed away from the body and other personnel. Keep face clear of heater exhaust. - Do not hold equipment that is being cleaned.	3/4/L
Drilling/Well Installation	Physical Hazard: Hearing loss	Wear appropriate PPE (ear plugs capable of reducing worker noise exposure below an 8-hour TWA of 85 dBA) when working in proximity to drill rig.	3/4/L
Drilling/Well Installation	Physical Hazard: Material Handling, Moving, Lifting	- Follow proper lifting techniques. - Wear work gloves for materials handling. - Use two or more persons for heavy bulk lifting. - Use mechanical lifting equipment (hand carts, trucks, etc.) to move large awkward loads. - One person will not lift more than 60 pounds.	3/4/L
Drilling/Well Installation	Physical Hazard: Vehicular	- Utilize cones, signs, flags, and/or other traffic control devices as outlined in the Traffic Control Plan; wherever appropriate, use work truck as a safety shield to protect against traffic risk. - Wear high-visibility apparel (fluorescent yellow-green, fluorescent orange-red, or fluorescent red). Select color to provide highest contrast to the work environment. - If exposed to traffic up to 45 miles per hour, high visibility apparel meeting at minimum ANSI/ISEA Class 2 requirements (e.g. fluorescent shirt or vest with retro reflective material) will be worn. - If exposed to traffic above 45 miles per hour, the SSHO will make a determination as to whether high visibility apparel meeting ANSI/ISEA Class 3 requirements (i.e., fluorescent shirt or vest with retro reflective material and similar shorts, pants, coveralls etc.) will be worn.	2/4/M

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Drilling/Well Installation	Physical Hazard: Heat Stress	- Determine appropriate work schedule (resulting from WBGT readings); take regular breaks. - Have adequate water and electrolyte drinks available. - Designate shaded break areas. - Be aware of symptoms of heat-related illness.	3/4/L
Drilling/Well Installation	Physical Hazard: Cold Stress	- Wear appropriate clothing to protect skin from wind and cold temperatures. Avoid working in extreme conditions. - Designate warm rest areas. - Be aware of symptoms of cold-related illness.	3/4/L
Drilling/Well Installation	Physical Hazard: Fire/Explosion	- Ensure type ABC, fully charged fire extinguisher is onsite. - Perform utility clearance to avoid possible gas or utility lines. - Stop work if hazardous conditions are identified.	1/5/M
Drilling/Well Installation	Physical Hazard: Electrical	- Inspect work areas for spark sources, maintain safe distances, and provide barriers to prevent inadvertent contact. - Maintain minimum clearance distances for overhead energized electrical lines. Use a spotter to confirm clearance of overhead lines and other obstructions. - Perform utility clearance to avoid possible buried electrical lines. Interview property owners on location of possible private utilities.	1/5/M
Drilling/Well Installation	Physical Hazard: Weather	- Monitor weather conditions online or on the radio using a weather station that is part of the National Oceanic and Atmospheric Administration weather radio network or similar notification system. - If unfavorable weather conditions arise, SSHO and Investigation Manager will evaluate the safety hazards and activities will be halted by the Investigation Manager at the discretion of the SSHO. - Approach from and stay upwind of potential sources of vapors.	2/4/M
Drilling/Well Installation	Chemical Hazard: Exposure to Contaminants of Concern	- Wear safety glasses with side shields and nitrile gloves. - Perform environmental monitoring as per APP/SSHP. - Calibrate instruments prior to use. - Ensure personnel using equipment have been trained on instrument use and site-specific action levels/upgrades. - Position personnel and equipment upwind of sampling activities. - Decontaminate tools and PPE after use. - Wash hands and face.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Drilling/Well Installation	Chemical Hazard: Decontamination Material Handling and Contaminated Media Residue Exposure	- Only those personnel with HAZWOPER training will be allowed to perform equipment decontamination. - Safety data sheets will be maintained onsite for decontamination materials/fluids (e.g., detergents, etc.). - Proper PPE will be required, including nitrile gloves and safety glasses with side shields. If vigorous scrubbing is required (creating a splash hazard) a face shield and/or disposable coverall may be required at the discretion of the SSHO.	3/4/L
Drilling/Well Installation	Biological Hazards: Insects, Snakes, Wildlife, Vegetation	- Use insect repellant as necessary. - Stay alert and safe distance away from biological hazards. - Inspect work areas when arriving onsite to identify hazards. - Workers with allergies should carry antidote kits, if necessary. - Wash hands, face, and other exposed areas at the beginning of each break and at the end of the workday. If dermal contact occurs, wash the affected area with soap and water immediately. - Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, or poison ivy is likely. Remove gloves prior to touching exposed areas of the body.	3/3/M
Drill Rig / Direct Push Relocation / Setup	Physical Hazard: Rig Roll Over	- Do not move rig with mast raised. - Cross all hills and obstructions head on. - Set riggers prior to raising mast.	2/5/L
Drill Rig / Direct Push Relocation / Setup	Physical Hazard: Collision with property or personnel	- Heavy equipment should be equipped with back-up alarm or use horn when backing. - Use spotters when moving in/out of nominal clearance areas.	2/5/L

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
- Support vehicle - Level of PPE (initial/upgrade): D/C - Monitoring equipment - Heavy equipment and drill rig - Power tools/hand tools - Emergency equipment including first aid kit, eye wash, fire extinguishers	- Inspect PPE prior to each use - Inspect vehicle daily - Calibrate environmental monitoring equipment daily prior to use - Use appropriate PPE - Underground hazards require clearance - Inspect emergency equipment/supplies daily	- Use and limitations of PPE - APP and AHA review - Valid driver's license - Operation of equipment - Use of monitoring equipment - Proper lifting - First aid/CPR—at least 2 people onsite

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Pressure washing equipment • Decontamination pad • WBGT monitor	(first aid kit, eye wash, fire extinguisher)	• Hazardous waste sites require 40 hour HAZWOPER training, annual updates. • SSHO will require 30-hour OSHA Construction Safety Course. • Site Manager will require 8-hour HAZWOPER Supervisor Course • Drill rig operator (and any other large equipment operator) will be trained in equipment use and maintenance

NOTES: AHA = Activity hazard analysis.
 ANSI = American National Standards Institute.
 APP = Accident Prevention Plan.
 CPR = Cardiopulmonary resuscitation.
 dBA = Decibels.
 HAZWOPER = Hazardous Waste Operations and Emergency Response.
 ISEA = International Safety Equipment Association.
 FAFB = Fairchild Air Force Base

OSHA = Occupational Safety and Health Administration.
 PPE = Personal protective equipment.
 PVC = Polyvinyl chloride.
 RAC = Risk assessment code.
 SSHO = Site Safety and Health Officer.
 SSHP = Site Safety and Health Plan.
 TWA = Time weighted average.
 WBGT = Wet-bulb globe temperature.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	Groundwater Sampling and Well Purging	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	July 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	David Cookston	1 Catastrophic	E	E	H	H	M	
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L	
Competent Person:	SSHO	3 Marginal	H	M	M	L	L	
		4 Negligible	M	L	L	L	L	

Step 1: Review each "hazard" and determine RAC.
 Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.
 Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.
 Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.

RAC Chart
 E = Extremely High Risk
 H = High Risk
 M = Moderate Risk
 L = Low Risk

TASK BREAKDOWN, HAZARDS, AND CONTROLS:

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Groundwater Sampling	Physical Hazard: Slips, Trips, Falls	- Keep work area free of excess material and debris. - Remove all trip hazards by keeping materials/objects organized and out of walkways. - Be aware of uneven surfaces while walking around drilling and well installation locations. - Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces. - Stay aware of footing, and do not run.	3/3/M
	Physical Hazard: Heat Stress	- Determine appropriate work schedule (resulting from WBGT readings); take regular breaks. - Have adequate water and electrolyte drinks available. - Designate shaded break areas. - Be aware of symptoms of heat-related illness.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Groundwater Sampling	Physical Hazard: Cold Stress	- Wear appropriate clothing to protect skin from wind and cold temperatures. Avoid working in extreme conditions. - Designate warm rest areas. - Be aware of symptoms of cold-related illness.	3/4/L
	Physical Hazard: Weather	- Monitor weather conditions online or on the radio using a weather station that is part of the National Oceanic and Atmospheric Administration weather radio network or similar notification system. - If unfavorable weather conditions arise, SSHO and Investigation Manager will evaluate the safety hazards and activities will be halted by the Investigation Manager at the discretion of the SSHO. - Approach from and stay upwind of potential sources of vapors.	2/4/M
Groundwater Sampling	Chemical Hazards – Exposure to Organic Vapors from Well, Contaminants in Groundwater	- Perform environmental monitoring as required in APP. Where appropriate PPE (including nitrile gloves) as indicated in the site-specific addendum. - Ensure personnel using have been trained on instrument use and site-specific action levels/upgrades. - Calibrate instrument prior to use. - Position personnel and equipment up wind of well.	
Groundwater Sampling	Physical Hazard: Hearing loss	Wear appropriate PPE (ear plugs capable of reducing worker noise exposure below an 8-hour TWA of 85 dBA) when working in proximity to drill rig.	3/4/L
Groundwater Sampling	Physical Hazard: Material Handling, Moving, Lifting	- Follow proper lifting techniques. - Wear work gloves for materials handling. - Use two or more persons for heavy bulk lifting. - Use mechanical lifting equipment (hand carts, trucks, etc.) to move large awkward loads. - One person will not lift more than 60 pounds.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Groundwater Sampling	Physical Hazard: Vehicular	- Utilize cones, signs, flags, and/or other traffic control devices as outlined in the Traffic Control Plan; wherever appropriate, use work truck as a safety shield to protect against traffic risk. - Wear high-visibility apparel (fluorescent yellow-green, fluorescent orange-red, or fluorescent red). Select color to provide highest contrast to the work environment. - If exposed to traffic up to 45 miles per hour, high visibility apparel meeting at minimum ANSI/ISEA Class 2 requirements (e.g. fluorescent shirt or vest with retro reflective material) will be worn. - If exposed to traffic above 45 miles per hour, the SSHO will make a determination as to whether high visibility apparel meeting ANSI/ISEA Class 3 requirements (i.e., fluorescent shirt or vest with retro reflective material and similar shorts, pants, coveralls etc.) will be worn.	2/4/M
Groundwater Sampling	Chemical Hazard: Exposure to Contaminants of Concern	- Wear safety glasses with side shields and nitrile gloves. - Perform environmental monitoring as per APP/SSHP. - Calibrate instruments prior to use. - Ensure personnel using equipment have been trained on instrument use and site-specific action levels/upgrades. - Position personnel and equipment upwind of sampling activities. - Decontaminate tools and PPE after use. - Wash hands and face.	3/4/L
	Chemical Hazard: Decontamination Material Handling and Contaminated Media Residue Exposure	- Only those personnel with HAZWOPER training will be allowed to perform equipment decontamination. - Safety data sheets will be maintained onsite for decontamination materials/fluids (e.g., detergents, etc.). - Proper PPE will be required, including nitrile gloves and safety glasses with side shields. If vigorous scrubbing is required (creating a splash hazard) a face shield and/or disposable coverall may be required at the discretion of the SSHO.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Groundwater Sampling	Biological Hazards: Insects, Snakes, Wildlife, Vegetation	- Inspect work areas when arriving at a sampling site to identify hazard(s). Specifically, inspect well casing immediately upon opening for stinging insects. - Use insect repellant as necessary. - Stay alert and safe distance away from biological hazards. - Inspect work areas when arriving onsite to identify hazards. - Workers with allergies should carry antidote kits, if necessary. - Wash hands, face, and other exposed areas at the beginning of each break and at the end of the workday. If dermal contact occurs, wash the affected area with soap and water immediately. - Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, or poison ivy is likely. Remove gloves prior to touching exposed areas of the body.	3/3/M
Well Purging	Physical, Chemical, and Biological Hazards Listed Above, In Addition To Those Listed Below	Controls as listed above, as well as those listed below.	2/4/M
	Physical Hazard: Hearing loss	Where appropriate PPE (ear plugs) when working in proximity to air compressor.	3/4/L
	Physical Hazard: Material Handling, Moving, Lifting Accident	- Observe proper lifting techniques. Obey sensible lifting limits (60 lb maximum per person manual lifting). - Use two or more persons for heavy bulk lifting. - Use mechanical lifting equipment (hand carts, trucks, etc.) to move large awkward loads.	3/4/L
	Physical Hazard: Fire	- Ensure type ABC, fully charged fire extinguisher on-site. - Stop work if hazardous conditions are identified.	1/5/M
	Chemical Hazard: Uncontrolled Release of Groundwater	Ensure tubing discharge pressure is controlled and contained in bucket or drum.	2/4/M

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Support vehicle • Level of PPE (initial/upgrade): D/C • Monitoring equipment • Heavy equipment and drill rig • Power tools/hand tools • Emergency equipment including first aid kit, eye wash, fire extinguishers • Pressure washing equipment • Decontamination pad • WBGT monitor	• Inspect PPE prior to each use • Inspect vehicle daily • Calibrate environmental monitoring equipment daily prior to use • Use appropriate PPE • Underground hazards require clearance • Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher) • Inspect air compressor • Inspect gas cylinders	• Use and limitations of PPE • APP and AHA review • Valid driver's license • Operation of equipment • Use of monitoring equipment • Proper lifting • First aid/CPR—at least 2 people onsite • Hazardous waste sites require 40 hour HAZWOPER training, annual updates. • SSHO will require 30-hour OSHA Construction Safety Course. • Site Manager will require 8-hour HAZWOPER Supervisor Course

NOTES: AHA = Activity hazard analysis.
 ANSI = American National Standards Institute.
 APP = Accident Prevention Plan.
 CPR = Cardiopulmonary resuscitation.
 dBA = Decibels.
 HAZWOPER = Hazardous Waste Operations and Emergency Response.
 FAFB = Fairchild Air Force Base

OSHA = Occupational Safety and Health Administration.
 PPE = Personal protective equipment.
 PVC = Polyvinyl chloride.
 RAC = Risk assessment code.
 SSHO = Site Safety and Health Officer.
 SSHP = Site Safety and Health Plan.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	Soil Sampling	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	August 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	David Cookston	1 Catastrophic	E	E	H	H	M	
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L	
Competent Person:	SSHO	3 Marginal	H	M	M	L	L	
		4 Negligible	M	L	L	L	L	
Step 1: Review each "hazard" and determine RAC. Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely. Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible. Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.							<u>RAC Chart</u> E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	

TASK BREAKDOWN, HAZARDS, AND CONTROLS: Soil Sampling

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Soil Sampling	Physical Hazard: Slips, Trips, Falls	Keep work area free of excess material and debris.	3/3/M
		Remove all trip hazards by keeping materials/objects organized and out of walkways.	
		Be aware of uneven surfaces while walking around drilling and well installation locations.	
		Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces.	
		Stay aware of footing, and do not run.	
Soil Sampling	Physical Hazard: Lifting and Handling of Equipment/Tools	Follow proper lifting techniques.	3/3/M
		One person will not lift more than 60 pounds.	
		Get assistance or use mechanical aids.	
		Wear leather gloves for materials handling.	
Soil Sampling	Chemical Hazard: Exposure to Contaminants of Concern	Wear safety glasses and nitrile gloves	3/4/L
		Perform environmental monitoring as per APP/SSHP	
		Decontaminate sampling tools and PPE after use	
		Wash hands and face after sampling events	

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Soil Sampling	Physical Hazard: Working Near Water	No one will work alone when collecting surface soil or sediment samples	3/3/M
		If collecting samples from the shore, be alert to site conditions and proximity to water	
		If wading into water is required, one person will stay on shore	
		Wade only into shallow water; be alert for debris, obstructions	
	Physical Hazard: Heat Stress	Determine appropriate work schedule; take regular breaks	3/3/M
		Have adequate water and electrolyte drinks available	
		Designate shaded break areas	
		Be aware of symptoms of heat-related illness	
	Biological Hazards: Insects, Snakes, Wildlife, Vegetation Exposures	Inspect work areas when arriving at a sampling site to identify hazard(s)	3/3/M
		Use insect repellant as necessary	
		Stay alert and safe distance away from biological hazards	
		Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, poison ivy or oak	
		Workers with allergies should carry antidote kits, if necessary	

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Support vehicle • PPE • Monitoring equipment • Power tools/hand tools • Emergency equipment including first aid kit, eye wash, fire extinguishers • Respiratory Protection – not required	• Inspect PPE prior to each use • Inspect vehicle daily • Calibrate environmental monitoring equipment daily prior to use. • Use appropriate PPE • Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher)	• Use and limitations of PPE • Valid driver's license • Lifting • APP and AHA review • First aid/CPR—at least 2 people on site • Hazardous waste sites require 40 hour HAZWOPER training, annual updates • SSHO will require HAZWOPER 40 hour Worker Training and 30-hour OSHA Construction Safety Course

NOTES: AHA = Activity hazard analysis.
 ANSI = American National Standards Institute.
 APP = Accident Prevention Plan.
 CPR = Cardiopulmonary resuscitation.
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OSHA = Occupational Safety and Health Administration.
 PPE = Personal protective equipment.
 PVC = Polyvinyl chloride.
 RAC = Risk assessment code.
 SSHO = Site Safety and Health Officer.
 SSHP = Site Safety and Health Plan.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	Sediment Sampling	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	August 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	David Cookston	1 Catastrophic	E	E	H	H	M	
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L	
Competent Person:	SSHO	3 Marginal	H	M	M	L	L	
		4 Negligible	M	L	L	L	L	

Step 1: Review each "hazard" and determine RAC.
 Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.
 Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.

Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.

RAC Chart
 E = Extremely High Risk
 H = High Risk
 M = Moderate Risk
 L = Low Risk

TASK BREAKDOWN, HAZARDS, AND CONTROLS:

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Sediment Sampling	Physical Hazard: Slips, Trips, Falls	Keep work area free of excess material and debris.	3/3/M
		Remove all trip hazards by keeping materials/objects organized and out of walkways.	
		Be aware of uneven surfaces while walking around drilling and well installation locations.	
		Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces.	
	Physical Hazard: Lifting and Handling of Equipment/Tools	Follow proper lifting techniques.	3/3/M
		One person will not lift more than 60 pounds.	
		Get assistance or use mechanical aids.	
		Wear leather gloves for materials handling.	
	Chemical Hazard: Exposure to Contaminants of Concern	Wear Kevlar gloves for cut resistance.	3/4/L
		Wear safety glasses and nitrile gloves	
		Decontaminate sampling tools and PPE after use	
		Wash hands and face after sampling events	

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Soil Sampling	Physical Hazard: Working Near Water	No one will work alone when collecting surface soil or sediment samples	3/4/L
		If collecting samples from the shore, be alert to site conditions and proximity to water	
		If wading into water is required, one person will stay on shore	
		Wade only into shallow water; be alert for debris, obstructions	
	Physical Hazard: Heat Stress	Determine appropriate work schedule; take regular breaks	3/3/M
		Have adequate water and electrolyte drinks available	
		Designate shaded break areas	
		Be aware of symptoms of heat-related illness	
	Biological Hazards: Insects, Snakes, Wildlife, Vegetation Exposures	Inspect work areas when arriving at a sampling site to identify hazard(s)	3/3/M
		Use insect repellant as necessary	
		Stay alert and safe distance away from biological hazards	
		Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, poison ivy or oak	
	Biological Hazards: Microorganisms	Workers with allergies should carry antidote kits, if necessary	4/3/L
		Wear nitrile gloves, safety glasses, and waders	
		Wash PPE after use	
		Wash hands and face prior to eating, drinking, or smoking	

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Support vehicle • PPE • Power tools/hand tools • Emergency equipment including first aid kit, eye wash, fire extinguishers	• Inspect PPE prior to each use • Inspect vehicle daily • Calibrate environmental monitoring equipment daily prior to use. • Use appropriate PPE • Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher)	• Use and limitations of PPE • Valid driver's license • Lifting • APP and AHA review • First aid/CPR—at least 2 people on site • Hazardous waste sites require 40 hour HAZWOPER training, annual updates • SSHO will require HAZWOPER 40 hour Worker Training and 30-hour OSHA Construction Safety Course

NOTES: AHA = Activity hazard analysis.
 ANSI = American National Standards Institute.
 APP = Accident Prevention Plan.
 CPR = Cardiopulmonary resuscitation.
 dBA = Decibels.
 HAZWOPER = Hazardous Waste Operations and Emergency Response.
 FAFB = Fairchild Air Force Base

OSHA = Occupational Safety and Health Administration.
 PPE = Personal protective equipment.
 PVC = Polyvinyl chloride.
 RAC = Risk assessment code.
 SSHO = Site Safety and Health Officer.
 SSHP = Site Safety and Health Plan.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	Surface Water Sampling	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):				M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix					
Project Number:	6329605	Severity	Probability				
Date Prepared:	August 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely
Prepared By:	David Cookston	1 Catastrophic	E	E	H	H	M
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L
Competent Person:	SSHO	3 Marginal	H	M	M	L	L
		4 Negligible	M	L	L	L	L
Step 1: Review each "hazard" and determine RAC. Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely. Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible. Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.						<u>RAC Chart</u> E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk	

TASK BREAKDOWN, HAZARDS, AND CONTROLS:

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Surface Water Sampling	Physical Hazard: Slips, Trips, Falls	Keep work area free of excess material and debris.	3/3/M
		Remove all trip hazards by keeping materials/objects organized and out of walkways.	
		Be aware of uneven surfaces while walking around drilling and well installation locations.	
		Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces.	
	Physical Hazard: Lifting and Handling of Equipment/Tools	Follow proper lifting techniques.	3/3/M
		One person will not lift more than 60 pounds.	
		Get assistance or use mechanical aids.	
		Wear leather gloves for materials handling.	
		Wear Kevlar gloves for cut resistance.	
	Chemical Hazard: Exposure to Contaminants of Concern	Wear safety glasses and nitrile gloves	3/4/L
		Decontaminate sampling tools and PPE after use	
		Wash hands and face after sampling events	

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Surface Water Sampling	Physical Hazard: Working Near Water	No one will work alone when collecting surface water samples	3/4/L
		If collecting samples from the shore, be alert to site conditions and proximity to water	
		If wading into water is required, one person will stay on shore	
		Wade only into shallow water; be alert for debris, obstructions	
	Physical Hazard: Heat Stress	Determine appropriate work schedule; take regular breaks	3/3/M
		Have adequate water and electrolyte drinks available	
		Designate shaded break areas	
		Be aware of symptoms of heat-related illness	
	Biological Hazards: Insects, Snakes, Wildlife, Vegetation Exposures	Inspect work areas when arriving at a sampling site to identify hazard(s)	3/3/M
		Use insect repellant as necessary	
		Stay alert and safe distance away from biological hazards	
		Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if probability of encountering snakes, ticks, poison ivy or oak	
		Workers with allergies should carry antidote kits, if necessary	
	Biological Hazards: Microorganisms	Wear nitrile gloves, safety glasses, and waders	4/3/L
		Wash PPE after use	
		Wash hands and face prior to eating, drinking, or smoking	

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Support vehicle • PPE • Power tools/hand tools • Emergency equipment including first aid kit, eye wash, fire extinguishers	• Inspect PPE prior to each use • Inspect vehicle daily • Calibrate environmental monitoring equipment daily prior to use. • Use appropriate PPE • Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher)	• Use and limitations of PPE • Lifting • APP and AHA review • First aid/CPR—at least 2 people on site • Hazardous waste sites require 40 hour HAZWOPER training, annual updates • SSHO will require HAZWOPER 40 hour Worker Training and 30-hour OSHA Construction Safety Course

NOTES: AHA = Activity hazard analysis.
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 SSHP = Site Safety and Health Plan.

ACTIVITY HAZARD ANALYSIS

Activity/Work Task:	IDW Handling	Overall Risk Assessment Code (RAC) (use highest code from all subtasks):					M	
Project Location:	Fairchild AFB - Washington	Risk Assessment Code (RAC) Matrix						
Project Number:	6329605	Severity	Probability					
Date Prepared:	August 2020		1 Frequent	2 Likely	3 Occasional	4 Seldom	5 Unlikely	
Prepared By:	David Cookston	1 Catastrophic	E	E	H	H	M	
Reviewed By:	Pete Garger, Corporate Health and Safety Director	2 Critical	E	H	H	M	L	
Competent Person:	SSHO	3 Marginal	H	M	M	L	L	
		4 Negligible	M	L	L	L	L	

Step 1: Review each "hazard" and determine RAC.
 Probability = The likelihood to cause an incident, near miss, or accident. Identified as frequent, likely, occasional, seldom, or unlikely.
 Severity = The outcome/degree if an incident, near miss, or accident did occur. Identified as catastrophic, critical, marginal, or negligible.
 Step 2: Identify the RAC as E, H, M, or L for each hazard on the AHA. Select the highest RAC and note it at the top of the form.

RAC Chart
 E = Extremely High Risk
 H = High Risk
 M = Moderate Risk
 L = Low Risk

TASK BREAKDOWN, HAZARDS, AND CONTROLS:

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Handling and Accumulation of IDW	Physical Hazard: Slips, Trips, Falls	- Keep work area free of excess material and debris. - Remove all trip hazards by keeping materials/objects organized and out of walkways. - Be aware of uneven surfaces while walking around sampling locations. - Wear appropriate PPE, including non-slip rubber boots if working on wet or slick surfaces. - Stay aware of footing, and do not run.	3/3/M
Handling and Accumulation of IDW	Physical Hazard: Waste Handling, Moving, Lifting	- Do not exceed recommended weight limits for container handling equipment. - Obey sensible lifting limits (60 pound maximum per person manual lifting).	3/4/L
Handling and Accumulation of IDW	Physical Hazard: Heat/Cold Stress	- Take breaks as needed. - Be aware of weather conditions and dress appropriately. - Consume adequate food/beverages. - If possible, adjust work schedule to avoid heat/cold stresses.	3/4/L

Work Task Steps	Hazards	Controls	RAC
			Severity / Probability / RAC
Handling and Accumulation of IDW	Physical Hazard: Weather	• Monitor radio for up-to-date severe weather forecasts. • Discontinue work during thunderstorms and severe weather events. • Approach and stay upwind of potential sources of vapors.	3/4/L
Handling and Accumulation of IDW	Biological Hazards: Insects, Snakes, Wildlife, Vegetation	• Use insect repellant as necessary. • Stay alert and safe distance away from biological hazards. • Wear appropriate PPE including work gloves, long sleeves and pants, and snake chaps if there is a probability of encountering snakes, ticks, poison ivy, or poison oak.	3/3/M
Handling and Accumulation of IDW/Disposal of IDW	Chemical Hazard: Solid and Liquid IDW	• Only those personnel with HAZWOPER training will be allowed to perform IDW handling. • Perform environmental monitoring with properly calibrated equipment as required in APP. • Transfer of IDW will be performed with equipment that will limit direct contact with IDW (pumps, skid loaders, etc.) when possible. • Transfer of IDW into over pack drums will be performed with appropriate equipment to either lift the drums up and into the over pack containers or safely flip drums into the new over pack drums). • IDW will be properly containerized and/or covered and labeled. • Proper PPE will be required, including nitrile gloves and safety glasses. If open container pouring/transfer of liquid IDW is required (creating a splash hazard) a face shield and/or disposable coverall may be required at the discretion of the SSHO.	3/4/L
Handling and Accumulation of IDW/Disposal of IDW	Physical Hazard: Heavy Equipment/Collision with Property or Personnel	• Heavy equipment should be equipped with back-up alarm or use horn when backing. • Use spotters when moving in/out of nominal clearance areas.	2/5/L

REQUIRED EQUIPMENT, INSPECTION, AND TRAINING:

Equipment	Inspection Requirements	Training Requirements (including Competent Person and Qualified Personnel, if applicable)
• Support vehicle • Monitoring equipment • PPE • Material/drum/overpack drum moving equipment (skid loader, dolly, drum lift, etc.) • Containers/containerization material (drums, overpack drums, polyethylene liners) • Power and hand tools • Emergency equipment including first aid kit, eye wash, fire extinguishers • Water pumps • Respiratory Protection – not required	• Inspect PPE prior to each use • Inspect vehicle and IDW moving/lifting equipment daily • Calibrate environmental monitoring equipment daily prior to use. • Inspect emergency equipment/supplies daily (first aid kit, eye wash, fire extinguisher)	• Use and limitations of PPE • APP and AHA review • Valid driver's license • Operation of equipment (e.g., skid loader) • Use of monitoring equipment • Use and limitations of PPE • Lifting • First aid/CPR—at least 2 people on site • Hazardous waste sites require 40 hour HAZWOPER training, annual updates for any intrusive activities. • SSHO will require HAZWOPER 40 hour Worker Training and 30-hour OSHA Construction Safety Course.

NOTES: AHA = Activity hazard analysis.
 APP = Accident Prevention Plan.
 CPR = Cardiopulmonary resuscitation.
 HAZWOPER = Hazardous Waste Operations and Emergency Response.
 IDW = Investigation-derived waste.
 FAFB = Joint Base Lewis-McChord.

OSHA = Occupational Safety and Health Administration.
 PPE = Personal protective equipment.
 RAC = Risk assessment code.
 SSHO = Site Safety and Health Officer.

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Appendix B

Occupational Safety and Health Administration 300A Form

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Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for

Year 2019



U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name EA Engineering, Science, and Technology, Inc., PBC

City Hunt Valley State Maryland

Identify the person		Describe the case				Classify the case				CHECK ONLY ONE box for each case based on the most serious outcome for that case:		Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:						
(A) Case No.	(B)	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of "" (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	Death	Days away from work	Remained at work		Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses			
						(G)	(H)	Job transfer or	Other record-	(K)	(L)	(1)	(2)	(3)	(4)	(5)	(6)			
1		geologist	1/2	Syracuse New York office, 269 W. Jefferson St. Syr, NY	cut finger with box cutter trying to separate file folders				x			x								
2		intern	7/10	Jones Falls stream, Stevenson, Maryland	employee got a bug bite and cellulitis ensued on 7/18				x			x								
3		Sr. Env Tech	11/6	fishing in Palmetto Creek, near Deridder, La	fish hook stuck in finger, hospital visit with tetanus shot				x			x								
4		scientist	12/20	106 Lake Street, Port Washington, Wisconsin	put on gloves to carry equipment, developed dermatitis				x				x							
5																				
6																				
7																				
8																				

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

(1)	Injury
(2)	Skin Disorder
(3)	Respiratory Condition
(4)	Poisoning
(5)	Hearing Loss
(6)	All other illnesses

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year 2019



U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	4
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of... (M)			
(1) Injury	3	(4) Poisoning	0
(2) Skin Disorder	1	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name EA Engineering, Science, and Technology Inc., PBC

Street 225 Schilling Circle

City Hunt Valley State Maryland Zip 21031

Industry description (e.g., Manufacture of motor truck trailers)
Environmental Remediation and Consulting

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

5 6 2 9 1 0

Employment information

Annual average number of employees 535

Total hours worked by all employees last year 1,123,596

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Tom D. Matrone
Company executive

President and CEO
Title

410 584-7000
Phone

8-Jan-20
Date

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for

Year 2018



U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an injury and illness incident report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name EA Engineering, Science, and Technology, Inc., PBC

City Hunt Valley State Maryland

Identify the person				Describe the case		Classify the case				Enter the number of days the injured or ill worker was:		Check the "injury" column or choose one type of illness:					
(A) Case No.	(B) Employee's Name	(C) Job Title (e.g., Welder)	(D) Date of injury or onset of (mo./day)	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	CHECK ONLY ONE box for each case based on the most serious outcome for that case:											
						Death	Days away from work	Remained at work		Away From Work (days)	On job transfer or restriction (days)	(M) Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illness
						(G)	(H)	(I) Job transfer or	(J) Other record-	(K)	(L) 14	(1) x	(2)	(3)	(4)	(5)	(6)
1		scientist II	7/25	GWTS field trailer at Kirtland, AFB	laceration to right index finger tip with box cutter			x				x					
2		UXO tech II	9/21	Aberdeen Proving Ground Range area	during magnetometer sweep contacted poison ivy				x				x				
Page totals						0	0	1	1	0	14	1	1	0	0	0	0

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Injury	Skin Disorder	Respiratory Condition	Poisoning	Hearing Loss	All other illnesses
(1)	(2)	(3)	(4)	(5)	(6)

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	1	1
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	14
(K)	(L)

Injury and Illness Types

Total number of... (M)			
(1) Injury	1	(4) Poisoning	0
(2) Skin Disorder	1	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name EA Engineering, Science, and Technology Inc., PBC

Street 225 Schilling Circle

City Hunt Valley State Maryland Zip 21031

Industry description (e.g., Manufacture of motor truck trailers)
Environmental Remediation and Consulting

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)
5 6 2 9 1 0

Employment information

Annual average number of employees 511

Total hours worked by all employees last year 1,062,015

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.


Company executive

410 584-7000
Phone

President and CEO
Title

4-Jan-19
Date

Summary of Work-Related Injuries and Illnesses



Form approved OMB no. 1218-0176

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	1	6
(G)	(H)	(I)	(J)

Total number of days away from work 0 (K)

Total number of days of job transfer or restriction 7 (L)

Total number of... (M)			
(1) Injury	<u>7</u>	(4) Poisoning	<u>0</u>
(2) Skin Disorder	<u>0</u>	(5) Hearing Loss	<u>0</u>
(3) Respiratory Condition	<u>0</u>	(6) All Other Illnesses	<u>0</u>

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Your establishment name EA Engineering, Science, and Technology Inc., PBC

Street 225 Schilling Circle

City Hunt Valley State Maryland Zip 2103

Industry description (e.g., Manufacture of motor truck trailers)
Environmental Remediation and Consulting

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)

OR North American Industrial Classification (NAICS), if known (e.g., 336212)

5 6 2 9 1 0

Annual average number of employees 514

Total hours worked by all employees last year	1,072,638
---	-----------

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.



Company executive

President and CEO
Title

410 584-7000
Phone

8-Jan-18
Date

Appendix C

Resumes and Certifications of Key Personnel ***(Will be included with Final Version of this Document)***

(Any certification that is set to expire prior to, or during, field activities will be renewed before said expiration date. Onsite files will be amended with current certifications as appropriate)

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Appendix D

Field and Inspection Forms

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ACCIDENT PREVENTION PLAN AND SITE SAFETY AND HEALTH PLAN REVIEW RECORD

Site: _____

EA Project No. 6329605

I have read the Accident Prevention Plan and have been briefed on anticipated site hazards, required accident prevention, and emergency response for work to be performed at this site. I agree to conform to all the requirements of this Plan.

[illegible]



TAILGATE SAFETY MEETING

1. Reason for Briefing:			
	Daily Safety Briefing		New Site Procedure
	Initial Safety Briefing		New Site Information
	New Task Briefing		Review of Site Information
	Periodic Safety Meeting		Other: (Specify)
2. Personnel Attending:			
	Name	Signature	Position
Briefing Given By:			
3. Topics: (Check All That Apply)			
	Site Safety Personnel		Decontamination Procedures
	Site/Work Area Description		Emergency Response/Equipment
	Physical Hazards		On-Site Injuries/Illnesses
	Chemical/Biological Hazards		Reporting Procedures
	Heat/Cold Stress		Directions to Medical Facility
	Work/Support Zones		Drug and Alcohol Policies
	PPE		Medical Monitoring
	Safe Work Practices		Evacuation/Egress Procedures
	Air Monitoring		Communications
	Task Being Performed		Confined Spaces
	OE Precautions		Other:
4. Remarks:			



SAFETY INSPECTION REPORT

Site / Location: _____

Date: ____/____/____

Type of Inspection: ____ Initial ____ Daily ____ Weekly ____ Other

List Job Function Inspected: _____

Inspection List:

Category	Yes	No	NA	Comments
Biological Hazards				
Biting/Stinging insects.				
Poisonous plants (i.e. poison ivy, poison oak, nettles)				
Snakes				
Work Environment				
Work area clean and orderly.				
Walk surface dry and/or slip-resistant.				
Spilled materials or liquids cleaned immediately.				
Trash in appropriate containers and removed as needed.				
Emergency Planning				
Emergency contacts phone numbers available.				
Emergency routes to hospital available.				
Weather forecast discussed for daily activities. Cold/Heat Stress discussed. Actions to take.				
First Aid kit(s) available.				
Eye wash station available.				
Current certified Fire Extinguisher available.				
Cell phones available.				
PPE				
Required PPE (Hardhats, safety shoes, safety glasses with side shields) worn.				
Safety Vest available and worn when needed.				
Proper dermal protection available for the task and worn.				
Hearing protection available and worn when needed.				
Utilities				
Nebraska Diggers Hotline been contacted. (Phone 811)				
Electrical been located. Buried Overhead (Been sheathed if within 10 ft /boom)				
Telephone				
Cable				
Buried water/sewer/gas.				
Vehicle/Pedestrian Traffic				
Lights in proper working order.				
Alarms working properly.				
Internal safety equipment in proper working order. (i.e. safety belts, shoulder harness)				

Deficiency Date:

Deficiency Description: _____

Date of Correction:

Actual Date of Correction:

Re-Inspection Required: ____ Yes ____ No. Date Re-Inspection: ____/____/____

Signature: _____ Onsite SSHO



VISITORS LOG

Project Location: _____

Month of: _____

[illegible]



ACCIDENT/LOSS REPORT

This report must be completed by the injured employee or supervisor and faxed to EA Corporate Human Resources **within 24 hours** of any accident. The fax number is: **(410) 771-1780**.

NOTE: Whenever an employee is sent for medical treatment for a work-related injury or illness, Page 4 of this report must accompany that individual to ensure that all invoices/bills/correspondence are sent to Human Resources for timely response.

A. DEMOGRAPHIC INFORMATION

Name of Injured Employee:					
Home Address:					
Home Phone:		Date of Birth:			
Age:		Sex:	M:		F:
Marital Status:		Hourly Rate:			
Employee Number:		Date of Hire:			
Number of Dependents:					
Employee's Job Title:					
Department Regularly Employed by:					
Was the Employee Injured on the Job:		Yes:		No:	
Primary Language of the Employee					

B. ACCIDENT/INCIDENT INFORMATION

Date of Accident:		Time of Accident:	
Report to Whom:		Name of Supervisor:	
Exact Location Where Accident Occurred (including street, city, state, and county):			
Explain what happened (include what the employee was doing at the time of the accident and how the accident occurred):			
Describe the injury and the specific part(s) of the body affected (e.g., laceration, right hand, third finger)			

Object or Substance that Directly Injured the Employee:			
Number of Days or Hours Employee Usually Works per Week:			
Is the Employee Expected to Lose at Least One Full Day of Work?			
Does the Employee Have a Previous Claim (Yes or No):		If yes, status (Open/Closed):	
Was the Employee Assigned to Restricted Duty (Yes or No)?			

C. ACCIDENT INVESTIGATION INFORMATION (Yes or No)

Was Safety Equipment Provided?		If yes, was it used	
Was an Unsafe Act Being Performed?		If yes, describe:	
Was a Machine Part Involved?		If yes, describe:	
Was the Machine Part Defective?		If yes, in what way?	
Was a Third Party Responsible for the Accident/Incident?		If yes, list name, address, and phone number:	
Was the Accident/Incident Witnessed?		If yes, list name, full address, and phone number:	

D. PROVIDER INFORMATION

Was First Aid Given Onsite (Yes or No)/		If yes, what type of medical treatment was given	
Physician Information (if medical attention was administered)?		Name, full address, and phone number	
Hospital Address		Name, full address, and phone number:	
Was the Employee Hospitalized (Yes or No)?		If yes, on what date?	
Was the Employee Treated as an Out-Patient. Receive Emergency Treatment, or Ambulance Service (Yes or No)?			

Please attach the physician's written Return to Work slip.

NOTE: A physician's Return to Work Slip is required prior to allowing the worker to return to work.

E. AUTOMOBILE ACCIDENT INFORMATION (complete if applicable)

Authority Contacted and Report Number			
EA Employee Vehicle Year, Make, and Model			
V.I.N.		Plate/Tag No.:	

Owner's Name and Address:			
Driver's Name and Address:		Driver's License No.:	
Relation to Insured:			
Describe Damage to Your Property:			
Describe Damage to Other Vehicle or Property:			

Other Driver's Name and Address:	
Other Driver's Phone No.:	
Other Driver's Insurance Company and Phone Number:	
Location of Other Vehicle:	
Name, Address, and Phone No. of Other Injured Parties:	

Witness 1 Name:		Phone No.:	
Address:			
Statement:			
Signature of Witness 1:			

Witness 2 Name:		Phone No.:	
Address:			
Statement:			
Signature of Witness 2:			

F. ACKNOWLEDGEMENT

Name of Supervisor:			
Report Prepared by:		Date Prepared:	

I have read this report and the contents as to how the accident/loss occurred are accurate to the best of my knowledge.

Signature of Injured Employee

Date

I am seeking medical treatment for a work-related injury/illness.

Please forward all bills/invoices/correspondence to:

**EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
11019 McCORMICK ROAD
HUNT VALLEY, MARYLAND 21031**

**ATTENTION: Michele Bailey
HUMAN RESOURCES**

**(410) 584-7000
(410) 771-1780 (FAX)**



“NEAR MISS” INCIDENT REPORT

A “near miss” is a potential hazard or incident that has not resulted in any personal injury or property damage. Unsafe working conditions, unsafe employee work habits, improper use of equipment, or use of malfunctioning equipment have the potential to cause work-related injuries. It is everyone’s responsibility to report and correct these potential accidents/incidents immediately.

Please complete this form as a means to report these “near miss” situations.

Department/Location _____ Date: _____ Time: _____ a.m. / p.m.

Please check all appropriate conditions:

_____ Unsafe act _____ Unsafe equipment _____ Other
_____ Unsafe condition _____ Unsafe use of equipment

Description of incident or potential hazard _____

Employee Signature _____ Date _____

“NEAR MISS” INVESTIGATION

Description of the “Near Miss” Condition _____

Causes (primary and contributing) _____

Corrective Action Taken (i.e., remove the hazard; replace, repair, or retrain in the proper procedures for the task) _____

Signed _____ Date Completed _____

Form not completed within 4 hours of incident for the following reason(s) _____

Corporate Health and Safety Officer

Date

Forward to Corporate Health and Safety Officer when completed.

Appendix E

Site Safety and Health Plan

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NOVEMBER 2020

**DRAFT FINAL
SITE SAFETY AND HEALTH PLAN
PFAS PHASE I REMEDIAL INVESTIGATION**

Fairchild Air Force Base

Spokane County, Washington



**U.S. Army Corps of Engineers
Seattle District**



**U.S. Air Force
Civil Engineer Center**



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LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent
°C	Degrees Celsius
°F	Degrees Fahrenheit
AHA	Activity Hazard Analysis
ANSI	American National Standard Institute
APP	Accident Prevention Plan
ASSE	American Society of Safety Engineers
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	Contaminant of Concern
CPR	Cardiopulmonary resuscitation
CSP	Certified Safety Professional
dBA	Decibel(s)
EA	EA Engineering, Science, and Technology, Inc., PBC
EM	Engineer Manual
EPA	United States Environmental Protection Agency
FAFB	Fairchild Air Force Base
ft	Foot (feet)
HAZWOPER	Hazardous Waste Operations and Emergency Response
OSHA	Occupational Safety and Health Administration
PFAS	per – and polyfluoroalkyl substances
PPE	Personal protective equipment
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
RPM	Restoration Program Manager
SOP	Standard Operating Procedures
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
TWA	Time weighted average

LIST OF ACRONYMS AND ABBREVIATIONS (con't)

UFP	Uniform Federal Policy
USACE	United State Army Corps of Engineers

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1. INTRODUCTION AND PROJECT ORGANIZATION

1.1 PURPOSE

This Site Safety and Health Plan (SSHP) has been prepared to support the Phase I Remedial Investigation (RI) at Fairchild Air Force Base (FAFB) in Spokane County, Washington (Figure 1 of the Accident Prevention Plan [APP]).

Work conducted under this contract will be performed in accordance with applicable federal, state, and local safety and occupational health laws and regulations, including Occupational Safety and Health Administration (OSHA) standards (e.g., 29 Code of Federal Regulations [CFR] 1910 and 29 CFR 1926) and the United States Army Corps of Engineers (USACE) Safety and Health Requirements Manual (Engineer Manual [EM] 385-1-1, 30 November 2014) and all applicable health and safety procedures of EA Engineering, Science, and Technology, Inc., PBC (EA). The contents of the SSHP are subject to review and revision as new information becomes available.

The procedures and standards in this SSHP are prepared for employees and subcontractors of EA working at FAFB under this contract. These policies are based on the available current information on potential hazards and contaminants, as identified in previous investigations. Personnel covered by this SSHP must consider newly acquired data or conditions when conducting their work, and must use appropriate, generally accepted practices to safeguard the health of onsite personnel.

1.1.1 Project Description

The site description and project background information, including work activities to be conducted at the site, are included in Section 2 of the APP.

1.1.2 Project Tasks

The scope of work for activities at FAFB covered by this SSHP are detailed in Section 2.3 of the APP.

1.2 FIELD WORK CHAIN OF COMMAND

Health and safety are everyone's responsibility. However, as with all projects, a significant portion of responsibility resides with the onsite Site Safety and Health Officer (SSHO). Safety responsibility is assigned to all levels of management and all phases of project implementation. EA personnel, identified below, are responsible for implementation of this plan. Section 4 of the APP provides additional organization members, qualifications, and responsibilities of staff. Appendix C of the APP presents resumes and/or certifications.

1.2.1 Corporate Health and Safety Officer

The EA Program Corporate Health and Safety Officer is a Certified Industrial Hygienist (CIH) and Certified Safety Professional (CSP) and is responsible for establishing, implementing, monitoring, and administering the Health and Safety Program. The Corporate Health and Safety Officer is responsible for ensuring that the company Health and Safety Program complies with federal, state, and contract specific health and safety requirements, and will approve all amendments to this plan. Mr. Peter Garger, CIH, CSP, is the EA Corporate Health and Safety Officer.

1.2.2 Site Safety and Health Officer

The SSHO is responsible for aiding the Corporate Health and Safety Officer and the field personnel in ensuring that field activities are performed safely. The SSHO is responsible for coordinating the Health and Safety Program for all EA personnel involved in onsite activities, and for management of the hazards under their control. The SSHO will maintain health and safety training records for all onsite personnel. The SSHO or his designee will record in a daily logbook the site conditions; any site monitoring activities, personal protective equipment (PPE) used and any upgrading or downgrading of PPE levels, and other site specific or personnel related health and safety information.

The SSHO will additionally provide guidance for onsite health and safety developments, recommend and prepare health and safety plan addenda, and ensure that all personnel, including subcontractors, follow the provisions herein. The SSHO will notify the Project Manager of any dangers that threaten the health or safety of onsite personnel or the surrounding populace and has the authority to stop any operation until the situation is made safe. During field operations where the SSHO will not be at the site, the SSHO shall designate a qualified individual to be an alternate. The individual will be responsible for ensuring that this plan is followed.

1.2.3 Field Personnel and Subcontractors

Field personnel and subcontractors performing work associated with this project are responsible for compliance with all applicable federal, state, and local statutes, ordinances, or regulations regarding health and safety.

Each subcontractor to EA shall prepare a health and safety plan that provides planning equal to this plan or may adopt this plan in lieu of preparation of a separate plan. Regardless of the health and safety plan used, it is the responsibility of the subcontractor to ensure the compliance of its employees to the most stringent approved plan. The subcontractor will identify a lead individual responsible for the health and safety compliance of their employees, lower tier subcontractors, and consultants. This person will be responsible for reporting to the SSHO and demonstrating compliance with the health and safety procedures.

Health and safety issues associated with specific subcontractor activities, methods, and equipment must be provided by the subcontractor and shared with the rest of the field personnel

and the SSHO. The forum for disseminating this information includes standard operating procedures, pre project health and safety briefings, and daily tailgate meetings.

In conformance with the Department of Labor and Federal OSHA HAZWOPER (29 CFR 1910.120), each subcontractor employee proposed for intrusive onsite activities involving hazardous waste or hazardous substances must participate in a medical monitoring program, have been certified for hazardous waste field work by a licensed Occupational Health physician, and have successfully completed the required HAZWOPER training. All subcontractors are responsible for demonstrating compliance by providing documentation of current health and safety training and medical surveillance for onsite personnel prior to the start of their activities onsite.

1.2.4 Visitors

Upon arrival to a site, all visitors will sign in at a pre-arranged location. The SSHO or designee will brief all visitors of the general health and safety requirements and specific requirements related to each task. Visitors will be escorted at all times while onsite and will be responsible for compliance with the requirements specified in this SSHP.

1.3 TRAINING

All individuals proposed for intrusive onsite activities involving hazardous waste or hazardous substances shall have the 40-hour health and safety training as well as 8-hour updates annually. Before the work begins, the SSHP shall be reviewed and the signature page (Section 1 of the APP) signed and dated stating that the reader understands and complies with the SSHP. Additional training requirements are provided in Section 6 of the APP.

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2. HAZARD/RISK ANALYSIS

The primary work phases are described in Section 2 of the APP. Each task has been analyzed to assess the potential chemical, physical, and biological hazards that may be encountered by site personnel and prescribe the proper engineering and/or administrative controls and/or PPE. These controls will ensure that the risks to site personnel safety and health are reduced or eliminated while performing the activities associated with the Phase I RI at FAFB. The results of the task hazard analysis are documented using a task-specific Activity Hazard Analyses (AHA). An AHA has been developed for each task associated with the Phase I RI. The AHAs are provided in Appendix A of the APP.

2.1 CHEMICAL HAZARDS

The potential for exposure to chemical hazards may occur during system operation and sampling. It is anticipated for this project there will be minimal chemical exposure. per – and polyfluoroalkyl substances (PFAS) compounds are identified contaminants of concern (COC), however field personnel will not ingest water from sampling locations. The anticipated COC concentrations are below direct contact risk.

Dermal contact with these chemical hazards is possible. Dermal protection appropriate for the chemical will be worn when handling or contacting potentially contaminated environmental media (Section 3).

2.1.1 Other Potential Chemical Hazards

The potential for chemical exposure also exists when using hazardous substances to conduct field activities and includes: (1) gasoline and diesel for vehicle and power equipment operation, and (2) decontamination fluids. The Safety Data Sheets for chemicals expected to be used during field activities will be maintained at the site.

2.1.2 Administrative Controls

All samples and sampling equipment will be kept separate and away from food items. Place food items in coolers marked specifically for food. Do not place food items in coolers used for samples.

2.2 EQUIPMENT HAZARDS

The use of drilling and subsequent equipment may pose safety hazards to site personnel. If required, drilling equipment work will be conducted only by trained, licensed (as required by state law), and experienced personnel. Gasoline- and diesel-operated equipment (vehicles and equipment) will be re-fueled properly to prevent fire hazards; power will be off, no smoking allowed, and proper dispensing equipment (fire extinguishers nearby and self-locking cans if not filled at a stand-alone commercial gas station or from a truck mounted tank) will be used. When not operational, equipment will be set and locked so that it cannot be activated, released,

dropped, etc. Site personnel are prohibited from approaching the gears/belts/pulleys of equipment when the equipment is operating in order to prevent physical harm in the form of abrasions, lacerations, or other physical harm.

Equipment such as pipe cutters or other sharp objects and hand operated power tools may be used during well installation. Site personnel will practice safe handling of hand tools to prevent worker related injuries. Hearing protection will be worn if the use of loud hand tools is required. Hand tools will be inspected prior to use to ensure the tools are not damaged.

2.3 HAND AND POWER TOOLS

Equipment such as pipe cutters or other sharp objects and hand operated power tools may be used during well installation activities. Site personnel will practice safe handling of hand tools to prevent worker related injuries. Hearing protection will be worn if the use of loud hand tools is required. Hand tools will be inspected prior to use to ensure the tools are not damaged.

2.3.1 Use, Inspection, and Maintenance

- Unsafe tools will not be used.
- Impact tools, such as chisels, will be kept free of mushroomed heads.
- Wooden handles will be kept free of splinters or cracks and will be kept tight in the tool.
- Hand and power tools will be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and will be used only for the purpose for which it was designed.
- Hand and power tools will be inspected, tested, and determined to be in safe operating condition before use: continued periodic inspections will be made to ensure safe operating condition and proper maintenance.
- Hand and power tools will be in good repair with all required safety devices installed and properly adjusted: tools having defects that will impair their strength or render them unsafe will be removed from service.

2.3.2 Required Safety Measures

- Electric power-operated tools will be double insulated and properly grounded.
- Power tools designed to accommodate guards will be equipped with such guards.
- Portable power-driven circular saws will be equipped with guards above and below the base plate or shoe. When the tool is withdrawn from work, the lower guard will automatically and instantly return to the covering position.

- All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools shall be equipped with a momentary contact “on-off” control and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
- All other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, shall be equipped with a constant pressure switch that will shut off the power when the pressure is released.

2.3.3 Personal Protective Equipment and Clothing

- Loose and frayed clothing, loose long hair, dangling jewelry (including dangling rings, chains, earrings, and wristwatches) will not be worn while working with power tools.
- Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists, vapors, or gases will be provided with the PPE necessary to protect them from the hazard (Section 3).

2.4 GENERAL PHYSICAL HAZARDS

Field operations at the installations may include many general physical safety hazards, such as:

- Holes, ditches, etc.
- Precariously positioned objects, which may cause crushing or other injuries
- Sharp objects (e.g., nails, metal shards, glass), which may cause cuts, punctures, or other injuries
- Slippery surfaces, posing slip and fall hazards
- Uneven terrain, posing slip, trip, and fall hazards.

Field personnel will look constantly, closely, and carefully for these basic safety hazards and immediately inform the SSHO of conditions that they feel may be hazardous. If hazards are present, these hazards will be recorded by the SSHO, and precautionary measures will be taken to prevent injury. These and additional physical hazards are discussed below:

2.4.1 Working surfaces

Weather conditions can also adversely affect working surfaces. Surfaces may also be unlevelled and present a variety of tripping hazards. Unstable soil conditions may exist near open excavations and slopes that can attribute to the slip/fall hazard. Work areas, platforms, walkways, scaffolding, and other access ways must be kept free of materials, debris, obstructions or substances such as ice, grease, or mud that could cause the surface to become slick or otherwise hazardous. Awareness of environmental conditions, avoiding unstable soils when possible, not standing near edges of an excavation, and use of safety shoes with deep treaded soles is recommended.

2.4.2 Slip/Trip/Fall Hazards

Work sites will generally be in remote locations, and most areas will have uneven terrain, slippery locations, and other slip/trip/fall hazards. All team members are required to wear American National Standards Institute (ANSI) Z41 approved steel toed footwear and are to take special care in obtaining sure footing and walking slowly, when necessary.

2.4.3 Moving/Lifting Materials

Materials handling at the site will include manually moving/lifting items. Injuries to back and abdominal muscles from improperly lifting of loads are the most common occupational injuries reported. Such injuries can range from relatively mild strains to major, permanently disabling injuries. Before lifting a load (e.g., sample coolers, field equipment), personnel will consider the overall weight, distribution of weight, unwieldiness or awkwardness of the load, distance to be carried, obstacles to be negotiated, site conditions, and visibility. Personnel will lift with their legs, keeping their back straight, keep the load close to their body, not twist while lifting, and not lift more than 50 pounds.

When using equipment to move materials, proper work practices will be followed. Equipment used will be designed for the task to be performed. Equipment will be inspected regularly by the SSHO, and damaged or defective equipment will be removed from service. Planning is critical when handling materials. The SSHO will plan where the materials are to be moved, taking into consideration the current location of such materials and hazards associated with moving them. Routes for moving materials will be clearly outlined, with paths cleared of obstructions so materials may be transported safely.

The item to be lifted will be approached to balance the load evenly. Personnel will lift with their legs, keeping their back straight, keep the load close to their body, not twist while lifting, and not lift more than 50 pounds. Bulky, heavy loads will be handled by at least two people, ensuring that the load is level and evenly distributed between personnel helping to carry it. Carriers will know the destination and path for the load. Risks associated with moving loads are described more fully in the APP and the AHAs; however, items likely moved will be restricted to equipment, supplies, and monitoring equipment.

2.4.4 Heat and Cold Stress

At ambient temperatures above 70 degrees Fahrenheit (°F) (21.1 degrees Celsius [°C]) or below 40°F (4.4°C) heat or cold stress are concerns. Respective sections in this plan should be followed as conditions mandate.

2.4.4.1 Heat Stress

Heat stress hazards can occur even in temperatures not commonly considered “hot” due to the level of physical activity, the level of PPE the worker is wearing, or the physical condition of the worker. Site training will include symptoms of heat-related illnesses and prevention techniques. Personnel will be familiar with the signs and symptoms of heat stress, including the following.

Heat Cramps—Muscle spasms in the abdomen or limbs. Frequent rest periods and fluid intake are appropriate measures to prevent or reduce heat cramps.

Heat Exhaustion—Severe dehydration; pale, clammy skin; profuse sweating; dizziness, light-headedness; slurred speech; rapid pulse; confusion; fainting; fatigue; cool skin; nausea. Affected personnel will be escorted from the site, set in a cool, shaded area, and given fluids slowly.

Heat Stroke—Life-threatening condition occurring when the body’s temperature-regulating system improperly functions. Hot dry skin; rapid, deep breathing; lack of perspiration; delirium; high fever (often 106 °F or more), nausea; unconsciousness. Brain damage and/or death may occur, if body temperature is not reduced. Provide fluids, use cooling devices (hose-down or shower), call emergency medical services or transport to hospital immediately.

Heat stress prevention techniques include:

- Resting frequently in a shaded or airconditioned area.
- Allowing personnel who are not acclimatized to take additional breaks.
- Drink at least 8 ounces of water or diluted Gatorade every 15–20 minutes.
- Monitoring personnel on a periodic basis as described below.

Heat stress monitoring will be conducted in a manner that anticipates and prevents the onset of heat stress symptoms (i.e., work-rest regimens). The radial pulse of each worker will be counted by the SSHO during a 30-second period as early as possible during the rest period immediately following work activities. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle will be shortened by one-third and the rest period will be maintained. If the heart rate still exceeds 110 beats per minute at the next rest period, the following work cycle will be shortened by another one-third. When ambient temperatures are expected to exceed 75 °F, the resting heart rate of each worker will be measured prior to the start of onsite activities.

The suggested frequency for physiological monitoring is provided in Table 2-1.

Table 2-1. Suggested Frequency of Physiological Monitoring for Fit and Acclimatized Personnel

Adjusted Temperature (°F)		Monitoring Interval (Minutes of Work)
90	Above 90	45
87.5	90	60
82.5	87.5	90
77.5	82.5	120
72.5	77.5	150

Assumes work levels of 250 kilocalories/hour (e.g., a moderate work level). Consider increasing the frequency for heavier work rates.

Adjusted Air Temperature: Calculate the adjusted air temperature by using this equation:

$$\text{Adjusted Temperature}(\text{°F}) = \text{Air Temperature}(\text{°F}) + ([13] \times [\% \text{ sunshine}])$$

Measure the air temperature with a standard thermometer, with the bulb shielded from radiant heat. Estimate the percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow.
 100% sunshine = no cloud cover and a sharp, distinct shadow.
 0% sunshine = cloud cover and no shadows.

For the purpose of this table a normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

Adapted from: National Institute for Occupational Safety and Health/ Occupational Safety and Health Administration/U.S. Coast Guard/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Chapter 8 (1985).

The suggested and work-rest regimen is provided in Table 2-2.

Table 2-2. Suggested Work-Rest Regimen

Ambient Temperature (°F)	Work Period (Hours)	Rest Period (Minutes)
70	3.0	15
75	2.5	15
80	2.0	15
85	1.5	15
90	1.0	15
95	0.5	15

Other factors, such as a worker's level of acclimation, level of physical fitness, and age, may increase or decrease his/her susceptibility to heat stress. Before assigning a task to an individual worker, these factors will be taken into account to ensure that the task will not endanger the worker's health. Sunscreen lotions will be provided and used per manufacturer's recommendations.

If a heat-related illness is suspected or observed, the affected person will be moved to a cool or shaded area and given plenty of liquids to consume. If symptoms of a heat stroke are observed, the victim will be cooled and site personnel will immediately call 911.

2.4.4.2 Cold Stress

Cold stress hazards are most likely to occur at low temperatures or low wind chill factors, with wet, windy conditions contributing to risk. As temperatures could fluctuate during these events, personnel will be trained in signs and symptoms of cold stress and controls. Personnel will be familiar with the signs and symptoms of cold stress, which include:

- **Hypothermia**—Cold-induced decreasing of the core body temperature that produces shivering, numbness, drowsiness, and muscular weakness. If severe enough, it can lead to unconsciousness and death.
- **Frostbite**—Constriction of blood vessels in the extremities, decreasing the supply of warming blood may result in formation of ice crystals in the tissues, causing tissue damage. Condition may range from frostnip, which is a numbing of extremities, to deep-freezing tissue beneath the skin. Symptoms include white or grayish skin, blisters, numbness, mental confusion, failing eyesight, fainting, shock, and cessation of breathing. Death may occur from heart failure.

Pain in the extremities may be the first warning of cold stress and precautions will be taken to reduce exposure. Maximum severe shivering will be taken as a sign of immediate danger to the worker and exposure to cold will be immediately terminated. Personnel exhibiting signs and symptoms of cold stress will be removed from the site and given appropriate first aid. Emergency medical services will be contacted if symptoms are severe (e.g., more than numbness of the extremities or shivering). Employees will not be immersed in water.

As a precautionary measure, employees will wear layers of loose-fitting clothing including insulated coveralls, head cover, gloves, and boots when temperatures fall below 40 °F. Protection of the hands, feet, and head is particularly important because these are likely to be injured first by cold. However, actual injury to hands, feet, and head is not likely to occur without prior development of early signs of hypothermia such as numbing and shivering. Bare skin contact with cold surfaces (below 32 °F) will be avoided. No continuous exposure to cold is permitted when the air speed and temperature results in an equivalent chill temperature of 26 °F or less. The equivalent chill temperature will be determined by using the wind chill temperature shown in Table 2-3. Warm rest areas (support vehicles) will be provided. Air temperature and wind speed will be monitored at least every 4 hours at air temperatures below 45 °F.

Table 2-3. Wind Chill Temperature

Air Temperature (°F)	Wind Speed (miles per hour)											
		0	5	10	15	20	25	30	35	40	45	50
	40	40	36	34	32	30	29	28	28	27	26	26
	35	35	31	27	25	24	23	22	21	20	19	19
	30	30	25	21	19	17	16	15	14	13	12	12
	25	25	19	15	13	11	9	8	7	6	5	4
	20	20	13	9	6	4	3	1	0	-1	-2	-3
	15	15	7	3	0	-2	-4	-5	-7	-8	-9	-10
	10	10	1	-4	-7	-9	-11	-12	-14	-15	-16	-17
	5	5	-5	-10	-13	-15	-17	-19	-21	-22	-23	-24
	0	0	-11	-16	-19	-22	-24	-26	-27	-29	-30	-31
	-5	-5	-16	-22	-26	-29	-31	-33	-34	-36	-37	-38
	-10	-10	-22	-28	-32	-35	-37	-39	-41	-43	-44	-45
	-15	-15	-28	-35	-39	-42	-44	-46	-48	-50	-51	-52
	-20	-20	-34	-41	-45	-48	-51	-53	-55	-57	-58	-60
	-25	-25	-40	-47	-51	-55	-58	-60	-62	-64	-65	-67
	-30	-30	-46	-53	-58	-61	-64	-67	-69	-71	-72	-74
	-35	-35	-52	-59	-64	-68	-71	-73	-76	-78	-79	-81
	-40	-40	-57	-66	-71	-74	-78	-80	-82	-84	-86	-88
-45	-45	-63	-72	-77	-81	-84	-87	-89	-91	-93	-95	
Green		LITTLE DANGER (frostbite occurs in >2 hours in dry, exposed skin)										
Yellow		INCREASED DANGER (frostbite could occur in 45 minutes or less in dry, exposed skin)										
Red		GREAT DANGER (frostbite could occur in 5 minutes or less in dry, exposed skin)										
Adapted from: Sustaining Health and Performance in Cold Weather Operations: U.S. Army Research Institute of Environmental Medicine. October 2001.												

2.4.5 Noise Hazards

Noise hazards are addressed in Section 9.5 of the APP.

2.4.6 Utilities

The Task Manager and SSHO will be responsible for ensuring that the utility locating service has completed a utility marking for the site prior to site intrusive work. These markings show an estimated location of underground installations, including sewer, telephone, fuel, electric, water lines or other underground installations that reasonably may be expected to be encountered during intrusive work. Site maps will also be utilized when available to note underground hazards.

Underground utilities pose hazards to personnel involved in intrusive operations. These hazards include electrical hazards, explosion, and asphyxiation, as well as costly and annoying hazards

associated with damaging communication, sewer, and water lines. Prior to commencement of intrusive operations, underground utilities, including buried wires, pipes, tanks, etc., will be visibly marked with flags or marking paint to alert personnel to areas unsafe for digging/excavating. Personnel will be aware that although an area may be “cleared,” unanticipated hazards may occur. Intrusive subsurface work will be located at least 3 ft from utility markings.

2.5 FIRE/EXPLOSION HAZARDS

Section 9.8 in the APP discusses the Fire Prevention and Protection Plan and the associated fire and explosion hazards.

2.6 VEHICLE AND PEDESTRIAN HAZARDS

Motor vehicles must always be driven in a safe manner, which includes strictly obeying posted speed limits and using defensive driving skills.

During rainy weather, off-road trails can become slippery or muddy, and off-road driving can be dangerous. Those unfamiliar with off-road vehicle operation should practice in a supervised, safe location.

Traffic within certain areas of the site, particularly active locations in busy areas, may present a hazard to site personnel. Mobile equipment will be located in an area that does not present hazards to bystanders. Barriers will be used to separate the work areas from both vehicle and pedestrian traffic areas, and to prevent inadvertent entry of either type of traffic into the work area. Barriers demarcating the work area required even if the site is inactive during work operations.

Employees exposed to vehicular traffic will be provided with, and will wear, warning vests or other suitable high visibility clothing meeting at minimum American National Standard Institute (ANSI)/International Safety Equipment Association Class 2 requirements (e.g., fluorescent shirt or vest with retro-reflective material).

2.7 WEATHER HAZARDS

It is not anticipated that frequent inclement weather will be encountered by site personnel. Most site activities can continue through extremes in temperature and light rain. The SSHO will monitor weather conditions using a weather station that is part of the National Oceanic and Atmospheric Administration weather radio network at least two times per day. To safely mitigate the hazards from severe weather (i.e., heavy rains, electrical storms, or heavy snowfall) site personnel (including the SSHO) will also look for indications, or triggers, of impending severe weather (e.g., changes in wind direction, cloud formation, or humidity).

If weather conditions are to the point of causing unacceptable safety hazards (i.e., lightning, vision impairment, footing becomes slippery and difficult, icy working surfaces, or attention of

the crew is distracted from the task at hand), work will be stopped. The SSHO will be responsible for evaluating and stopping work, as necessary and informing the office if the delays are anticipated to be significant. If severe weather is likely, based on weather review, site personnel will retreat to their support vehicle(s). The SSHO will monitor weather conditions, and activity will not resume for 30 minutes following cessation of severe weather (i.e., the last visible flash of lightning). Training on severe weather precautions and actions will be conducted during the pre-entry briefing.

2.8 BIOLOGICAL HAZARDS

2.8.1 Poisonous Plants

A biological hazard photo log is presented in Appendix G of the APP. The plants of primary concern (i.e., potential for contact versus effect produced) are those that produce skin reactions, and skin and tissue injury. Contact with the leaves, stems, or roots of these plants may result in urushiol-induced contact dermatitis, which is an allergic rash produced by urushiol oil or similar poisonous sap. The most commonly found poisonous plants are detailed in this section.

Carrot family (Apiaceae) has a variety of species in Washington that are poisonous and can cause severe skin reactions when oils or sap are encountered, and even death if ingested. Oils or sap from some species in the carrot family cause mild to extremely severe skin rashes which increase in severity when combined with exposure to sunlight. It can be difficult to tell the difference between potentially harmless species and harmful species, so it is best to avoid contact with plants in this family. All parts of some plants in this family can be poisonous, including: roots, stem, leaves, flowers, seeds, oils from plant. Some species are extremely toxic and can cause death, while some species in this family have milder toxins. Some people may react, while others will not experience any reaction. If encountered, clean the affected area, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching. If the rash is near eyes or covers large parts of the body, seek medical attention at the nearest hospital.

The common cowparsnip is common in wooded areas of Washington and its sap is poisonous and is present in all portions of the plant. Oils from the plant can cause mild to extremely severe skin rashes which increase in severity when combined with exposure to sunlight. If encountered, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching. If the rash is near eyes or covers large parts of the body, seek medical attention at the nearest hospital.

Poison hemlock is easily identified by its purple spotted stems. The plant emits a mousy smell when bruised or crushed. Poison hemlock grows in disturbed soils and is often weedy. The entire plant is highly toxic. It is more toxic in warm, sunny weather, and young foliage is more toxic than mature foliage. Symptoms of poisoning include an initial stimulation of the nervous system followed by severe depression of nervous system responses, slowing of the heart, paralysis, and eventually respiratory paralysis. If encountered, seek medical attention at the nearest hospital.

Water hemlock are branching perennials that can reach heights of six feet in moist meadows. Ingesting a single mouthful can be deadly. The poison is mainly in the roots, but the entire plant should be avoided, as convulsions, fever, delirium, nausea, convulsions, abdominal pain, seizures, and vomiting within 60 minutes of ingestion, and death will shortly follow. If encountered, seek medical attention at the nearest hospital.

Wild parsnip is commonly found in ditches and roadsides in Washington. The sap is poisonous and is present in all portions of the plant. Oils from the plant can cause mild to extremely severe skin rashes which increase in severity when combined with exposure to sunlight. If encountered, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching. If the rash is near eyes or covers large parts of the body, seek medical attention at the nearest hospital.

Buttercups typically have shiny yellow flowers and are most often found in areas with wet or damp soils. Fresh plants often contain irritant oils which can cause blistering of the mouth and digestive tract though this is almost never fatal. Some buttercup species are more toxic than others and some species are used as medicinal herbs. Buttercups are considered more toxic to grazing animals than humans. If encountered, seek medical attention at the nearest hospital.

Climbing nightshade is found along roadsides, in moist clearings in and riparian areas of Washington. All parts of the plant are poisonous if ingested. Some may experience mild skin irritation or more severe rashes when exposed to foliage. If ingested, see medical attention immediately at the nearest hospital. If encountered, wash the affected area, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching.

Poison ivy contain an irritating, oily sap called urushiol. The old saying “Leaves of three, Let it be!” is a helpful reminder for identifying poison ivy. Urushiol triggers an allergic reaction upon contact with skin, resulting in an itchy rash, which can appear within hours of exposure or up to several days later. A person can be exposed to urushiol directly or by touching objects that have come into contact with the sap of one of the poisonous plants. If encountered, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching. If the rash is near eyes or covers large parts of the body, seek medical attention at the nearest hospital.

Spurges are found in a variety of habitats in Washington and have a milky sap that can cause rashes or skin irritation. The symptoms can worsen when exposed to the sunlight. If encountered, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching. If the irritation is in the eyes, rinse eyes well, wear sunglasses, and seek medical attention.

Stinging nettle is common in wet areas throughout the United States except for Hawaii. This thin, upright nettle usually occurs in dense patches. Stinging nettle causes extreme discomfort when touched. Tiny hairs on the stem and leaves break off readily and leave small amounts of a very irritating chemical in your skin. People differ greatly in their sensitivity to stinging nettle

and different areas of your body may be more sensitive to it. If encountered, use a cold compress, calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching. If the rash is near eyes or covers large parts of the body, seek medical attention at the nearest hospital.

Preventive measures that will be provided to and/or utilized by site personnel are:

- Instruction in recognition and identification of hazardous plants at the project site.
- Keeping the skin covered as much as possible (i.e., long pants, long-sleeved shirts, and gloves) in areas where these plants are known to exist will limit potential exposure.
- Removal or destruction of plants, where practical and necessary. Gloves, long-sleeved shirts, and long pants will be worn to protect against the urushiol oils of the plant, and the plant will be placed in a trash bag and disposed of in a proper receptacle.
- Remove gloves prior to touching face, neck, or other exposed areas of the body.
- Wash hands, face, or other exposed areas at the beginning of each break period and at the end of each workday. Water, soap, and hand sanitizer will be provided.

Treatment measures to be utilized by site personnel in the event of exposure include:

- Washing of the exposed skin thoroughly with soap and water should be conducted as soon as possible to remove the urushiol oil and other inflammatory agents.
- Antihistamines and hydrocortisone creams or oral antihistamines can be used to alleviate rash symptoms.
- Secondary infections may require the use of antibiotics.

2.8.2 Insect Bites/Stings

A biological hazard photo log is presented in Appendix G of the APP. Personnel with known allergies to insects (i.e., bees) should advise their employer prior to field activities and should carry an antidote kit, if necessary. A worker, who has been bitten or stung and shows symptoms of a severe reaction, will seek medical assistance immediately. The most commonly found hazardous insects are detailed in this section.

Cases of mosquito-borne diseases are rare in the region of the site; however, mosquitoes may still be encountered. If a worker is exposed to tick and/or mosquito bites, and develops symptoms such as headaches, fever, fatigue, and/or a noticeable skin rash, the worker should seek immediate medical attention. Secondary infection from ticks, mosquitoes, and other biting insects may occur if the skin is broken from scratching the bite area. Care should be taken to

minimize the urge to scratch. Excessive swelling may indicate that a secondary infection has occurred and personnel should seek medical attention, as antibiotics may be necessary.

Ticks are external parasites of reptiles, birds, and mammals. Most drop off their host after feeding. They molt and then wait on the tips of leaves, forelegs outstretched, ready to attach to any animal brushing past. The bites of some soft-bodied ticks may cause mild paralysis. Ticks transmit many diseases, most importantly Rocky Mountain spotted fever and Lyme disease. Ticks attach themselves to the host only with their mouth parts and feed on blood. If a tick attaches to the body, it should be removed by slowly pulling it straight out with tweezers where the mouthparts enter the skin. In removing a tick, take care not to leave mouth parts behind. The tick should not be killed prior to removal. Ticks are best removed by pulling them off with steady, gentle pressure. The pull must be light enough to not injure the tick. After tick is removed, wash area thoroughly with soap and water, gently scrubbing the area of the tick bite.

Chiggers are small bugs that are part of the arachnid family, live in areas with tall grass, and are among the most common sources of bug bites. Chiggers frequently attach themselves to skin near the ankles, around the waist and in warm areas of the body, like the folds of the elbows and knees. Chiggers are more commonly found in more humid parts of the country but can also be found in Washington. If bitten, wash the affected area and apply calamine lotion, non-prescription hydrocortisone cream, or an antihistamine to ease itching.

Wasps and hornets are very common in Washington and their stings can cause a variety of symptoms including, but not limited to, rashes, headaches, hives, vomiting, difficulty breathing, diarrhea, and shock. If stung or bitten from these insects, wash the affected area, apply a antihistamine, and monitor for breathing issues or other symptoms. If difficulty breathing, immediately seek medical attention at the nearest hospital.

Spiders such as the black widow spider and the yellow sac spider are found in Washington. Black widow female spider bites can cause permanent damage and even death (though death is now rare thanks to modern treatment). You can easily recognize them thanks to their red markings. The yellow sac spider are small yellow, white, or even greenish spiders with upper bodies that are darker than the abdomen. If bitten, wash area with soap and water and apply a cool cloth and antihistamine cream. Seek medical help immediately if an allergic reaction occurs. Watch out for these spiders in dark, secluded areas, and see a doctor if you think one has bitten you.

Although the potential for contracting insect-borne diseases is low, the following preventive measures will be provided to and/or utilized by site personnel to minimize the potential for bites/stings:

- Instruction in recognition and identification of insects of concern (Appendix G of the APP)
- PPE such as high-top work boots worn in conjunction with long pants and long-sleeved shirts

- Instruction to inspect and shake out clothing and shoes before getting dressed
- Insect repellents (i.e., DEET) for use on outer garments and footwear with special attention to arms and legs.

2.8.3 Animal Bites

A biological hazard photo log is presented in Appendix G of the APP. The most commonly found animals dangerous to humans are detailed in this section.

Snakes, including the Western rattlesnake, may be present among brush and other isolated locations or items that provide good habitat. Western rattlesnakes have a potentially deadly venom which affects the circulatory system. Use caution when moving or disturbing such areas or items. If a snake is encountered, do not attempt to touch or catch it. If possible, identify key characteristics of the snake to assist with the doctor's medical evaluation and treatment.

The following preventive measures specific to poisonous snakes will be utilized by site personnel:

- Instruction in recognition, identification, and avoidance of poisonous snakes and common habitats.
- Do not reach into an object such as a pipe that may contain an unseen snake. If a snake is observed, delay activity in this area until the snake leaves or move to an alternate location. Do not approach a snake under any circumstance, as this may cause the snake to act in an aggressive manner.

Persons bitten by a snake will seek medical assistance immediately. General recommendations for first aid if a person is bitten include:

- Remain calm, retreat from the snake, and arrange transport to a medical facility immediately.
- Remove restrictive clothing (e.g., watches, rings, buttoned shirts, etc.) from the victim.
- Splint or otherwise immobilize any bitten limbs and keep limbs below heart level.
- Keep victim calm (which will lower their heart rate, slowing the spread of venom).

Large predatory mammals such as wolves, cougars, bears, moose, elk, and coyotes are found in areas of Washington. If a cougar, coyote, or wolf is encountered, make noise, make yourself look as big as possible, and slowly create distance between you and the animal. If a bear is encountered speak calmly, slowly wave arms and make yourself look as big as possible while

standing your ground. Move away from the bear slowly and sideways while keeping your eye on the bear. If moose or elk are encountered, try to keep your distance and move away slowly. If a moose or elk charges, find a tree or boulder for protection. If attacked, seek medical attention at the nearest hospital.

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3. PERSONAL PROTECTIVE EQUIPMENT

Personnel will be equipped with PPE for the tasks they are asked to perform. The SSHO will distribute PPE to employees and will also train employees in proper donning, doffing, use, and disposal of PPE. Subcontractors are responsible for providing proper PPE for their own employees; however, the SSHO is responsible for ensuring that the PPE meets or exceeds the PPE requirements listed in the subsections below. If the SSHO cannot determine whether subcontractor-supplied PPE meets these delivery order specific requirements, the Corporate Health and Safety Officer will be consulted.

Prior to any field work activities, the SSHO will conduct a daily hazard assessment to determine appropriate PPE required for scheduled activities. After the daily hazard assessment has been performed by the SSHO, PPE will be selected based on the site hazards, site conditions, and the judgment of the SSHO in accordance with 29 Code of Federal Regulations (CFR) 1910.132. The PPE used will be chosen to be effective against the hazards present on site and will be monitored for effectiveness against site hazards by the SSHO.

3.1 PERSONAL PROTECTIVE EQUIPMENT LEVELS

Engineering controls and work practices will be used where feasible to minimize potential chemical, physical, and biological hazards. The components of each level of PPE anticipated to be donned during field activities are listed below. Use of Levels A, B, and/or C PPE is not anticipated at this site.

Level D protection will be required during field operations as described in Section 11 of the APP and in this section. The following are the minimum requirements for Level D at the site:

- Steel-toe, steel-shank safety shoes/boots (in accordance with ANSI Z41, and American Society Testing and Materials International Standards F2412 and F2413)
- Snake chaps (if there is potential for encountering a poisonous snake)
- Hard hat that is less than 5 years old and meets ANSI Standard Z89.1-1986 (whenever working in close proximity to heavy equipment, when overhead hazards are present, and as required by SSHO)
- Chemical-resistant gloves (when contact with potentially contaminated media is expected or when working with applicable chemicals listed in Table 10 of the APP). Based on the contaminant type(s) and concentration at this site and chemicals listed in Table 10 of the APP, nitrile gloves will be utilized)^{1,2}

¹ Kimberly-Clark Nitrile Gloves, Chemical Resistance Guide, www.kimtech.com, accessed 3/27/2017.

² Ansell Chemical Resistance Guide, Permeation and Degradation Data, 7th Edition. 2003.

- Heavy duty cloth or leather gloves, as necessary, for work not involving the handling of potentially contaminated media (cut-resistant if handling potentially sharp items)
- Heat resistant gloves whenever working with hot asphalt and/or hot tack coat materials
- Safety glasses with side shields in accordance with ANSI/American Society of Safety Engineers (ASSE) Z87.1 that bear the Z87 logo
- Face shield in accordance with ANSI/ASSE Z87.1 in addition to safety glasses (all bearing the Z87 logo) when a splash or flying debris hazard exists
- National Institute for Occupational Safety and Health-approved N95 particulate filtering face piece dust mask whenever visible dust is present
- High visibility apparel meeting a minimum of ANSI/International Safety Equipment Association Class 2 requirements (when exposed to traffic and/or heavy equipment).

3.1.1 Hearing Protection

Site personnel noise exposure will be monitored initially and periodically during activities involving drilling to confirm sound pressure levels. Personnel involved with the operations identified above will be provided with and will be required to wear hearing protection in the form of ear plugs capable of reducing worker noise exposure below an 8-hour TWA of 85 decibels (dBA). If worker noise exposure exceeds 115 dBA, secondary hearing protection will be required in the form of earmuffs over the ear plugs.

3.1.2 Personal Protective Equipment Training

During the daily tailgate safety meeting, the SSHO will ensure that all field personnel have the proper PPE training by reviewing proper PPE use/adjustment, limitations of the PPE, proper care, and inspection of PPE, and disposal of PPE. If the SSHO determines during the safety meeting and inspection that an employee needs to be retrained, the SSHO will not allow the employee to perform the work activities until this retraining has occurred. The SSHO will provide the retraining to the individual or groups of employees, as needed. Employees will certify they have received and understood the required PPE training and retraining (if required) by signing the PPE training form in Appendix D of the APP.

All aspects of proper PPE use, including the selection of appropriate PPE, donning, doffing, adjusting, and wearing PPE, limitations of the PPE; and proper care, inspection, testing, maintenance, storage, and disposal of the PPE, are also a fundamental part of the Occupational Safety and Health Administration 29 CFR 1910.120 40-hour and 8-hour (refresher) Hazardous Waste Operations and Emergency Response refresher training. Evidence of training for key personnel is provided in Appendix C of the APP. Documentation of training for all other site support personnel will be maintained onsite during all field activities.

4. MEDICAL SURVEILLANCE

Site personnel that anticipate being exposed to contaminants at the Permissible Exposure Limit for 30 or more days a year will be enrolled in a medical surveillance program and will satisfactorily complete a comprehensive medical examination by or under the supervision of a licensed physician knowledgeable in occupational medicine prior to the initiation of fieldwork. EA employees and subcontractors involved in those activities that may contact contaminated media, will be in the medical surveillance program.

Medical clearance documenting enrollment in the program is included in Appendix C of the APP. The local Emergency Medical Services will be notified immediately if needed. Emergency contact numbers are presented in Table 9-2 of the APP. Personnel will not transport victims to emergency medical facilities unless the injury does not pose immediate threat to life, and transport to the emergency medical facility can be accomplished without the risk of further injury. Directions and route to the nearest hospital are presented on Figure 3 of the APP.

First aid equipment will be available in company vehicles. Mishap reporting and investigation will be performed in accordance with Section 8 of the APP.

Medical examinations will be provided according to the following schedule:

- Prior to fieldwork assignment
- At least annually for employees covered by the program (biennially for those employees that do limited site work, with the approval of the occupational physician)
- At termination of employment or reassignment to an area where the employee had not been examined within the past 6 months
- As soon as possible after the development of signs or symptoms that may indicate an overexposure to hazardous substances or health hazards
- More frequently if the physician deems such examination necessary to maintain employee health.

Documentation for compliance with medical surveillance will be kept onsite. Further documentation is maintained in EA's Office of Human Resources (410-584-7000). The records shall be complete and accurate and be kept on file for at least 30 years after termination of employment. A minimum of the following information shall be kept:

- Name and social security number
- Physician's written opinions, recommendations, limitations, and test results

- Employee medical complaints related to hazardous waste operations
- Information provided to the physician by the employee concerning possible exposures, mishaps, etc.

4.1 FIRST AID AND MEDICAL TREATMENT

At least one onsite personnel will be currently certified in both first aid and CPR by the American Red Cross or equivalent organization. For this site, the SSHO and one field person at a minimum are certified and will be onsite. Documentation of all personnel certifications will be kept onsite and will include separate Engineer Manual 385-1-1 03.A.06a-c-compliant bloodborne pathogen training. A Bloodborne Pathogen Exposure Control Plan is contained in Section 9.4 of the APP. Individuals onsite currently certified in first aid will be called out at the start of each day's activities during the health and safety meeting. Employees will have the telephone number to the hospital during working hours should an occupational illness or injury occur.

4.2 MEDICAL RESTRICTION

Should an occupational injury or illness occur that restricts or limits an employee's ability to function at full capacity, EA maintains a policy of providing these employees with restricted or modified duty assignments whenever possible to allow them to continue to be productive.

4.3 MEDICAL RECORDS

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1910.120 (f) and shall be kept for a minimum of 30 years beyond employment. Employee confidentiality shall be maintained.

5. SAFETY EQUIPMENT AND WORK PRACTICES

5.1 SITE RULES

During field activities, personnel will remain in verbal or mobile phone contact with each other. The SSHO and field staff will use mobile telephones and will be responsible for handling communications during emergencies that may arise. Safe work practices that will be followed by site personnel include, but are not limited to, the following rules (which are described in more detail in pertinent sections of the APP):

- Working before or after daylight hours is prohibited.
- Eating, drinking, chewing tobacco, and smoking in the in the work area is prohibited.
- Possessing, using, purchasing, distributing, or having controlled substances in their system is prohibited.
- Consuming or possessing alcoholic beverages is prohibited.
- Good housekeeping – work areas will be kept clear of debris, tools, or other potential tripping hazards.
- Wash hands thoroughly upon leaving the work site and before sampling activities.
- Immediately repair or replace defective PPE.

Personnel onsite will use the buddy system; visual contact will be maintained between team members while in the work area.

- Additional rules that are not included in this APP/SSHP but are posted at FAFB will also be enforced.

5.2 DAILY COMMUNICATION AND SAFE WORK PROCDURES

The following general protocols will be followed daily prior to start of work activities and are a summarization of activities, training, and documentation covered in pertinent sections of the APP:

- The SSHO will review site conditions to establish whether modification of work and safety plans is needed.
- Personnel will be briefed and updated on new safety procedures as appropriate.
- Safety equipment will be checked for proper function.

- The SSHO will ensure that first aid equipment is readily available.
- The SSHO will inform personnel of any mishaps or deficiencies identified during inspections the previous day.
- Personnel will proceed through appropriate decontamination procedures and facilities (e.g., hand washing, PPE removal) when exiting the project site, at the end of daily operations, and before breaks.
- All personnel will have cellular telephones or radios to maintain constant communication with other site personnel and the SSHO. The SSHO will be in communication with the Task Manager, PM, and Corporate Health and Safety Officer as needed.

5.2.1 Safety Equipment

The following safety equipment must be present at the work site:

- First aid kit,
- Required PPE as described in Section 3,
- ABC-type fire extinguisher (when flammable fluids present),
- Eye wash bottle or eyewash kit, and
- Drinking water.

5.2.2 Spill Containment

Information pertaining to spill containment and emergency responses related to spills is presented in Section 9.1.3 of the APP.

5.2.3 Emergency Equipment and First Aid

Emergency equipment and first aid information is presented in Section 8.

6. PERSONNEL HYGIENE AND DECONTAMINATION

Field work will be conducted in Level D PPE. Remove and discard gloves used for sample collection and equipment decontamination purposes. Place disposable gloves in plastic bags prior to leaving the site and prior to entering any vehicle. Site personnel will wash their hands, face, and exposed skin surfaces prior to ingestion of food, liquids, or any other hand-to-mouth activities and whenever leaving the project site. Hand washing with potable water, soap, and paper towels will be available in each site support vehicle. Hand sanitizer will also be made available in each site support vehicle.

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7. EQUIPMENT DECONTAMINATION

All sampling and drilling equipment that comes into contact with potentially PFAS contaminated site media be decontaminated before leaving the work area and before completing work in subsequent areas. It is anticipated that only drilling and sampling equipment and any other non-dedicated equipment and tools associated with sampling activities will require decontamination. Sampling equipment decontamination is detailed in the Phase I RI UFP-QAPP for FAFB (Appendix A – Standard Operating Procedures (SOP)s).

Drilling equipment, especially stems and rods, will be decontaminated before and after completing new monitoring well installations or collecting soil borings to prevent the risk of cross contamination. A designated decontamination area approved by the FAFB Restoration Program Manager (RPM) will be located near the work areas for decontamination activities. Drilling equipment will be steam or high-pressure washed using water that is laboratory-certified as PFAS-free. All water used for decontamination of equipment will be provided by EA or the subcontractor unless otherwise approved by the FAFB RPM. Decontamination water will be collected after use and containerized for proper treatment and disposal as described in the Waste Management Plan (Appendix D of the Phase I RI UFP-QAPP for FAFB).

Hand-held, non-dedicated sampling equipment will be decontaminated by rinsing with Alconox detergent (or other non-PFAS detergent), PFAS-free water, and methanol in accordance with the SOPs in Appendix A of the Phase I RI UFP-QAPP for FAFB. All non-disposable sampling equipment will be decontaminated prior to use and after each use (except for dedicated tubing left in monitoring wells). All decontamination fluid will be containerized for offsite disposal as detailed in the Appendix D of the Phase I RI UFP-QAPP for FAFB.

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8. EMERGENCY EQUIPMENT AND FIRST AID

A complete first aid kit, meeting the requirements of a Type III, 16-unit or larger in a waterproof container will be readily available onsite and contain, at a minimum, a pocket mouthpiece for CPR, absorbent compresses, adhesive bandages, adhesive tape, antiseptic swabs, burn gel, sterile pads, and a triangular bandage. The contents of the kit(s) will be evaluated and possibly modified for this specific delivery order. Kit(s) will be located not more than 300 ft from the work activity and will be transported in each EA or subcontractor vehicle located onsite.

The contents will be checked prior to their utilization for sterility and to replace expended items. The SSHO or other designated individual will inventory the kit(s) at least every 3 months and document the results in a log, using an email to the Corporate Health and Safety Officer, or on an inspection form. Expended or non-sterile contents will be replaced with serviceable items.

Prior to the start of work, the SSHO will discuss with site personnel the prevention steps, symptoms, and medical personnel available to assist with injuries or questions on diseases, plants, or animals that could be encountered while working on this project. Diseases, plants, and animals are discussed in Section 2.8.

Emergency response and contingency procedures are discussed in Section 9.1 of the APP including emergency contact telephone numbers. Directions and route to the nearest hospital are presented in Section 9.1 of the APP. A working cell phone with adequate signal in this area will be maintained onsite and fully charged at the start of each workday. Emergency contacts are presented in Table 9-2 of the APP. A fire extinguisher will be maintained in each vehicle. Site personnel are trained in the use of fire extinguishers commensurate with Table 6-1 of the APP.

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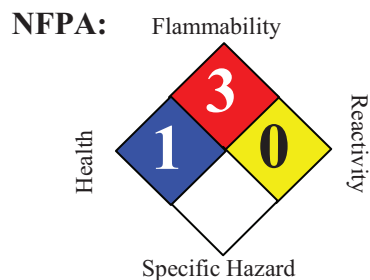
Appendix F

Safety Data Sheets

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Safety Data Sheet

Gasoline, Unleaded



SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Gasoline, Unleaded			
Synonyms	:	Blend of Highly Flammable Petroleum Distillates, Regular, Mid-Grade, Premium, 888100008809			
SDS Number	:	888100008809	Version	:	1.1
Product Use Description	:	Fuel			
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
Tesoro Call Center	:	(877) 783-7676	Chemtrec (Emergency Contact)	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications	:	Flammable Liquid – Category 1 or 2 depending on formulation. Aspiration Hazard – Category 1 Carcinogenicity – Category 2 Specific Target Organ Toxicity (Repeated Exposure) – Category 2 Specific Target Organ Toxicity (Single Exposure) – Category 3 Skin Irritation – Category 2 Eye Irritation – Category 2B Chronic Aquatic Toxicity – Category 2
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Pictograms



Signal Word : **Danger**

Hazard Statements

Extremely flammable liquid and vapor.
May be fatal if swallowed and enters airways – do not siphon gasoline by mouth.
Suspected of causing blood cancer if repeated over-exposure by inhalation and/or skin contact occurs.
May cause damage to liver, kidneys and nervous system by repeated and prolonged inhalation or skin contact. Causes eye irritation. Can be absorbed through skin.
May cause drowsiness or dizziness. Extreme exposure such as intentional inhalation may cause unconsciousness, asphyxiation and death.
Repeated or prolonged skin contact can cause irritation and dermatitis.

Harmful to aquatic life.

Precautionary statements

Prevention

- : Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat, sparks, open flames, welding and hot surfaces.
- No smoking.
- Keep container tightly closed.
- Ground and/or bond container and receiving equipment.
- Use explosion-proof electrical equipment.
- Use only non-sparking tools (if tools are used in flammable atmosphere).
- Take precautionary measures against static discharge.
- Wear gloves, eye protection and face protection (as needed to prevent skin and eye contact with liquid).
- Wash hands or liquid-contacted skin thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Do not breathe vapors.
- Use only outdoors or in a well-ventilated area.

Response

- : In case of fire: Use dry chemical, CO₂, water spray or fire fighting foam to extinguish.
- If swallowed: Immediately call a poison center, doctor, hospital emergency room, medical clinic or 911. Do NOT induce vomiting. Rinse mouth.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If in eye: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If skin or eye irritation persists, get medical attention.
- If inhaled: Remove person to fresh air and keep comfortable for breathing.
- Get medical attention if you feel unwell.

Storage

- : Store in a well ventilated place. Keep cool. Store locked up. Keep container tightly closed. Use only approved containers. Some containers not approved for gasoline may dissolve and release flammable gasoline liquid and vapors.

Disposal

- : Dispose of contents/containers to approved disposal site in accordance with local, regional, national, and/or international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Gasoline, natural; Low boiling point naphtha	8006-61-9	10 - 30%
Toluene	108-88-3	10 - 30%
Xylene	1330-20-7	10 - 30%
Ethanol; ethyl alcohol	64-17-5	0-8.2%
Trimethylbenzene	25551-13-7	1 - 5%
Isopentane; 2-methylbutane	78-78-4	1 - 5%

Naphthalene	91-20-3	1 - 5%
Benzene	71-43-2	Less than 1.3%
Pentane	109-66-0	1 - 5%
Cyclohexane	110-82-7	1 - 5%
Ethylbenzene	100-41-4	1 - 5%
Butane	106-97-8	1 - 20%
Heptane [and isomers]	142-82-5	0.5 - 0.75%
N-hexane	110-54-3	0.5 - 0.75%

SECTION 4. FIRST AID MEASURES

Inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.
Skin contact	: In case of contact, immediately flush skin with plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Contaminated leather, particularly footwear, must be discarded. Note that contaminated clothing may be a fire hazard. Seek medical advice if symptoms persist or develop.
Eye contact	: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical advice if symptoms persist or develop.
Ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention.
Notes to physician	: Symptoms: Dizziness, Discomfort, Headache, Nausea, Kidney disorders, Liver disorders. Aspiration may cause pulmonary edema and pneumonitis. Swallowing gasoline is more likely to be fatal for small children than adults, even if aspiration does not occur.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO ₂ , water spray or fire fighting foam. 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. Keep containers and surroundings cool with water spray.
Specific hazards during fire fighting	: Extremely flammable liquid and vapor. This material is combustible/flammable and is sensitive to fire, heat, and static discharge.
Special protective equipment for fire-fighters	: 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.

Further information	: 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. Exposure to decomposition products may be a hazard to health. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Evacuate personnel to safe areas. Ventilate the area. Remove all sources of ignition. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).
Environmental precautions	: Discharge into the environment must be avoided. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	: Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling	: Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification. Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initated fire or explosion during transfer, storage or handling, include but are not limited to these examples: (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators. (2) 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 or diesel) is loaded into tanks previously containing low flash point products (such gasoline or naphtha). (3) Storage tank level floats must be effectively bonded. For more information on precautions to prevent static-initated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).
Conditions for safe storage, including incompatibilities	: Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". 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".

Reports suggest that government-mandated ethanol, if present, may not be compatible with fiberglass gasoline tanks. Ethanol may dissolve fiberglass resin, causing engine damage and possibly allow leakage of explosive gasoline.

Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

No decomposition if stored and applied as directed. Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Store only in containers approved and labeled for gasoline.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA	Benzene	71-43-2	TWA	1 ppm
		71-43-2	STEL	5 ppm
		71-43-2	OSHA_ACT	0.5 ppm
OSHA Z1	Xylene	1330-20-7	PEL	100 ppm 435 mg/m3
	Ethanol; Ethyl alcohol	64-17-5	PEL	1,000 ppm 1,900 mg/m3
	Naphthalene	91-20-3	PEL	10 ppm 50 mg/m3
	Cyclohexane	110-82-7	PEL	300 ppm 1,050 mg/m3
	Ethylbenzene	100-41-4	PEL	100 ppm 435 mg/m3
	Heptane [and isomers]	142-82-5	PEL	500 ppm 2,000 mg/m3
	N-hexane	110-54-3	PEL	500 ppm 1,800 mg/m3
ACGIH	Toluene	108-88-3	TWA	50 ppm
	Xylene	1330-20-7	TWA	100 ppm
		1330-20-7	STEL	150 ppm
	Ethanol; Ethyl alcohol	64-17-5	TWA	1,000 ppm
	Trimethylbenzene	25551-13-7	TWA	25 ppm
	Isopentane; 2-Methylbutane	78-78-4	TWA	600 ppm
	Naphthalene	91-20-3	TWA	10 ppm
		91-20-3	STEL	15 ppm
	Benzene	71-43-2	TWA	0.5 ppm
		71-43-2	STEL	2.5 ppm
	Pentane	109-66-0	TWA	600 ppm
	Cyclohexane	110-82-7	TWA	100 ppm
	Ethylbenzene	100-41-4	TWA	100 ppm
		100-41-4	STEL	125 ppm
	Heptane [and isomers]	142-82-5	TWA	400 ppm
		142-82-5	STEL	500 ppm

	N-hexane	110-54-3	TWA	50 ppm
Engineering measures	: Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces. Use only intrinsically safe electrical equipment approved for use in classified areas.			
Eye protection	: Safety glasses or goggles are recommended where there is a possibility of splashing or spraying. Ensure that eyewash stations and safety showers are close to the workstation location.			
Hand protection	: Gloves constructed of nitrile or neoprene are recommended. Consult manufacturer specifications for further information.			
Skin and body protection	: If needed to prevent skin contact, chemical protective clothing such as of DuPont TyChem®, Saranex or equivalent recommended based on degree of exposure. Flame resistant clothing such as Nomex ® is recommended in areas where material is stored or handled.			
Respiratory protection	: 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. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. Use a NIOSH/ MSHA-approved positive-pressure supplied-air 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.			
Work / Hygiene practices	: Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.			

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear to straw colored liquid
Odor	: Characteristic hydrocarbon-like
Odor threshold	0.5 - 1.1 ppm
pH	: Not applicable
Melting point/freezing point	About -101°C (-150°F)
Initial boiling point & range	Boiling point varies: 30 – 200°C (85 – 392°F)
Flash point	< -21°C (-5.8°F)
Evaporation rate	: Higher initially and declining as lighter components evaporate
Flammability (solid, gas)	: Flammable vapor released by liquid

Upper explosive limit	7.6 %(V)
Lower explosive limit	1.3 %(V)
Vapor pressure	345 - 1,034 hPa at 37.8 °C (100.0 °F)
Vapor density (air = 1)	Approximately 3 to 4
Relative density (water = 1)	0.8 g/mL
Solubility (in water)	Negligible
Partition coefficient (n-octanol/water)	2 – 7 as log Pow
Auto-ignition temperature	Approximately 250°C (480°F)
Decomposition temperature	Will evaporate or boil and possibly ignite before decomposition occurs.
Kinematic viscosity	0.64 to 0.88 mm ² /s range reported for gasoline
Conductivity (conductivity can be reduced by environmental factors such as a decrease in temperature)	: Hydrocarbon liquids without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with "ultra-low conductivities" below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Vapors may form explosive mixture with air. Hazardous polymerization does not occur.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	Can react with strong oxidizing agents, peroxides, alkaline products and strong acids. Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.
Conditions to avoid	: Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Avoid static charge accumulation and discharge (see Section 7).
Hazardous decomposition products	: Ignition and burning can release carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Skin contact	: Irritating to skin. Can be partially absorbed through skin.
Eye contact	: Irritating to eyes.
Ingestion	: Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death. Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death may occur.

Inhalation and further information

Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, over excitation. Exposure to very high levels can result in unconsciousness and death.

Repeated over-exposure may cause liver and kidney injuries.
Components of the product may affect the nervous system.

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.

Component:**Gasoline, natural; Low boiling point naphtha** 8006-61-9Acute oral toxicity: LD50 rat
Dose: 18.8 mg/kgAcute inhalation toxicity: LC50 rat
Dose: 20.7 mg/l
Exposure time: 4 hSkin irritation: Classification: Irritating to skin.
Result: Mild skin irritationEye irritation: Classification: Irritating to eyes.
Result: Moderate eye irritation**Toluene**

108-88-3

Acute oral toxicity: LD50 rat
Dose: 636 mg/kgAcute dermal toxicity: LD50 rabbit
Dose: 12,124 mg/kgAcute inhalation toxicity: LC50 rat
Dose: 49 mg/l
Exposure time: 4 hSkin irritation: Classification: Irritating to skin.
Result: Mild skin irritation
Prolonged skin contact may defat the skin and produce dermatitis.
Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation**Xylene**

1330-20-7

Acute oral toxicity: LD50 rat
Dose: 2,840 mg/kgAcute dermal toxicity: LD50 rabbit
Dose: ca. 4,500 mg/kgAcute inhalation toxicity: LC50 rat
Dose: 6,350 mg/l
Exposure time: 4 hSkin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Ethanol; Ethyl alcohol

64-17-5

Acute oral toxicity: LD50 rat

Dose: 6,200 mg/kg

Acute dermal toxicity: LD50 rabbit

Dose: 19,999 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 8,001 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Prolonged skin contact may cause skin irritation and/or dermatitis.

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Mild eye irritation

Naphthalene

91-20-3

Acute oral toxicity: LD50 rat

Dose: 2,001 mg/kg

Acute dermal toxicity: LD50 rat

Dose: 2,501 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 101 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Carcinogenicity: N11.00422130

Benzene

71-43-2

Acute oral toxicity: LD50 rat

Dose: 930 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 44 mg/l

Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.

Result: Risk of serious damage to eyes.

Pentane

109-66-0

Acute oral toxicity: LD50 rat

Dose: 2,001 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 364 mg/l

Exposure time: 4 h

Skin irritation: Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

Cyclohexane

110-82-7

Acute dermal toxicity: LD50 rabbit

Dose: 2,001 mg/kg

Acute inhalation toxicity: LC50 rat

Dose: 14 mg/l

Exposure time: 4 h

Ethylbenzene	100-41-4	<u>Skin irritation:</u> Classification: Irritating to skin. Result: Skin irritation
		<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
		<u>Acute oral toxicity:</u> LD50 rat Dose: 3,500 mg/kg
Heptane [and isomers]	142-82-5	<u>Acute dermal toxicity:</u> LD50 rabbit Dose: 15,500 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat Dose: 18 mg/l Exposure time: 4 h
		<u>Skin irritation:</u> Classification: Irritating to skin. Result: Mild skin irritation
N-hexane	110-54-3	<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Risk of serious damage to eyes.
		<u>Acute oral toxicity:</u> LD50 rat Dose: 15,001 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat Dose: 103 g/m3 Exposure time: 4 h
		<u>Skin irritation:</u> Classification: Irritating to skin. Result: Skin irritation Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
		<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
		<u>Acute oral toxicity:</u> LD50 rat Dose: 25,000 mg/kg
		<u>Acute dermal toxicity:</u> LD50 rabbit Dose: 2,001 mg/kg
		<u>Acute inhalation toxicity:</u> LC50 rat Dose: 171.6 mg/l Exposure time: 4 h
		<u>Skin irritation:</u> Classification: Irritating to skin. Result: Skin irritation
		<u>Eye irritation:</u> Classification: Irritating to eyes. Result: Mild eye irritation
		<u>Teratogenicity:</u> N11.00418960

Carcinogenicity

NTP	:	Naphthalene (CAS-No.: 91-20-3) Benzene (CAS-No.: 71-43-2)
IARC	:	Gasoline, natural; Low boiling point naphtha (CAS-No.: 8006-61-9) Naphthalene (CAS-No.: 91-20-3) Benzene (CAS-No.: 71-43-2) Ethylbenzene (CAS-No.: 100-41-4)
OSHA	:	Benzene (CAS-No.: 71-43-2)
CA Prop 65	:	WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Toluene (CAS-No.: 108-88-3)

Benzene (CAS-No.: 71-43-2)

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

Toluene	108-88-3	<u>Toxicity to fish:</u> LC50 Species: Carassius auratus (goldfish) Dose: 13 mg/l Exposure time: 96 h <u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 11.5 mg/l Exposure time: 48 h <u>Toxicity to algae:</u> IC50 Species: Selenastrum capricornutum (green algae) Dose: 12 mg/l Exposure time: 72 h
Ethanol; Ethyl alcohol	64-17-5	<u>Toxicity to fish:</u> LC50 Species: Leuciscus idus (Golden orfe) Dose: 8,140 mg/l Exposure time: 48 h <u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 9,268 - 14,221 mg/l Exposure time: 48 h
Isopentane; 2-Methylbutane	78-78-4	<u>Toxicity to fish:</u> LC50 Species: Oncorhynchus mykiss (rainbow trout) Dose: 3.1 mg/l Exposure time: 96 h <u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 2.3 mg/l Exposure time: 96 h
Naphthalene	91-20-3	<u>Toxicity to algae:</u> EC50 Species: Dose: 33 mg/l Exposure time: 24 h
Pentane	109-66-0	<u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 9.74 mg/l Exposure time: 48 h
Cyclohexane	110-82-7	<u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 3.78 mg/l Exposure time: 48 h

Heptane [and isomers]	142-82-5	<u>Toxicity to fish:</u> LC50 Species: Carassius auratus (goldfish) Dose: 4 mg/l Exposure time: 24 h
		<u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 1.5 mg/l Exposure time: 48 h
N-hexane	110-54-3	<u>Toxicity to fish:</u> LC50 Species: Pimephales promelas (fathead minnow) Dose: 2.5 mg/l Exposure time: 96 h
		<u>Acute and prolonged toxicity for aquatic invertebrates:</u> EC50 Species: Daphnia magna (Water flea) Dose: 2.1 mg/l Exposure time: 48 h

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14. TRANSPORT INFORMATION

CFR

Proper shipping name : Petrol
UN-No. : 1203
Class : 3
Packing group : II

TDG

Proper shipping name : Gasoline
UN-No. : UN1203
Class : 3
Packing group : II

IATA Cargo Transport

UN UN-No. : UN1203
Description of the goods : Gasoline
Class : 3
Packaging group : II
ICAO-Labels : 3
Packing instruction (cargo aircraft) : 364
Packing instruction (cargo aircraft) : Y341

IATA Passenger Transport

UN UN-No. : UN1203
Description of the goods : Gasoline
Class : 3

Packaging group : II
ICAO-Labels : 3
Packing instruction (passenger aircraft) : 353
Packing instruction (passenger aircraft) : Y341

IMDG-Code

UN-No. : UN 1203
Description of the goods : Gasoline
Class : 3
Packaging group : II
IMDG-Labels : 3
EmS Number : F-E S-E
Marine pollutant : No

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Flammable liquid
Highly toxic by ingestion
Moderate skin irritant
Severe eye irritant
Carcinogen

TSCA Status : On TSCA Inventory

DSL Status : . All components are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Toluene 108-88-3

Benzene 71-43-2

SECTION 16. OTHER INFORMATION**Further information**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Date : 08/09/2012

6, 8, 10, 12, 14, 16, 64, 68, 91, 112, 306, 1092, 1106, 1500, 1570, 1571, 1651, 1652, 1654, 1700, 1701, 1702, 1710, 1711, 1714, 1726, 1729, 1730, 1732, 1733, 1826, 1848, 1880, 1950

Effective date: 11 May 2020

Revision: 11 May 2020

Trade Name: Alconox®

I Identification of the substance/mixture and of the supplier**I.1 GHS Product identifier**

Trade Name: Alconox®

Product number: 1101, 1103, 1104, 1104-1, 1112, 1112-1, 1125, 1150

I.2 Application of the substance / the mixture: Cleaning material/Detergent**I.2.1 Recommended dilution ratio: 1 – 2% in water****I.3 Details of the supplier of the Safety Data Sheet****Manufacturer:**

Alconox Inc.
30 Glenn St
White Plains, NY 10603
(914) 948-4040

Supplier:**Emergency telephone number:**

ChemTel Inc

North America: 1-888-255-3924

International: +1 813-248-0573

2 Hazards identification**2.1 Classification of the substance or mixture:**

In compliance with EC regulation No. 1272, 29CFR1910/1200 and GHS requirements.

Hazard-determining components of labeling:

Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Eye damage, category 1.

Skin irritation, category 2.

Product at recommended dilution:

Eye irritation, category 2B

Hazard pictograms:**Signal word:** Danger**Hazard statements:**

H315 Causes skin irritation.

H318 Causes serious eye damage.

Precautionary statements:

P264 Wash skin thoroughly after handling.

Effective date: 11 May 2020

Revision: 11 May 2020

Trade Name: Alconox®

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P321 Specific treatment (see supplemental first aid instructions on this label).

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P501 Dispose of contents and container as instructed in Section 13.

Hazardous Elements at Use Dilution:

Hazard Pictograms:

**Signal Word:** Warning**Hazard Statements:**

H320 Causes eye irritation

Precautionary statements:

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P501 Dispose of contents and container as instructed in Section 13

Additional information: None.**Hazard description****Hazards Not Otherwise Classified (HNOC):** May cause surfaces to become slippery if wet. Use caution in areas of foot traffic if on floors.**Information concerning particular hazards for humans and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to EC regulation No. 1272, 29CFR1910/1200 and GHS Requirements, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients**3.1 Chemical characterization:** Not determined or not available.**3.2 Description:** None**3.3 Hazardous components (percentages by weight)**

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2; H315 Eye Dam. 1; H318	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	2-16

Effective date: 11 May 2020

Revision: 11 May 2020

Trade Name: Alconox®

Hazardous components at use dilution (percentages by weight):

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Eye Irrit. 2; H319	0.12 - 0.28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Eye Irrit. 2; H319	0.08 – 0.22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Eye Irrit. 2; H319	0.02 – 0.16

3.4 Additional Information: None.**4 First aid measures****4.1 Description of first aid measures****General information:** None.**After inhalation:**

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.

Seek medical attention if irritation, discomfort, or vomiting persists.

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

First aid measure at recommended dilution:**General information:** None.**After inhalation:**

Maintain an unobstructed airway.

Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.

Remove contact lens(es) if able to do so during rinsing.

After swallowing:

Rinse mouth thoroughly. Seek medical attention if irritation, discomfort, or vomiting develops.

5 Firefighting measures

Effective date: 11 May 2020**Revision:** 11 May 2020**Trade Name:** Alconox®**5.1 Extinguishing media****Suitable extinguishing agents:**

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents: None

5.2 Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters**Protective equipment:**

Wear protective eye wear, gloves and clothing.

Refer to Section 8.

5.4 Additional information:

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.

Avoid contact with skin, eyes and clothing.

6 Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures:**

Ensure adequate ventilation.

Ensure air handling systems are operational.

6.2 Environmental precautions:

Should not be released into the environment.

Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up:

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections: None**7 Handling and storage****7.1 Precautions for safe handling:**

No expected hazards under normal use condition.

Avoid breathing mist or vapor if aerosolized.

Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities:

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

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8 Exposure controls/personal protection



8.1 Control parameters:

- a) 7722-88-5, Tetrasodium Pyrophosphate, ACGIH TWA 10 mg/m³
- b) 7758-29-4, Sodium Tripolyphosphate, ACGIH TWA 10 mg/m³
- c) Dusts, non-specific OEL, Irish Code of Practice
 - (i) Total inhalable 10 mg/m³ (8hr)
 - (ii) Respirable 4 mg/m³ (8hr)
 - (iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m³, (8hr)

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal use conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

Exposure Control and Personal Protective Equipment at recommended dilution:

Under normal use and operational conditions, no special personal protective equipment or engineering controls will be necessary. Handle with care.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	Explosion limit lower: Explosion limit upper:	Not determined or not available. Not determined or not available.
Odor:	Not determined or not available.	Vapor pressure at 20°C:	Not determined or not available.
Odor threshold:	Not determined or not available.	Vapor density:	Not determined or not available.
pH-value:	9.5 (1% aqueous solution)	Relative density:	Not determined or not available.

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Melting/Freezing point:	Not determined or not available.	Solubilities:	Not determined or not available.
Boiling point/Boiling range:	Not determined or not available.	Partition coefficient (n-octanol/water):	Not determined or not available.
Flash point (closed cup):	Not determined or not available.	Auto/Self-ignition temperature:	Not determined or not available.
Evaporation rate:	Not determined or not available.	Decomposition temperature:	Not determined or not available.
Flammability (solid, gaseous):	Not determined or not available.	Viscosity:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

- 10.1 Reactivity:** Not determined or not available.
10.2 Chemical stability: Not determined or not available.
10.3 Possibility hazardous reactions: Not determined or not available.
10.4 Conditions to avoid: Not determined or not available.
10.5 Incompatible materials: Not determined or not available.
10.6 Hazardous decomposition products: Not determined or not available.

11 Toxicological information

11.1 Information on toxicological effects:

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product.

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation.

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye damage.

Tetrasodium Pyrophosphate: Risk of serious damage to eyes.

Product information at recommended dilution:

Eye irritation may occur upon direct contact with eyes. No specific hazards for skin contact, inhalation, or chronic exposure are expected within normal use parameters.

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

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STOT-single and repeated exposure: No additional information.**Additional toxicological information:** No additional information.**12 Ecological information****12.1 Toxicity:**

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.

Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.9 mg/l, 48 hours.

Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.

Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.

Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.**12.3 Bioaccumulative potential:** No additional information.**12.4 Mobility in soil:** No additional information.**General notes:** No additional information.**12.5 Results of PBT and vPvB assessment:****PBT:** No additional information.**vPvB:** No additional information.**12.6 Other adverse effects:** No additional information.**13 Disposal considerations****13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)****Relevant Information:**

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information**14.1 UN Number:**

None

ADR, ADN, DOT, IMDG, IATA

14.2 UN Proper shipping name:

None

ADR, ADN, DOT, IMDG, IATA

14.3 Transport hazard classes:

ADR, ADN, DOT, IMDG, IATA

Class: None**Label:** None**LTD. QTY:** None**US DOT****Limited Quantity Exception:**

None

Bulk:**RQ (if applicable):** None**Proper shipping Name:** None**Hazard Class:** None**Packing Group:** None**Marine Pollutant (if applicable):** No additional information.**Non Bulk:****RQ (if applicable):** None**Proper shipping Name:** None**Hazard Class:** None**Packing Group:** None**Marine Pollutant (if applicable):** No additional information.

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Comments: None	Comments: None
14.4 Packing group: ADR, ADN, DOT, IMDG, IATA	None
14.5 Environmental hazards:	None
14.6 Special precautions for user:	None
Danger code (Kemler):	None
EMS number:	None
Segregation groups:	None
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.	
14.8 Transport/Additional information:	
Transport category:	None
Tunnel restriction code:	None
UN "Model Regulation":	None

15 Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.****North American****SARA****Section 313 (specific toxic chemical listings):** None of the ingredients are listed.**Section 302 (extremely hazardous substances):** None of the ingredients are listed.**CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable****Spill Quantity:** None of the ingredients are listed.**TSCA (Toxic Substances Control Act):****Inventory:** All ingredients are listed as active.**Rules and Orders:** Not applicable.**Proposition 65 (California):****Chemicals known to cause cancer:** None of the ingredients are listed.**Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.**Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.**Chemicals known to cause developmental toxicity:** None of the ingredients are listed.**Canadian****Canadian Domestic Substances List (DSL):**

All ingredients are listed.

EU**REACH Article 57 (SVHC):** None of the ingredients are listed.

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Germany MAK: Not classified.**EC 648/2004** – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts**EC 551/2009** – This is not a laundry or dishwasher detergent**EC 907/2006** – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents**Asia Pacific****Australia****Australian Inventory of Chemical Substances (AICS):** All ingredients are listed.**China****Inventory of Existing Chemical Substances in China (IECSC):** All ingredients are listed.**Japan****Inventory of Existing and New Chemical Substances (ENCS):** All ingredients are listed.**Korea****Existing Chemicals List (ECL):** All ingredients are listed.**New Zealand****New Zealand Inventory of Chemicals (NZOIC):** All ingredients are listed.**Philippines****Philippine Inventory of Chemicals and Chemical Substances (PICCS):** All ingredients are listed.**Taiwan****Taiwan Chemical Substance Inventory (TSCI):** All ingredients are listed.**16 Other information****Abbreviations and Acronyms:** None**Summary of Phrases****Hazard statements:**

H315 Causes skin irritation.

H318 Causes serious eye damage.

NFPA: 1-0-0**HMIS:** 1-0-0**At recommended dilution:****NFPA:** 1-0-0**HMIS:** 1-0-0**Precautionary statements:**

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 If on skin: Wash with soap and water.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P321 Specific treatment (see supplemental first aid instructions on this label).

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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Appendix G

Biological Photographic Log

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Photo 1 – Wild Carrot



Photo 2 – Common Cowparsnip



Photo 3 – Poison Hemlock Flower



Photo 4 – Poison Hemlock Stem



Photo 5 – Western Water Hemlock Flower



Photo 6 – Western Water Hemlock Leaves



Photo 7 – Wild Parsnip



Photo 8 – Buttercups



Photo 9 – Climbing Nightshade



Photo 10 – Poison Ivy



Photo 11 – Spurges



Photo 12 – Stinging Nettle



Photo 13 – Mosquito



Photo 14 – Male Rocky Mountain Wood Tick



Photo 15 – Female Rocky Mountain Wood Tick



Photo 16 – Female Western Black-Legged Tick



Photo 17 – Female American Dog Tick



Photo 18 – Symptom of Lyme Disease



Photo 19 – Chigger



Photo 20 – Chigger Bites



Photo 21 – Wasp/ Hornet



Photo 22 – Black Widow Spider



Photo 23 – Yellow Sac Spider



Photo 24 – Western Rattlesnake



Photo 25 – Wolves



Photo 26 – Cougar



Photo 27 – Bears



Photo 28 – Moose



Photo 29 – Elk



Photo 30 – Coyotes

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Appendix H

Wildfire Smoke Health Hazards

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WILDFIRE SMOKE HEALTH HAZARDS

Health threat from wildfire smoke:

Smoke from wildfires is a mixture of gases and fine particles from burning trees and other plant materials. Smoke can irritate eyes, irritate the respiratory system, and worsen chronic heart and lung diseases.

How to tell if smoke is affecting you:

Smoke can cause:

- Coughing
- A scratchy throat
- Irritated sinuses
- Shortness of breath
- Chest pain
- Headaches
- Stinging eyes
- A runny nose.

If you have heart or lung disease, smoke may make your symptoms worse. People who have heart disease might experience:

- Chest pain
- Rapid heartbeat
- Shortness of breath
- Fatigue.

Smoke may worsen symptoms for people who have pre-existing respiratory conditions, such as respiratory allergies, asthma, and chronic obstructive pulmonary disease (COPD), in the following ways:

- Inability to breathe normally
- Cough with or without mucus
- Chest discomfort
- Wheezing and shortness of breath.

When smoke levels are high enough, even healthy people may experience some of these symptoms.

Know whether you are at risk:

If you have heart or lung disease, such as congestive heart failure, angina, COPD, emphysema, or asthma, you are at higher risk of having health problems than healthy people.

Older adults are more likely to be affected by smoke, possibly because they are more likely to have heart or lung diseases than younger people.

Children are more likely to be affected by health threats from smoke because their airways are still developing and because they breathe more air per pound of body weight than adults. Children also are more likely to be active outdoors.

Protect yourself:

Following are ways to protect your health:

- Limit your exposure to smoke.
- Pay attention to local air quality reports.
- Listen and watch for news or health warnings about smoke.
- Find out if your community provides reports about the Environmental Protection Agency's Air Quality Index (AQI).
- Also pay attention to public health messages about taking additional safety measures.
- Refer to visibility guides if they are available.

If you are advised to stay indoors, keep indoor air as clean as possible. Keep windows and doors closed unless it is extremely hot outside. Run an air conditioner if you have one, but keep the fresh-air intake closed and the filter clean to prevent outdoor smoke from getting inside. If you do not have an air conditioner and if it is too warm to stay inside with the windows closed, seek shelter elsewhere.

Use a high-efficiency particulate air (HEPA) filter to reduce breathing problems. A HEPA filter may reduce the number of irritating fine particles in indoor air.

Do not add to indoor pollution. When smoke levels are high, do not use anything that burns, such as candles, fireplaces, or gas stoves. Do not vacuum, because vacuuming stirs up particles already inside your home. Do not smoke, because smoking puts even more pollution into the air.

If you have asthma or another lung disease, follow your doctor's advice about medicines and about your respiratory management plan. Dust masks are not enough. Paper "comfort" or "dust" masks commonly found at hardware stores are designed to trap large particles, such as sawdust. These masks will not protect your lungs from smoke.