DOE–EM/GJ1038–2005

Office of Environmental Management – Grand Junction

MOAB UTAH
UMTRA Project

Moab Project
Health and Safety Plan

November 2005

U.S. Department of Energy

Office of Environmental Management

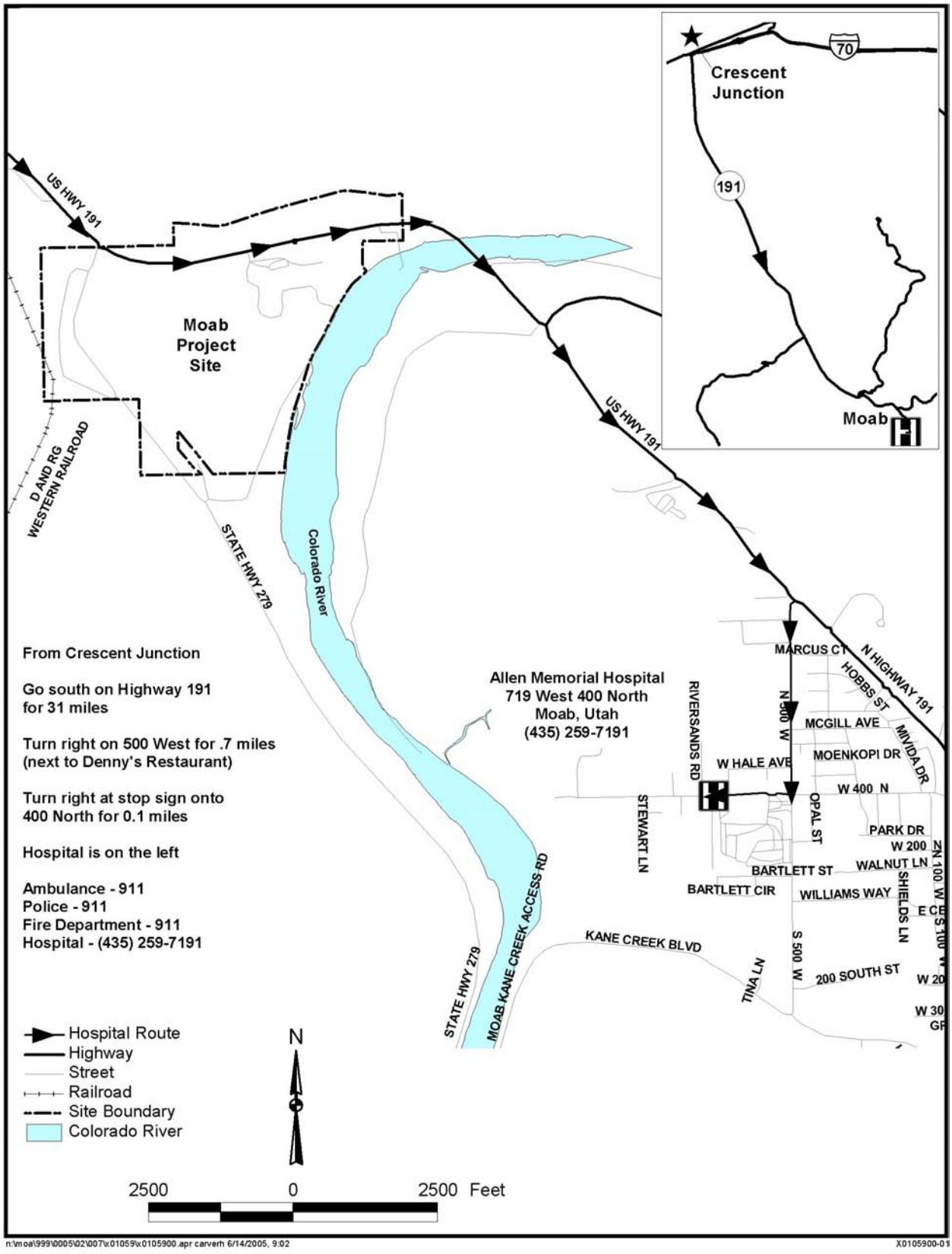
Work Performed Under DOE Contract No. DE–AC01–02GJ79491
for the U.S. Department of Energy Office of Environmental Management.

DOE-EM/GJ1038-2005

Moab Project

Health and Safety Plan

Work Performed by S.M. Stoller Corporation under DOE Contract No. DE–AC01–02GJ79491 for the U.S. Department of Energy Office of Environmental Management, Grand Junction, Colorado



n:\moa\999\0005\02\007\x01059\x0105900.apr carverh 6/14/2005, 9:02

X0105900-01

Moab Project Health and Safety Plan
Revision 6

11/18/05
Michael R. Hurshman
Health and Safety Manager
Date

11-21-05
Thomas R. Richards
Acting Health and Safety Site Lead
Date

11-18-05
Jim Erickson
Crescent Junction Site Manager
Date

11-18-05
Irwin Stewart
Site Manager
Date

11-18-05
Kenneth E. Karp
Acting Project Manager
Date

End of current text

Contents

Figures

Tables

Appendix

Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
APR	air purifying respirator
CFR	*Code of Federal Regulations*
CRZ/C	contamination reduction zone/corridor
DOE	U.S. Department of Energy
EIS	Environmental Impact Statement
H&S	health and safety
HAZCOM	hazard communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSP	Health and Safety Plan
JSA	Job Safety Analysis
km/h	kilometers per hour
LEL	lower explosive limit
mg/m^3	milligrams per cubic meter
mm	millimeter
mph	miles per hour
MPSC	Moab Project Safety Coordinator
mrem	millirem
MSDS	material safety data sheet
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
pCi/g	picocuries per gram
PEL	permissible exposure limit
PPE	personal protective equipment
ppm	parts per million
RBA	Radiological Buffer Area
RTA	Real Time Analysis
RWP	Radiological Work Permit
SWP	Safe Work Permit
TAC	Technical Assistance Contractor
TLD	thermoluminescent dosimeter
TLV	threshold limit value
UL	Underwriter Laboratory
URC	Uranium Reduction Company

End of current text

1.0 General Information

1.1 Introduction

This Health and Safety Plan (HSP) has been prepared and issued by the Technical Assistance Contract (TAC) contractor for the U.S. Department of Energy (DOE) at Grand Junction, Colorado. In this HSP, Contractor refers to the TAC contractor. Personnel position titles are Contractor employees unless specified otherwise.

This HSP defines safety and health policies and procedures for performing on-site work at the former Atlas Moab Uranium Mill site, Moab, Utah (Moab site), the Crescent Junction Disposal site, Crescent Junction, Utah, and vicinity properties and applies to all personnel, including subcontractors. It identifies the responsible personnel and their functions in the implementation of the HSP. The HSP also addresses the hazards associated with and the site-specific employee protection requirements for these activities at the Moab project. In this HSP the term "Moab Project " refers to the activities performed on the Moab Mill site, vicinity properties, and Crescent Junction Disposal site. "Moab site" refers to activities performed on the Moab Mill site and/or vicinity properties.

Revision of this document in response to changing work scope or site conditions is coordinated through the Health and Safety (H&S) organization. A Safe Work Permit (SWP), Radiological Work Permit (RWP), or Job Safety Analysis (JSA) may be used to supplement this HSP.

Major tasks associated with these operations are described in Appendix A, "Moab and Vicinity Properties Task-Specific Requirements Table" and Appendix B, "Crescent Junction Task-Specific Requirements Table."

Hazards associated with work at Crescent Junction do not include ionizing radiation or hazardous wastes that would invoke the requirements of 29 CFR 1910.120 (HAZWOPER).

1.2 Scope of Work

Moab site work covers:

- Initial and interim ground water actions, including operation of a ground water extraction well field, ground water injection system, evaporation pond, sprinkler system, and fresh water application system for selected near shore shallow river areas.
- Characterization and measurement of airborne, soil, and ground water concentrations of radioactive materials and potentially hazardous substances.
- Maintenance of access and radiological controls, the tailings pile, and surrounding areas until an appropriate remediation approach is implemented.
- Development of site infrastructure in support of the DOE preferred alternative.
- Preliminary assessment and activities related to remediation of vicinity properties.
- Coordination with other involved agencies and stakeholders.
- Program Management.

Crescent Junction work covers:

- Development of site infrastructure in support of the DOE preferred alternatives.
- Activities associated with construction of site access entrance road, trailer staging area, installation of domestic and construction water system, and rail spur siding.
- Characterization efforts including drilling, seismic, and soil testing

1.3 Site Description and History Overview

The Moab site is a former uranium-ore processing facility located about 3 miles northwest of Moab in Grand County, Utah. A site location map is provided as Figure 1–1.

The Moab site is bordered on the north and southwest by steep sandstone cliffs. The Colorado River forms the southeastern boundary of the site. U.S. Highway 191 (US 191) parallels the northern site boundary and State Road 279 (SR 279) parallels the southwestern boundary. Arches National Park is located north of the site across US 191, and Canyonlands National Park is more distantly located to the southwest. The Union Pacific Railroad traverses a small section of the site, just west of SR 279, prior to entering a tunnel that emerges several miles to the southeast. Moab Wash runs in a southeasterly direction through the center of the site and joins with the Colorado River. The wash is an ephemeral stream that flows only when there is a precipitation event or during snowmelt. The entire site covers approximately 400 acres of land, approximately 130 acres is occupied by the tailings pile. Major site features are shown on Figure 1–1.

Originally, the property and facility were owned by the Uranium Reduction Company (URC) and was regulated by the U.S. Atomic Energy Commission. In 1956, URC began operating the Moab Mill. In 1962, the Atlas Minerals Company acquired URC and operated the mill until operations ceased in 1984. From 1956 to 1984, uranium mill tailings were deposited on site in an unlined impoundment. Decommissioning of the mill began in 1988, and an interim cover was placed on the impoundment from 1989 to 1995. In 1996, Atlas proposed to reclaim the tailings pile for permanent disposal in its current location.

In October 2001, the Moab site was transferred from the Moab Reclamation Trust to DOE control. At that time the former U.S. Nuclear Regulatory Commission license for the site was terminated. The site is now regulated under Title 1 of the Uranium Mill Tailings Radiation Control Act.

The Crescent Junction site is located north by northeast of the junction of Interstate 70 and US-191 between Crescent Junction, Utah, and Thompson Springs, Utah, in Township 21 South, Range 19 East. A site location map is provided as Figure 1−2.

DOE is managing the Uranium Mill Tailings Remedial Action Program at the Moab Project Site in Moab, Utah. The selected remedy involves moving the existing tailings material from the Moab site to a permanent repository at the Crescent Junction site. S.M. Stoller is the Technical Assistance Contractor for DOE in Grand Junction, Colorado (hereinafter referred to as Contractor).

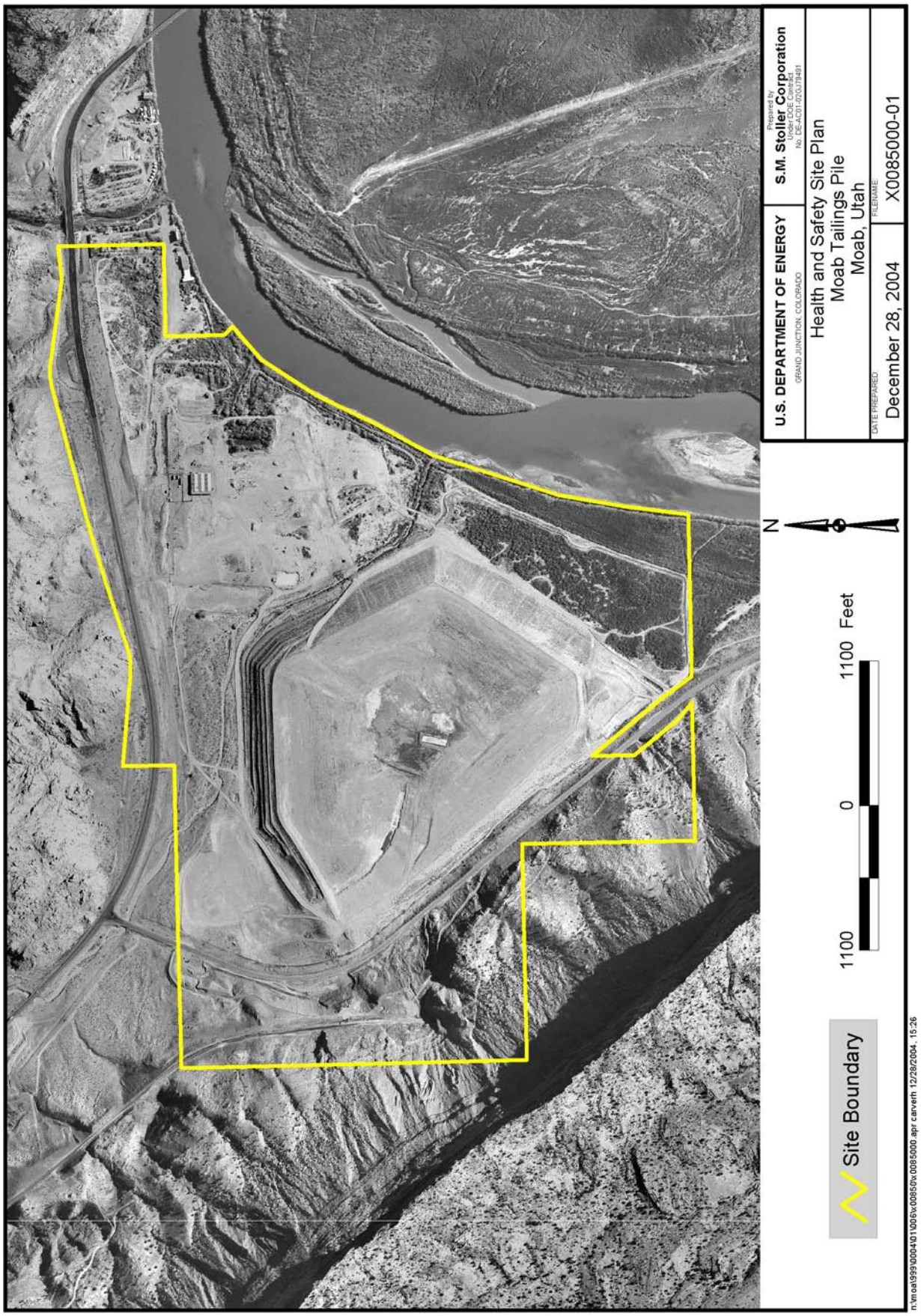


Figure 1–1. Moab Site Location Map

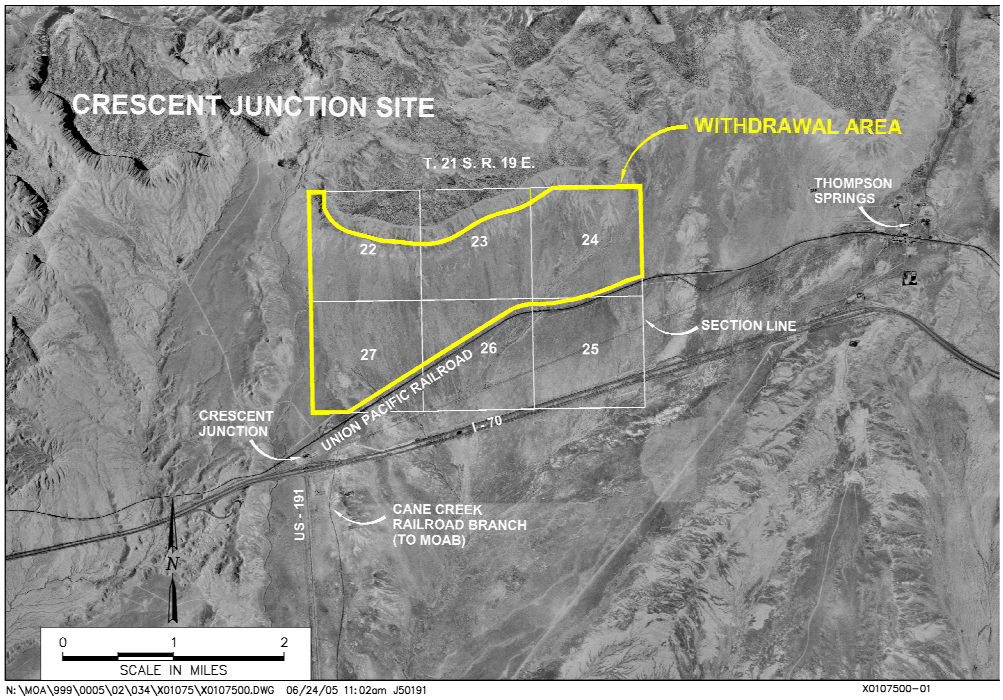


Figure 1–2. Crescent Junction Site Location Map

1.4 Regulatory Scope

The primary Federal regulations governing the H&S of site workers are:

- 29 *Code of Federal Regulations* (CFR) 1910, "Occupational Safety and Health Standards—General Industry."
- 29 CFR 1926, "Safety and Health Regulations for Construction."
- 10 CFR 835, "Occupational Radiation Protection."

The decision has been made to also control site work in accordance with the hazardous waste operations requirements of 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response." The H&S Manager and Moab Project Safety Coordinator (MPSC) are responsible for interpreting regulatory requirements for applicability to this project. Site personnel with questions related to the regulatory basis should contact the MPSC. Activities of short duration requiring site access for less than one week per year, that have very limited potential for chemical exposures, may be controlled under the requirements of the Stoller Radiation Protection Program rather than 29 CFR 1910.120 at the discretion of the H&S Manager.

Hazards associated with work at Crescent Junction do not currently include ionizing radiation or hazardous wastes that would invoke the requirements of 29 CFR 1910.120 (HAZWOPER) or 10 CRF 835.

Hazards associated with work at vicinity properties will include ionizing radiation and will invoke the requirements of 10 CFR 835. Hazards associates with work at the vicinity properties

do not currently include hazardous waste that would invoke the requirements of 29 CFR 1910.120 (HAZWOPER).

1.5 Administrative Requirements

1.5.1 Health and Safety Plan Changes

The information in this HSP shall be maintained current with conditions at the Moab and Crescent Junction sites. All revisions will be accomplished in accordance with Contractor policies for maintaining controlled documents.

1.5.2 Recordkeeping

All TAC H&S documentation shall be maintained in accordance with the records management procedure provided in the S.M. Stoller Corporation (TAC contractor) *General Administrative Procedures Manual* (STO–100), and the Moab Project working file index.

1.6 Accident Investigation

The Site Manager, MPSC, or Project Manager shall immediately (within 30 minutes) be notified of all job-related accidents, events, and near-misses that could affect the safety and health of site workers or the general public. Any equipment and/or work site involved in an accident/incident or near-miss shall be secured and shall remain secured until the Project Manager and H&S Manager have given permission to resume work.

Guidelines and requirements for event reporting and notification are contained in the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."

1.7 Incorporation of Lessons Learned

Lessons learned from within the DOE complex, including the Office of Environmental Management safety forum, and related industrial experience are incorporated in this project's H&S program through the following methods:

- Management safety assessments to measure performance and potential vulnerabilities.
- Formal training programs.
- Routine safety meetings.
- Revisions to this HSP to incorporate lessons learned.

End of current text

2.0 Key Personnel

2.1 Organizational Structures

The names, organizational relationships, and reporting relationships for personnel critical to H&S issues are presented in Table 2–1. Organizations to be contacted in the event of an emergency and emergency protocols are identified in Section 11.0, "Emergency Response/Contingency Plan."

Table 2–1. Contact Numbers for Selected Moab Project Staff and Support Personnel

Position	Primary	
	Name	Phone No.
DOE Personnel		
DOE Moab Federal Project Director[a]	Don Metzler	970-248-7612
DOE Budget Analyst	John Gilmore	970-248-6027
DOE Project Engineer	Joel Berwick	970-248-6020
DOE Health and Safety Manager	Kent Brakken	970-248-6085
Technical Assistance Contractor (TAC) Personnel		
Moab Project Manager (acting)	Ken Karp	970-248-6564
Moab Site Manager	Irwin Stewart	435-259-5131 cell—970-640-3188
Crescent Junction Site Manager	Jim Erickson	970-248-6395
Health and Safety Manager	Michael Hurshman	970-248-6468
Acting Health and Safety Site Lead	Tom Richards	435-719-2845 cell—970-201-3235
Moab Project Safety Coordinator (MPSC)	Tom Guthrie	435-259-4892 cell—970-640-3101
Ground Water Coordinator	John Ford	970-248-6399
Environmental Services Manager	Cheri Bahrke	970-248-6038

[a]The DOE Program Team Leader also acts as the DOE Public Affairs Specialist for the Moab Project.

2.2 Contractor Organization

2.2.1 Project Manager

The Project Manager has overall contractor responsibility to implement the selected remedial actions. The Project Manager issues the HSP with concurrence from the H&S Manager.

2.2.2 Moab Site Manager

The Moab Site Manager serves as primary point of contact and identifies the operations that will be performed on the Moab site and vicinity properties and the resources required to perform the tasks. Responsibilities include project scheduling, cost updating, and overall project direction.

2.2.3 Crescent Junction Site Manager

The Crescent Junction Site Manager is responsible for work scope definition, budgets, schedules, and submittals of infrastructure construction activities, protection and security of the Crescent Junction Disposal site. Tasks may include coordinating with functional staff and overseeing subcontracts associated with site construction and maintenance.

2.2.4 Health and Safety Manager

The H&S Manager serves the management team by assisting with H&S policy development based on evaluation of customer and regulatory requirements. The H&S Manager is responsible for ensuring that the Project Manager has the necessary H&S support to effectively implement the HSP and the TAC H&S Program.

2.2.5 Moab Project Safety Coordinator (MPSC)

The MPSC reports to the H&S Manager and is responsible for assisting the H&S Manager and Site Manager with coordination of project H&S resources and issues. The MPSC also performs routine oversight of Contractor and subcontractor H&S performance.

The MPSC serves as the Contractor Site Safety Supervisor in accordance with 29 CFR 1910.120 and is the primary H&S point of contact. This individual is located on the site and has the authority and knowledge necessary to implement the HSP and verify compliance with applicable safety and health requirements, including radiological controls. The MPSC also serves as a Radiological Control Technician.

2.2.6 Ground Water Coordinator

The Ground Water Coordinator works with the Site Manager to manage ground water activities at the Moab site, such as routine monitoring, characterization, and performing immediate and interim actions.

2.2.7 Environmental Services Manager

The Environmental Services Manager provides information on the regulatory notification requirements to the appropriate project management in the event of a spill or a release of regulated materials and recommends follow-up actions to remain in compliance with applicable regulations. This position is responsible for identification and disposition of regulated materials.

2.2.8 Employee Safety Responsibility

Employees are responsible for their own safety as well as the safety of those around them. Employees shall use all equipment provided in a safe and responsible manner as directed by their supervisors. All personnel shall follow the practices set forth in this HSP. All employees have the responsibility to stop work if unsafe practices are being used.

3.0 Health and Safety Hazard Analysis

3.1 General Requirements

This section addresses the radiological, chemical, biological, physical, and task-specific hazards for the Moab, Crescent Junction, and vicinity property sites.

The specific tasks to be performed during the investigation and remediation of the Moab site are listed in Appendix A. The specific tasks to be performed during the investigation and initial construction phases at the Crescent Junction site are listed in Appendix B. Participants and observers of the tasks covered by this plan are required to comply with the hazard control and personnel protective equipment requirements for the task.

Each subcontractor shall comply with the HSP and also work with the Contractor to develop a JSA for each major task or work activity. Copies of this HSP and of any site-specific addenda will be maintained on site.

In addition to the requirements of this HSP, one or more of the following working documents may be used to control hazards related to certain tasks involving activities such as drilling, excavating, hoisting, or tasks not addressed in the task-specific requirements table (Appendix A).

- Radiological Work Permit (RWP)—The RWP defines radiological conditions associated with work involving potential exposure to ionizing radiation. Controls, personal protective equipment (PPE), and radiological monitoring requirements for the work are prescribed.
- Safe Work Permit (SWP)—The SWP is generally used for short term, nonroutine jobs that are not covered by a formal procedure or Job Safety Analysis. Examples of work that may require an SWP include working from vehicle-mounted elevated platforms or aerial lift baskets or working near underground or overhead utility lines.
- Job Safety Analysis (JSA)—The JSA is a method to review job procedures or practices to identify hazards and determine appropriate equipment and controls for implementation during performance of the job or task. When possible, workers involved in task performance should assist with JSA development.

These documents are addressed in the *Health and Safety Manual* (STO 2) and the *Site Radiological Control Manual* (STO 3).

3.2 Task-Specific Requirements Tables (Appendixes A and B)

Appendixes A (Moab site and vicinity properties) and B (Crescent Junction site) present summaries of the protective measures, task-specific training, personnel monitoring, and notification/coverage requirements applicable to each identified task. Workers are expected to review the table's "prescription" for the task before performing the task. Compliance with the prescriptions for the tasks in the table does not absolve the worker from the requirement to comply with the entire HSP. The task-specific requirements listed in the table are not intended to be inclusive of every requirement that may be necessary to do each task. Rather, the table identifies the task-discreet requirements affecting worker safety and health that must be met to perform a given task at the controlled site. The general training requirements for all workers at

the site are stated in Section 6.0, "Training Program." The task-specific requirements in the table do not address worker qualifications or training unrelated to the safe performance of a task (such requirements are the responsibility of the worker and supervisor). For example, because Hazardous Waste Operations and Emergency Response (HAZWOPER) training is required for all general site workers, it is not listed as a task-specific requirement in the task-specific requirements tables.

3.3 Hazard Communication Program

The purpose of a hazard communication (HAZCOM) program is to ensure chemical hazards located at a site are communicated to all personnel according to 29 CFR 1910.1200 and 1926.59.

A written HAZCOM program in the *Health and Safety Manual* (STO 2) includes the following information:

- Container Labeling—Personnel will ensure that all drums and containers are labeled according to contents. These drums and containers will include those from manufacturers and those produced on site by operations. Manufacturers' labels and warning will serve as the primary labeling system for all containers and will not normally be removed or covered with another label. Worn labels on manufacturers' containers will be replaced with labels consistent with 29 CFR 1910.1200. Transfer containers (those without labels that are filled from the manufacturers' containers) that are kept more than one shift will be labeled consistent with 29 CFR 1910.1200. As a best management practice, off-specification products (e.g., used motor oils) and other waste streams will be clearly labeled to define contents and in accordance with Resource Conservation and Recovery Act requirements.
- Chemical list—A chemical list is maintained that includes any hazardous chemical encountered on the project site.
- Material safety data sheets (MSDSs)—An MSDS will be located on the site for each hazardous chemical used or known to be on the site. The MSDS will be located at the site office or vehicle and will be kept in the binder along with a master chemical list.
- Employee information and training—Information about project-specific chemical hazards is communicated to employees through an initial site orientation meeting and during subsequent safety briefings. At a minimum, employees will be instructed on the following:

  - Chemicals and their hazards in the work area.
  - How to prevent exposure to these hazardous chemicals.
  - Procedures to follow if exposed to the chemicals.
  - How to read and interpret labels and MSDSs for hazardous substances.
  - Emergency spill procedures.
  - Proper storage and labeling.
  - Procedure for bringing new chemicals on site.

When any new hazardous material is introduced or discovered on site, employees will be given information on this material during routine work planning sessions, safety meetings, or immediately if necessary.

3.4 Health and Safety Hazard Characterization and Controls

3.4.1 Ionizing Radiation

The focus of the Moab site remedial action is the characterization and stabilization of radioactive material associated with the mill tailings pile. These materials contain several radioactive isotopes in the uranium decay series. Collectively they emit alpha, beta, and gamma radiation.

Ionizing radiation hazards from uranium mill tailings result in low risk to workers. Three primary routes of exposure are inhalation of radioactive materials, ingestion of radioactive materials, and exposure to penetrating radiation.

The specific activity of the radioactive materials on the Moab site and vicinity properties is low enough that potential exposure from all pathways is very low. Exposure to penetrating radiation is expected to be below the regulatory threshold for exposure monitoring for occupational workers (100 millirem [mrem] per year). Ingestion is not a significant concern. Inhalation exposure is possible, but normal dust suppression techniques typically serve to maintain average airborne contamination concentrations below the regulatory value that would require personnel monitoring.

The potential exists for radiation exposure from radon daughters. The monitoring threshold is 500 mrem per year. Personnel who work on the site infrequently (less than 3 consecutive months per year) do not require monitoring for exposure to radon daughters. Personnel monitoring requirements are determined by the H&S Manager, who is also the Radiological Control Manager.

Areas within the Exclusion Zone (Contamination Area) may result in the transfer of radioactive contaminants to items in contact with the contaminated soil. Although controls are required and will be implemented to minimize the spread of contaminated soil, the low concentrations of radioactivity pose no significant radiation exposure hazard to workers.

3.4.2 Noise Hazards and Hearing Conservation Program

The Contractor's Hearing Conservation Program and American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) will be followed. Where noise levels exceed an action level of 85 decibels, 8-hour time-weighted average, on A-weighted scale (dBA), hearing protection shall be made available to all exposed employees. Sound level surveys shall be conducted by the Contractor on the site with each piece of operable equipment if noise levels are suspected of exceeding the action level. Exposure assessments will be accomplished for personnel whose exposure may exceed the ACGIH TLV (85 dBA 8-hour time-weighted average). Site workers will not be exposed above permissible noise exposure levels without adequate hearing protection. The action and exposure assessment criteria levels shall be adjusted according to the applicable ACGIH TLV for shifts longer than 8 hours.

3.4.3 Chemical Hazard Identification

Several types of chemicals are known to exist in the tailings pile. These chemicals do not present a significant hazard to site personnel performing work within the scope of this HSP because

limited intrusive penetration into the pile is planned. If intrusive work is anticipated, a JSA or revision to this plan will be developed to assess the hazards and prescribe controls. Any discolored soils should be reported to the Site Manager and MPSC.

3.4.3.1 Carbon Monoxide from Internal Combustion Engines

Internal combustion engines, particularly gasoline-powered engines, produce carbon monoxide, which could produce hazardous concentrates. Any operation of such equipment inside the maintenance bay requires adequate ventilation and air monitoring to ensure a safe environment.

3.4.3.2 Silica Quartz in Mill Tailings and Soil

Silica quartz is present in significant levels in concrete blocks and in mill tailings and at lower concentrations in soil. Silica poses a hazard for such tasks as cutting and jackhammering concrete; well or core drilling; moving, blading, or compacting mill tailings; and backfilling with clean soil. Sandstone composition in this region ranges from 30 to 60 percent silica quartz. With this high percentage of silica quartz in the surrounding environment and when blowing dust clouds are readily visible, silica monitoring on similar past projects have shown silica quartz in the air to be about half of the ACGIH TLV. Work activities that generate silica-containing dust shall require dust suppression such as watering. If such suppression techniques are not feasible, air monitoring and respiratory protection may be required.

3.4.3.3 Laboratory Chemicals

Most of the laboratory chemicals from the previous site operator have been removed from the site for final disposition. A few remaining containers have been segregated and are awaiting final disposition. Unauthorized access to the chemical storage area is prohibited.

3.4.4 Biological Hazards

The following biological hazards could be encountered, although such encounters are not anticipated to pose a significant risk to site personnel (personnel shall notify their immediate supervisor of any of these occurrences):

- Animal and spider bites and insect stings can cause localized swelling, itching, and minor pain that can be handled by first aid treatment. In sensitized individuals, however, effects can be much more serious. No attempts should be made to capture any wild or semi-wild animals, such as cats or rats, because of the possibility of a bite or parasitic infestation.
- Poisonous snakes are rarely encountered in Moab, although several species of small rattlesnakes are known to inhabit the area. To care for someone bitten by a venomous snake, the wound should be immediately washed, immobilized, and kept lower than the heart if possible. Immediate medical attention shall be sought. A bite by a nonvenomous snake should be treated as a first aid case using routine procedures.
- Animal and bird droppings often contain mold, fungus, or bacteria, which represent a significant respiratory hazard. Personnel should not touch droppings and must wear gloves and impervious coveralls when going into limited access areas, such as crawl spaces and high ceilings that have become refuges or nesting areas. Exposure to the hantavirus, for example, can be minimized by avoiding areas where there are concentrations of mouse droppings. The

virus can be inhaled in the dust from areas where mice have nested or left their droppings. Minimizing dust inhalation or avoiding these areas will lessen the risk of exposure. Any work in such areas should be done only with a SWP.

- Sewer system breaks or leaks will be reported immediately to the Site Manager or MPSC, and the area will be evacuated until an appropriate plan of action is made. Anyone who comes in contact with sewer waste will wash immediately.

3.4.5 Common Safety Hazards

3.4.5.1 Head, Eye, Ear, Hand, and Foot Injuries

Hard hats will be donned prior to performing any site activities involving overhead hazards. Safety shoes that comply with ANSI Z41.1 are required on the site for activities other than inspections and tours. For tours and inspections, substantial footwear appropriate for site conditions shall be worn. Compliance with 29 CFR 1926, Subpart E, "Personal Protective and Lifesaving Equipment," will be enforced where applicable.

3.4.5.2 Lifting and Carrying Heavy or Bulky Loads

Good ergonomic practices, such as keeping your spine straight, lifting with your legs, and keeping objects as close to your body as possible, will be used when handling heavy or bulky objects. Mechanical equipment should be used when possible. An individual should not lift an object weighing more than 50 pounds without assistance.

3.4.5.3 Hoisting and Rigging Operations

Hoisting and rigging will be executed in accordance with the *Health and Safety Manual* (STO 2), Standard 2.12, "Hoisting and Rigging."

3.4.5.4 Motor Vehicles and Heavy Equipment Operation and Inspection

All equipment must comply with the manufacturer's specifications and/or Occupational Safety and Health Administration (OSHA) requirements. All equipment will be inspected prior to initial use on the project. This inspection will be performed or observed by appropriate Contractor personnel. Daily vehicle/equipment checks will be performed and documented as appropriate. A copy of the most recent vehicle/equipment inspections shall be maintained on the site. Vehicles/equipment with defects that render the equipment unsafe to operate will be taken out of service until the defects are corrected.

All equipment will be operated by qualified personnel in accordance with manufacturers' guidelines and OSHA standards. Equipment operator qualifications shall be documented on the Operator Qualification Form GJ 2090e.

3.4.5.5 Hot Work: Open Flame, Welding, or Other Significant Spark-Producing Operations

Hot work should be performed in designated safe areas when practical. When hot work cannot be moved to a designated safe area, a hot work permit and/or SWP will be developed to control the specific hazards.

3.4.5.6 Flammable Liquids and Refueling

Storage of flammable liquids and refueling operations will be in accordance with 29 CFR 1926.150 through 1926.152. Hazard communication signs meeting the requirements of 29 CFR 1926.150 through 1926.152 and Subpart G shall be posted at refueling and flammable liquid storage areas.

No smoking, open flames, or spark-producing work shall occur within 50 feet of flammable liquid storage locations or refueling operations. Fire extinguishers shall be provided and placed in accordance with 29 CFR 1926.150 through 1926.152 and shall be the pressurized dry chemical type with a minimum Underwriter Laboratory (UL) rating of 2A:20BC.

3.4.5.7 Electrical Hazards

All electrical work will be performed in accordance with 29 CFR 1926, Subpart K, "Electrical."

Utilities must be located prior to beginning operations and marked offsets must be established. Any work involving heavy equipment underneath or in close proximity to overhead power lines shall require a JSA. The JSA shall clearly identify appropriate controls such as barricades or use of spotters. A **minimum** of 10 feet between working equipment and overhead power lines will be maintained at all times.

Electrical devices and equipment must be de-energized prior to working on them. Contractor lockout/tagout procedures in the *Health and Safety Manual* (STO 2), Standard 2.4, and/or 29 CFR 1926.417 will be followed. All extension cords must be kept out of water, protected from crushing, and inspected regularly by Moab Project staff to ensure integrity. Temporary electrical circuits and all hand electrical tools must be used with ground-fault circuit interrupters. Electrical equipment with deficiencies in the appliance, cord, or plug shall not be used and will be removed from the site immediately.

Before new work starts, the subcontractor shall determine by inquiry, direct observation, or instruments whether the location of any part of an energized electric power circuit, exposed or concealed during the performance of the work may bring a person, tool, or machine into physical contact with an electric power circuit. Where such a circuit exists, warning signs shall be posted. These warning signs should be of a standard design so that the meaning of them is clearly understood. Where such a circuit exists, employees shall be advised of the location of the lines, the specific hazards involved, and the protective measures to be taken. Depending on the nature of the system and the work being performed, lockout/tagout procedures may be necessary.

3.4.5.8 Slip/Trip/Fall Hazards

Caution must be exercised when using steps and stairs with slippery surfaces. Good housekeeping practices are essential to minimize trip hazards. The "three points of contact" rule should be used while climbing.

No elevated work is anticipated. If elevated work should be required, it will be accomplished in accordance with 29 CFR 1926, Subpart M, "Fall Protection."

The work area shall be kept clean and orderly. Tools and debris must be picked up and placed in the proper place to prevent tripping hazards. Spills will be cleaned up immediately.

3.4.5.9 Excavations

If personnel must enter excavations of 5 feet or greater in depth, the sides of the excavation will be sloped or shored in accordance with 29 CFR 1926, Subpart P, "Excavations." Ramps or ladders will be provided in excavations 4 feet or greater in depth and placed no more than 25 feet from personnel in the excavation.

Underground utilities encountered in an excavation will be carefully uncovered and protected and supported or removed, as necessary, to safeguard employees. All excavations within 18 inches of a known energy source shall be hand excavated.

All excavated materials must be kept 2 feet from the edge of the excavation. The competent person shall conduct and document a daily inspection of excavations. The competent person will be identified in writing prior to commencement of excavation activities. The type of soil being excavated will be determined and documented to comply with 29 CFR 1926, Subpart P "Excavations."

The section does not address all the hazards involved with excavations; 29 CFR 1926, Subpart P "Excavations," will be used as the complete guide for excavation requirements.

3.4.5.10 Equipment and Hand Tools

All hand and power tools will comply with 29 CFR 1926, Subpart I, "Tools—Hand and Power." In general, the tools will be in good repair and will be used only for the job they were designed to do. All damaged tools will be tagged "out-of-service" and removed from the site. All tools will be kept clean. When working overhead, tools will be placed in a holding receptacle or secured when not in use. Tools shall not be thrown or dropped from heights. Only nonsparking tools will be used in flammable or explosive atmospheres. Electrical tools will not be carried or lowered by their electrical cords.

3.4.5.11 Ladders

Portable ladders will be used in accordance with 29 CFR 1926.1051 and 1926.1053. Employees who are required to use ladders as part of their employment will be trained in accordance with 29 CFR 1926.1060.

3.4.5.12 Working Over or Near Water

When employees are working over or near water where the danger of drowning exists, U.S. Coast Guard-approved life jackets or buoyant work vests will be worn. When the potential of falling into a body of water exists (e.g., personnel close to the shore line), life vests shall be worn, and ring buoys will be placed every 200 feet along the shore-line at active work locations. One life-saving skiff (boat) shall be immediately available at the location or adjacent to the water, if appropriate, and lifelines and body harnesses shall be provided.

3.4.5.13 High-Pressure Underground Gas Lines

Gas lines are present on site and on some vicinity properties and are maintained by the utility company. Any work in the vicinity of the marked gas lines shall be coordinated with the Site Manager, MPSC, and utility company representatives. No mechanical excavation will be allowed within 10 feet of the gas lines.

3.4.5.14 Working On or Near Active Rail Lines

Active rail lines are present at both the Moab Mill site and Crescent Junction Disposal site. Extreme caution shall be used when working on or near these active lines. At a minimum, two person teams are required to perform work on or near rail lines. One person will be designated as a train spotter at all times work is being performed within 20 feet of the rail lines.

3.4.6 Heat Stress

Personnel could potentially be exposed to heat stress conditions when ambient temperatures exceed 70 °F.

The potential for heat stress is a concern because of factors such as high air temperature, high relative humidity, low air movement, high radiant heat, protective clothing, and the level of physical activity of workers. The potential exists for the following:

- Heat rash from continuous exposure to heat or humid air, resulting in a reddish skin rash, usually in areas where clothing is restrictive, and the skin stays wet from sweat.
- Heat cramps caused by heavy sweating and inadequate replacement of electrolytes. Signs and symptoms include
  - Muscle spasms.
  - Pain in the hands, feet, and abdomen.
- Heat exhaustion from increased stress on various body organs, including inadequate blood circulation because of cardiovascular insufficiency or dehydration. Signs and symptoms include
  - Pale, cool, moist skin.
  - Heavy sweating.
  - Dizziness.
  - Nausea.
  - Fainting.
- Heat stroke. When heat stroke occurs, temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury and death occur. Competent medical help must be immediately obtained. Signs and symptoms are
  - Red, hot, usually dry skin.
  - Lack of or reduced perspiration.
  - Nausea.
  - Dizziness and confusion.

- Strong, rapid pulse.
- Coma.

Heat stroke, heat cramps, and heat exhaustion should be discussed during safety meetings as appropriate. Workers are encouraged to increase consumption of water during warm weather. Water will be provided on site and will be available for consumption during work breaks.

A key factor in determining the potential for heat stress is the work-load of the individual. ACGIH defines work load as (1) light work—sitting or standing to control machines, performing light hand or arm work; (2) moderate work—walking about with moderate lifting and pushing; and (3) heavy work—intermittent heavy lifting with pushing or pulling.

When site personnel are wearing personal protective clothing during the performance of field activities, the action level for heat stress has been established as an oral temperature of 99.6 °F or a pulse rate of 110 beats per minute. The oral temperature or pulse rate will be obtained immediately after the work period, where possible, in a seated shaded position. The oral temperature is obtained using a clinical thermometer or similar device. The work-rest regime in Table 3–1 provides guidance to reduce the potential for heat stress.

Table 3–1. Work-Rest Regime

Temperature (°F)	Work Period (minutes)	Rest Period (minutes)
< 70[a]	not limited	not required
70-77	150	15
78-82	120	15
83-87	90	15
88-90	60	15
> 90	45	15

[a]Drinking in the Exclusion Zone or Contamination Reduction Zone (CRZ) will not be permitted when the air temperature is <70 °F.

If a worker's oral temperature exceeds 99.6 °F or his or her pulse rate exceeds 110 beats per minute, that worker is undergoing heat stress, and the allowable work period will be reduced to the maximum for the next higher temperature range (e.g., if the oral temperature is greater than 99.6 °F or the pulse rate is greater than 110 beats per minute at 78–82 °F, the allowable work period will be reduced to the work period corresponding to 83–87 °F or 90 minutes). For work performed above 90 °F, the work period will be reduced by one-third each time the action level is exceeded (e.g., 45 minutes will be reduced to 30 minutes).

For a worker whose oral temperature exceeds 99.6 °F or their pulse rate exceeds 110 beats per minute, the oral temperature or pulse rate should be determined prior to resuming work to ensure that the worker has recovered. A worker whose temperature exceeds 100.6 °F shall not be allowed to work in impermeable or semi-permeable personal protective equipment (PPE) ensembles. Acclimatized workers are susceptible to heat exhaustion from dehydration when wearing PPE ensembles because they sweat more quickly and more profusely than unacclimatized workers without the same increase in heartbeats and temperatures.

Field activities in which site personnel are required to wear chemical protective clothing at ambient temperatures higher than 95 °F will be avoided whenever feasible by scheduling those activities during the work day to avoid the peak ambient temperatures from 10 a.m. to 2 p.m. Site personnel who have experienced a heat-related illness (heat cramps, heat exhaustion) will be restricted to Level D (hard hat, safety glasses, safety work boots, shirt with sleeves, and long pants) tasks for a minimum of 1 day after illness occurrence and will return to tasks requiring chemical protective clothing only with the concurrence of the attending physician.

3.4.7 Cold Exposure

In cold surroundings, shivering increases the metabolic heat production, but the feet, face, and hands can still feel cold. This is often a confusing situation because the individual can be warmly clothed, in which case portions of the body become overheated while the extremities remain cold. The regulation of blood flow and sweating cannot uniformly keep all parts of the body in thermal balance. Clothing must be appropriate to obtain uniform thermal balance.

In cold environments, wind chill temperature is a better description of thermal conditions than only the ambient temperature. The wind adds to the rate of cooling, and it is the combination of wind speed and air temperature that are most important. For example, at a wind chill temperature of -25 °F (from a 5 °F temperature and 15 mile per hour [mph] wind), exposed flesh can freeze within 1 minute. However, fingers, toes, nose tips, ears, or cheeks can become frostbitten at ambient temperatures as high as 28 °F with high winds. This is approximately the freezing point of skin.

The wind chill factor is the cooling effect of any combination of temperature and wind velocity or air movement. The wind chill index (Table 3–2) should be consulted when planning for exposure to low temperatures and wind. The wind chill index does not take into account the specific part of the body exposed to cold, the level of activity, which affects body heat production, or the amount of clothing being worn.

The human body senses “cold” as a result of both the air temperature and the wind velocity. Cooling of exposed flesh increases rapidly as the wind velocity increases. Frostbite can occur at relatively mild temperatures if wind penetrates the body insulation. For example, when the actual air temperature of the wind is 40 °F (4.4 °C) and the velocity is 30 mph (48 kilometers per hour [km/h]), the exposed skin would perceive this situation as an equivalent still air temperature of 13 °F (-11 °C).

3.4.7.1 Frostbite

Frostbite can be either superficial, involving only the skin, or deeper, extending below the skin. Frostbite can be considered to be superficial if exposure time was short. Otherwise, assume the injury to be deep and serious, necessitating treatment at a hospital rather than in the field.

Table 3–2. Wind Chill Index

Estimated Wind Speed (mph)	Actual Thermometer Reading (°F)											
	50	40	30	20	10	0	–10	–20	–30	–40	–50	–60
	Equivalent Chill Temperature (°F)											
calm	50	40	30	20	10	0	–10	–20	–30	–40	–50	–60
5	48	37	27	16	6	–5	–15	–26	–36	–47	–57	–68
10	40	28	16	4	–9	–24	–33	–46	–58	–70	–83	–95
15	36	22	9	–5	–18	–32	–45	–58	–72	–85	–99	–112
20	32	18	4	–10	–25	–39	–53	–67	–82	–96	–110	–121
25	30	16	0	–15	–29	–44	–59	–74	–88	–104	–118	–133
30	28	13	–2	–18	–33	–48	–63	–79	–94	–109	–125	–140
35	27	11	–4	–20	–35	–51	–67	–82	–98	–113	–129	–145
40	26	10	–6	–21	–37	–53	–69	–85	–100	–116	–132	–148
(Wind speeds greater than 40 mph have little additional effect.)	*LITTLE DANGER* In less than an hour with dry skin. Maximum danger of false sense of security.				*INCREASING DANGER* Danger from freezing of exposed flesh within 1 minute.				*GREAT DANGER* Flesh may freeze within 30 seconds.			
	Trench foot and immersion foot may occur at any point on this chart											

Developed by U.S. Army Research Institute of Environmental Medicine, Natick, Massachusetts.
Equivalent chill temperature requiring dry clothing to maintain core body temperature above 36 °C (96.8 °F) per cold stress TLV.

3.4.8 Wind Hazards

The project sites are in areas that are susceptible to high winds. When sustained wind speeds reach 25 mph or dust cannot be controlled, site activities shall cease until the wind speed decreases. Dust suppression procedures shall be implemented at all times.

Hoisting and rigging operations will be evaluated (e.g., necessary control of load swing, rocking, and/or rotation) by safety personnel. The evaluation shall consider the type of load relative to the wind conditions.

Heavy equipment traffic will be halted when safety is negatively impacted by reduced visibility.

3.4.9 Hazards Associated with Vendors

Vendors accessing the property controlled by DOE must comply with all applicable H&S requirements, even when working outside of a contamination area/exclusion zone. Hazards associated with vendors servicing equipment or facilities or supplying consumables such as fuel or calcium chloride shall be evaluated by the MPSC.

Controls to mitigate such hazards shall be identified in accordance with this plan. Vendors shall comply with the prescribed controls. Failure to adhere to H&S requirements shall result in the activity being stopped until the Site Manager and MPSC are satisfied that the work will be accomplished safely and in compliance with applicable requirements.

End of current text

4.0 Hierarchy of Controls

The hazards identified in Section 3.4, "Health and Safety Hazard Characterization and Controls," indicate the potential for exposure to a variety of hazardous substances and health hazards. Controls to mitigate those hazards are presented in this section.

Methods to control hazards are divided into three major categories:

- Engineering controls.
- Administrative controls and work practices.
- PPE.

All three methods of hazard control are employed on these sites.

Hazards other than those evaluated in this HSP for the same tasks and locations may be identified during the course of work on the Moab Project. When other hazards are identified, the MPSC shall provide additional required controls immediately, using an approved RWP, SWP, or JSA in accordance with the *Health and Safety Manual* (STO 2) and the *Site Radiological Control Manual* (STO 3).

4.1 Engineering Controls

Engineering controls are built into the process and designed to eliminate hazards. They include

- Wetting of all soils prior to disturbance to eliminate dust generation.
- Working in a manner to minimize dust generation.
- Establishing control zones and traffic patterns.
- Observing speed limits.

4.2 Administrative Controls and Work Practices

All site personnel are required to

- Attend site briefings and safety meetings as required.
- Wear and use all PPE properly.
- Survey for radiological contaminants on clothing and equipment (i.e., "frisking out" when required by a RWP).
- Use the "buddy system" for constant visual contact of your buddy.
- Comply with all H&S permits.
- Eat drink, chew gum or tobacco, smoke, and apply cosmetics or lip creams only in designated areas.
- Wash hands and face upon leaving the work area and before eating, drinking, chewing gum or tobacco, smoking, or applying cosmetics or lip creams.

- Comply with established safety procedures.

  NOTE: *Anyone who does not comply with safety policy as established by this HSP is subject to immediate dismissal from the site.*

- Sign in and out of the site at designated access points only.
- Stop work and notify a supervisor when unsafe or other non-routine conditions exist.
- Follow all task-specific work practices described in this HSP.

4.2.1 Contamination Control Practices

Workers should use the following techniques to minimize contact with contaminants:

- Consciously minimize contact with the hazardous substance.
- Refrain from walking through suspected contaminated liquid or soil.
- Avoid higher contamination areas unless entrance is required.
- Minimize the generation of hazardous waste.
- Do not bring unnecessary materials into the exclusion zone.
- Put nothing in mouth or on face in contaminated areas (with the exception of designated drinking stations).
- Immediately notify the MPSC if contamination of the skin or clothing is suspected.

4.3 Personal Protective Equipment

PPE is the last line of defense to control exposure to a hazardous substance. When using PPE, workers must

- Know the use and protection limits of PPE.
- Use PPE assigned for the task or area.
- Ensure that the PPE fits properly.
- Ensure that the PPE used is free from tears or holes and is in good working condition before entering the work area.
- Leave the area immediately if the PPE is damaged.
- Inspect other workers' PPE and inform them of any problems such as tears, holes, etc.

5.0 Personal Protective Equipment

5.1 General Requirements

All personnel must wear appropriate protective equipment when activities involve exposure to hazards that cannot be adequately or feasibly controlled by engineering or administrative controls. Protective equipment listed below must meet the specifications indicated.

- Hard hats—Hard hats meeting the specifications of American National Standards Institute (ANSI) Standard Z89.1, Class B (most current) shall be worn when in an area where overhead hazards are present or anticipated.
- High-visibility clothing—Personnel exposed to vehicular traffic shall wear high-visibility orange or yellow apparel during daylight hours and reflective high-visibility apparel with a minimum reflective area of 400 square inches after dark.
- Safety shoes—Safety shoes meeting the specifications of ANSI Standard Z41.1 (most current) shall be worn (regardless of the PPE ensemble prescribed) when working in the exclusion zone and when required by Appendix A or associated work permits. Members of inspection or tour groups need not wear shoes meeting ANSI Standard Z41.1 but must wear substantial footwear appropriate for site conditions.
- Eye protection—Eye protection meeting the specifications of ANSI Standard Z87.1 (most current) shall be worn when in areas or while performing tasks for which eye protection is specified.

PPE and respiratory protection required for each task are assigned in the task-specific requirements table (Appendixes A and B). Respiratory protection is required when activities are known or suspected to result in airborne hazards. Skin, hand, and foot protection are required when direct skin contact with hazardous materials is possible. The following briefly describes the PPE level categories anticipated for the identified tasks. Note that the higher levels of protection, Levels A and B, are not described because their use is not reasonably anticipated for the identified tasks.

Level D—Used when neither respiratory nor skin protection is needed; essentially only a work uniform. Clothing such as tank tops, shirts cut off at the midriff, short pants, moon boots, sandals, sneakers, and jogging shoes are considered unacceptable dress and will not be permitted. In general, work clothing shall consist of the following:

- Full-length trousers/slacks/jeans in good condition.
- Sturdy work shoes or boots meeting the requirements of ANSI Standard Z41.1.
- Shirts that cover the shoulders with sleeves at least T-shirt length.

Modified Level D—Used when skin protection is required and respiratory protection is not needed. Modesty clothing may be worn under coveralls in accordance with Section 9.10.3.

Level C—Used when air purifying respirators provide adequate protection.

Detailed PPE assignments are defined for each task in the task list in Appendix A. Should site conditions vary from those expected (Section 3.0), additional PPE may be required. Tables 5–1 through 5–13 (starting on page 5−3) describe the details of the various PPE ensembles.

PPE policy is defined by the *Health and Safety Manual* (STO 2), Standard 2.2, "Personal Protective Equipment," and Standard 2.14, "Respiratory Protection." The use of specific PPE for protection is governed by the *Site Radiological Control Manual* (STO 3).

5.2 PPE Selection, Upgrading, and Downgrading

Selection of appropriate respirators and protective clothing demands a thorough evaluation of all issues related to the task and the PPE. Selection of PPE will be made by the H&S staff with input from line management.

Occasionally, additional PPE may be required when the Contractor's H&S staff identifies site conditions that vary from those evaluated in the task list. Any additional PPE shall be prescribed by an approved RWP, SWP, or JSA on the basis of specific hazard data for the work area involved.

Selection of specific respirators and cartridges, including disposable respirators for voluntary use, shall be made by the MPSC with concurrence from the Respiratory Protection Program Administrator using a Respirator Selection Checklist (see the *Health and Safety Procedures Manual* [STO 2], Procedure HS-400.01, "Respirator Selection") in conjunction with the HSP or with the applicable RWP, SWP, or JSA. When air-purifying respirators are determined to be appropriate, the MPSC will specify the type of cartridges to be used, the frequency with which the cartridges should be changed, and any limitations or restrictions for use.

5.3 PPE Use and Limitation

Proper PPE use and limitations will be communicated in the pre-entry briefing. The worker using PPE should understand all aspects of the clothing operation and limitations. If the PPE does not appear to fit the intended use or properly protect the workers, the MPSC shall be notified to conduct a reevaluation.

5.3.1 PPE Inspection

The PPE user is responsible for inspecting PPE prior to use. Depending on the PPE prescribed and the significance of exposure, the user should

- Visually inspect for tears, seam defects, pinholes, and nonuniform coating.
- Inspect all closure mechanisms (e.g., zippers, Velcro) for proper operation.
- Visually inspect flex-coated chemical protective clothing for evidence of surface cracks or signs of shelf-life deterioration.

5.3.2 PPE Donning and Doffing

Instructions for protective clothing donning will be posted at the designated PPE change area. Instructions for protective clothing removal will be posted at the designated removal station.

5.3.3 PPE Maintenance and Storage

PPE will be maintained and stored in accordance with the *Health and Safety Manual* (STO 2), Standard 2.2, "Personal Protective Equipment." Reusable PPE (e.g., respirators and rubber boots) should be maintained in accordance with the manufacturers' instructions.

NOTE: *The following tables correspond to the task descriptions in Appendix A. See the column "PPE Level Prescribed in Section 5.0, PPE" in the table in Appendix A. Tables 5−1 and 5−13 correspond to the task descriptions in Appendix B.*

Table 5–1. Level D PPE—Ensemble D–1

Ensemble D–1		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	Yes[a]	Hard hat meeting ANSI Z89.1 (most current). See Section 5.0.
Eyes	Yes[b]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	No	Face shield as needed for flying debris or splash protection.
Hands	Yes	Leather or sturdy cotton work gloves (as needed).
Arms	Yes	Employee supplied long or short sleeve work shirt.
Trunk	Yes	Employee supplied long or short sleeved work shirt and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Employees supplied work pants.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current).

[a]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[b]Type of eye protection prescribed by the Contractor's H&S staff, based on specific task performed or hazard present.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–2. Level D PPE—Ensemble D–2

Ensemble D–2		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	Yes[a]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes[b]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	No	Face shield as needed for flying debris or splash protection.
Hands	Yes	Rubber, butyl, or nitrile gloves or other suitable material. Leather or cotton gloves may be worn over the nitrile gloves. For wet conditions, nitrile gloves (> 10 mil) with inner latex gloves.
Arms	Yes	Employee supplied long or short sleeved work shirt.
Trunk	Yes	Employee supplied long or short sleeved work shirt and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Employees supplied work pants.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current).

[a]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[b]Type of eye protection prescribed by the Contractor's H&S staff, based on specific task performed or hazard present.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–3. Modified Level D PPE—Ensemble MD–1

Ensemble MD–1		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	Yes[a]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes[b]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	No	Face shield as needed for flying debris or splash protection.
Hands	Yes	Rubber, butyl, or nitrile gloves or other suitable material. Leather or cotton gloves may be worn over the nitrile gloves. For wet conditions, nitrile gloves (> 10 mil) with inner latex gloves.
Arms	Yes	Coveralls of Tyvek (or Kleenguard GP, or Kappler Pro/Shield 2). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek.
Trunk	Yes	Coveralls of Tyvek (or Kleenguard GP, or Kappler Pro/Shield 2) and high-visibility clothing as specified in Section 5.0. For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek.
Legs	Yes	Coveralls of Tyvek (or Kleenguard GP, or Kappler Pro/Shield 2). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes (PVC) and shoe covers (Tyvek) shall be worn over the boots.

[a]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[b]Type of eye protection prescribed by the Contractor's H&S staff, based on specific task performed or hazard present.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–4. Modified Level D PPE—Ensemble MD–2

Ensemble MD–2		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	Yes[a]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes[b]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	No	Face shield as needed for flying debris or splash protection.
Hands	Yes	Rubber, butyl, or nitrile gloves or other suitable material. Leather or cotton gloves may be worn over the nitrile gloves. For wet conditions, nitrile gloves (> 10 mil) with inner latex gloves or other suitable material.
Arms	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious coveralls of poly-coated Tyvek or other suitable material.
Trunk	Yes	Coveralls (permeable cotton or equivalent) and high-visibility clothing as specified in Section 5.0. For wet conditions, liquid impervious coveralls of poly-coated Tyvek or other suitable material.
Legs	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious coveralls of poly-coated Tyvek or other suitable material.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes and shoe covers shall be worn over the boots.

[a]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[b]Type of eye protection prescribed by the Contractor's H&S staff, based on specific task performed or hazard present.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–5. Modified Level D PPE—Ensemble MD–3

Ensemble MD–3		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	Yes[a]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes[b]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	No	Face shield as needed for flying debris or splash protection.
Hands	Yes	Canvas gloves (or leather gloves over latex/nitrile gloves).
Arms	Yes	Coveralls of flame-resistant Pyrolon (or other fabric meeting National Fire Protection Association [NFPA] 701 requirements).
Trunk	Yes	Coveralls of flame-resistant Pyrolon (or other fabric meeting NFPA 701 requirements) and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Coveralls of flame-resistant Pyrolon (or other fabric meeting NFPA 701 requirements).
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes and shoe covers shall be worn over the boots.

[a]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[b]Type of eye protection prescribed by the Contractor's H&S staff, based on specific task performed or hazard present.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–6. Modified Level D PPE—Ensemble MD–4

Ensemble MD–4		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	Yes[a]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes[b]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	No	Face shield as needed for flying debris.
Hands	Yes	Canvas gloves.
Arms	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious coveralls of poly-coated Tyvek or other suitable material.
Trunk	Yes	Coveralls (permeable cotton or equivalent) and high-visibility clothing as specified in Section 5.0. For wet conditions, liquid impervious coveralls of poly-coated Tyvek or other suitable material.
Legs	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious coveralls of poly-coated Tyvek or other suitable material.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes and shoe covers shall be worn over the boots.

[a]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[b]Type of eye protection prescribed by the Contractor's H&S staff, based on specific task performed or hazard present.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–7. Modified Level D PPE—Ensemble MD–5

Ensemble MD–5		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	No	
Eyes	Yes	Chemical splash goggles meeting ANSI Z87.1 (most current) or face shield.
Ears	When noise levels exceed action level	Hearing protection.
Hands	Yes	Chemical resistant gloves of nitrile, neoprene, or butyl rubber over cotton liners.
Arms	Yes	Employee supplied long or short sleeved work shirt.
Trunk	Yes	Employee supplied long or short sleeved work shirt and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Employee supplied work pants.
Feet	Yes[a]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current).

[a]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–8. Modified Level D PPE—Ensemble MD–6

Ensemble MD–6		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	No	
Head	No	
Eyes	Yes	Chemical splash goggles or safety glasses meeting ANSI Z87.1 (most current) and face shield.
Ears	When noise levels exceed action level	Hearing protection.
Hands	Yes	Chemical protective gloves of butyl rubber over cotton liners.
Arms	Yes	Chemical protective sleeves of butyl rubber or Saranex
Trunk	Yes	Saranex coveralls or full length butyl rubber apron and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Saranex coveralls or full length butyl rubber apron.
Feet	Yes[a]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current) with chemical resistant butyl rubber overshoes.

[a]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–9. Level C PPE—Ensemble C–1

Ensemble C–1		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	Yes	Air-purifying respirators (APRs) (full or half-face).[a]
Head	Yes[b]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes	Full-face APR or safety glasses with half-face APR.
Ears	When noise levels exceed action level	Hearing protection.
Face	Yes	Full-face APR.
Hands	Yes	Nitrile gloves (> 10 mil) with inner latex gloves or other suitable material. Leather or cotton gloves may be worn over the nitrile gloves. For wet conditions, rubber, butyl, or nitrile gloves (> 10 mil) with inner latex gloves.
Arms	Yes	Coveralls of Tyvek (or Kleenguard GP, or Kappler Pro/Shield 2). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek.
Trunk	Yes	Coveralls of Tyvek (or Kleenguard GP, or Kappler Pro/Shield 2) and high-visibility clothing as specified in Section 5.0. For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek.
Legs	Yes	Coveralls of Tyvek (or Kleenguard GP, or Kappler Pro/Shield 2). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes (PVC) and shoe covers (Tyvek) shall be worn over the boots.

[a]Selection made by the Contractor's H&S staff using a Respiratory Selection Checklist.
[b]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–10. Level C PPE—Ensemble C–2

Ensemble C–2		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	Yes	Air-purifying respirators (APRs) (full or half-face).[a]
Head	Yes[b]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes	Full-face APR or safety glasses with half-face APR.
Ears	When noise levels exceed action level	Hearing protection.
Face	Yes	Full-face APR.
Hands	Yes	Nitrile gloves (> 10 mil) with inner latex gloves or other suitable material. Leather or cotton gloves may be worn over the nitrile gloves. For wet conditions, rubber, butyl, or nitrile gloves (> 10 mil) with inner latex gloves or other suitable material.
Arms	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek, or other suitable material.
Trunk	Yes	Coveralls (permeable cotton or equivalent) and high-visibility clothing as specified in Section 5.0. For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek, or other suitable material.
Legs	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek, or other suitable material.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes and shoe covers shall be worn over the safety boots.

[a]Selection made by the Contractor's H&S staff using a Respiratory Selection Checklist.
[b]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–11. Level C PPE—Ensemble C–3

Ensemble C–3		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	Yes	Air-purifying respirators (APRs) (full or half-face).[a]
Head	Yes[b]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes	Full-face APR or safety glasses with half-face APR.
Ears	When noise levels exceed action level	Hearing protection.
Face	Yes	Full-face APR.
Hands	Yes	Canvas gloves (or leather gloves over latex/nitrile gloves).
Arms	Yes	Coveralls of flame-resistant Pyrolon (or other fabric meeting NFPA 701 requirements).
Trunk	Yes	Coveralls of flame-resistant Pyrolon (or other fabric meeting NFPA 701 requirements) and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Coveralls of flame-resistant Pyrolon (or other fabric meeting NFPA 701 requirements).
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes and shoe covers shall be worn over the boots.

[a]Selection made by the Contractor's H&S staff using a Respiratory Selection Checklist.
[b]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–12. Level C PPE—Ensemble C–4

Ensemble C–4		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	Yes	Air-purifying respirators (APRs) (full or half-face).[a]
Head	Yes[b]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes	Full-face APR or safety glasses with half-face APR.
Ears	When noise levels exceed action level	Hearing protection.
Face	Yes	Full-face APR.
Hands	Yes	Canvas gloves.
Arms	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek, or other suitable material.
Trunk	Yes	Coveralls (permeable cotton or equivalent) and high-visibility clothing as specified in Section 5.0. For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek, or other suitable material.
Legs	Yes	Coveralls (permeable cotton or equivalent). For wet conditions, liquid impervious hooded coveralls of poly-coated Tyvek, or other suitable material.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current). Overshoes and shoe covers shall be worn over the boots.

[a]Selection made by the Contractor's H&S staff using a Respiratory Selection Checklist.
[b]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

Table 5–13. Level C PPE—Ensemble C–5

Ensemble C–5		
Route of Exposure	**Protection Required?**	**Type of PPE**
Respiratory	Yes	Air-purifying respirators (APRs) (full or half-face).[a]
Head	Yes[b]	Hard hat meeting ANSI Z89.1 (most current).
Eyes	Yes[a]	Safety glasses or chemical goggles meeting ANSI Z87.1 (most current).
Ears	When noise levels exceed action level	Hearing protection.
Face	Yes	APR (full or half-face)[a]
Hands	Yes	Leather or sturdy cotton work gloves.
Arms	Yes	Employee supplied long or short sleeved work shirt.
Trunk	Yes	Employee supplied long or short sleeved work shirt and high-visibility clothing as specified in Section 5.0.
Legs	Yes	Employees supplied work pants.
Feet	Yes[c]	Sturdy-sole leather work boots meeting ANSI Z41.1 (most current).

[a]Selection made by the Contractor's H&S staff using a Respiratory Selection Checklist.
[b]When working in construction areas where hard hats are required or when performing tasks involving identified overhead hazards.
[c]See *Health and Safety Manual*, Standard 2.2, "Personal Protective Equipment," for additional guidance on exceptions.

End of current text

6.0 Training Program

6.1 General Training Requirements

Moab mill site workers shall not be permitted to participate in or supervise the site field activities or have unescorted access until they have been provided training appropriate for their tasks and responsibilities. Basic site access training requirements include

- 40 Hour HAZWOPER or 24-hour site specific HAZWOPER training
- Current 8-hour HAZWOPER annual refresher
- Documented 3 days of HAZWOPER supervised field experience (1 day for 24-hours trained workers)
- Radiological Worker Level II

The Crescent Junction disposal site does not require Radiation Worker or HAZWOPER training at this time. Vicinity properties may require Radiation Worker training based on assessment findings. In the event that radiological work or hazardous waste operations occur, personnel performing those tasks shall have the appropriate documented training.

6.2 Site Pre-entry Briefing

All personnel working at the Moab site, Crescent Junction Disposal site, and vicinity properties will be trained in the provisions of this HSP. A site pre-entry briefing will be conducted for all personnel prior to entry, and attendance will be documented on a Pre-job Briefing/Safety Meeting Attendance Record (GJO-1554e). Any JSAs applicable to the individual should be initially reviewed as part of the briefing and orientation.

6.3 Work Activity/Safety Meetings

Daily or weekly activity/safety meetings (during active months) for all personnel performing work on site shall be conducted and documented. Documentation shall contain at a minimum, the topics included in the meeting and the signature of each participant. Personnel not attending the daily or weekly meeting shall be briefed prior to site entry. For subcontractor personnel who arrive to work after conduct of the meeting, the subcontractor supervisor shall brief the individual on the content of the meeting and obtain the necessary documentation. In addition to work planning issues, the discussion at these meetings should include items such as

- Review of planned activities against the task list (Appendixes A and B).
- Any changes to this HSP.
- Any new MSDSs filed on the site.
- Review of applicable JSAs, RWPs, or other work permits.
- Lessons learned from previous operations.

6.4 Visitors

See Section 9.5.2 for access requirements for personnel classified as visitors.

7.0 Medical Surveillance

7.1 Consulting Physicians

The Occupational Health Program subcontractor has contracts for services with

Dr. Craig Gustafson
2597 B 3/4 Road
Grand Junction, Colorado
970-248-6093 (Wellness Connection office)

7.2 Emergency Treatment Facility

The emergency treatment facility designated for use in emergency treatment of injuries or illness is

Allen Memorial Hospital
719 West 400 North
Moab, Utah
435-259-7191

The backup emergency treatment facility is

St. Mary's Hospital
7th Street and Patterson Road
Grand Junction, Colorado
970-244-2551

7.3 Medical Examination Policy

A biennial medical examination is required for site workers who work in the Exclusion Zone and for personnel who do not have the potential to exceed permissible exposure limits for 30 or more days per year. Personnel who enter the Exclusion Zone infrequently (e.g., managers, technical specialist, and DOE personnel) are not required to participate in the biennial medical surveillance.

An annual medical examination is required (regardless of job classification) if the 30-day limitations specified above are likely to be exceeded.

End of current text

8.0 Exposure Monitoring/Sampling

Personnel and area monitoring will be conducted to determine the exposure potential of site workers to hazardous materials. This monitoring can include personnel or area air samples, surface wipes, and soil samples.

8.1 Action Levels

The action levels as shown in Table 8–1 shall be used in conjunction with the monitoring data to ensure that the appropriate level of worker protection is maintained. PPE should provide a level of protection that ensures exposures will not exceed action limits from known or suspected site hazards until such time as monitoring indicates that a downgrade in PPE is warranted.

Table 8–1. Action Levels and Required Actions for Exposure Monitoring and Sampling

Parameter	Action Level	Action Required
External Radiation Dose Rate	> 5 mrem/h general area at 1 ft (30 cm) from source	Follow *Site Radiological Control Manual* and *Health and Safety Procedures Manual* for RWP, posting, and surveillance requirements. Workers shall be issued appropriate dosimeters in accordance with the *Health and Safety Procedures Manual*.
Cumulative Radiation Exposure	> 100 mrem/y with expected occupancy (excluding radon and radon progeny)	Post area as a Radiological Buffer Area (RBA), limit access to only radiological worker trained employees; provide personnel exposure monitoring.
	> 500 mrem/y from radon and radon progeny with expected occupancy (including background)	Limit access to only radiological worker trained employees; provide personnel exposure/dose monitoring.
Radiological Surface Contamination	Refer to the *Site Radiological Control Manual* and *Health and Safety Procedures Manual*, Procedures HS-330.01 and 370.01	Follow *Site Radiological Control Manual*. Also follow *Health and Safety Procedures Manual* for posting, RWP, survey, and decontamination requirements. Unconditional release of personnel and items shall meet Contractor criteria. Limit access to only radiation worker-trained employees.
Airborne Radioactivity	> 10% of appropriate derived air concentration	Follow *Site Radiological Control Manual* and *Health and Safety Procedures Manual* for RWP, posting, and surveillance requirements. Engineering controls and/or administrative controls shall be implemented to reduce exposures consistent with as low as reasonably achievable (ALARA) optimization. Limit access to only radiological worker-trained employees. If airborne radioactivity is due to radon and radon progeny, provide personnel exposure monitoring.
	> 100% of appropriate derived air concentration	Require use of respiratory protection (for other than radon progeny) if engineering and administrative controls cannot reduce airborne concentrations below this level and ALARA review indicates respiratory protection is warranted.
Soil Contamination	Exceeding the cleanup standard[a] for Ra-226, < 140 picocuries per gram (pCi/g) Ra-226 in soil contaminated with mill tailings mixture	Sample the area for radon and radon progeny airborne radioactivity.

Table 8–1 (continued). Action Levels and Required Actions for Exposure Monitoring and Sampling

Parameter	Action Level		Action Required
Soil Contamination (continued)	> 140 pCi/g Ra-226 in soil contaminated with mill tailings mixture		Follow *Site Radiological Control Manual*. Also follow *Health and Safety Procedures Manual* for posting, RWP, survey, and decontamination requirements. Sample area for airborne radioactive contamination levels. Engineering controls and/or administrative controls shall be implemented to reduce exposures consistent with ALARA optimization. Uncontrolled release of personnel and items shall meet Contractor criteria. Limit access to only radiological worker trained employees.
Combustible Gas	> 10% Lower Explosive Limit (LEL)		Stop work and control source. Continuously monitor until LEL < 10%. Evacuate area at > 25% LEL.
Oxygen	< 19.5 % or > 23.5% Oxygen		Evacuate area. Ventilate area and continuously monitor until O_2 is between 19.5% and 23.5%.
Metals as analyzed in closed-face total dust samples	Action level = 50% mixture permissible exposure limit (PEL) or single metals action levels (all values in milligrams per cubic meters [mg/m^3])		Respiratory protection required when the breathing zone concentration is at or above the action level until sufficient engineering controls are established to control exposure.
	As > 0.002 Be > 0.001 Cd > 0.025 Cr II&III > 0.25 Cu > 0.5 Pb > 0.030 Mo > 2.5	Ni > 0.05 Ag > 0.005 Th > 0.05 U > 0.025 $V0_5$ > 0.025 Zn > 2.5	
Acids	HCl > 3.5 mg/m^3 Ceiling H_2SO_4 > 0.5 mg/m^3		Don APR. Evaluate engineering controls.
Bases	$Ca(OH)_2$ > 2.5 mg/m^3 CaO > 1 mg/m^3 MgO > 5 mg/m^3 NaOH > 1 mg/m^3		Don APR. Evaluate engineering controls.
Volatile Organic Compounds	5 parts per million (ppm)—photo-ionization detector Real Time Analysis (RTA)		Evacuate and evaluate situation. Don air purifying respirator (APR) to monitor area with continued elevated reading.
Carbon Monoxide	12.5 ppm—Orion, Passport		Evaluate hazard and engineering controls. Continuously monitor until CO < 25 ppm. Ensure CO remains below 100 ppm for 5-minute average. Evacuate area if CO > 100 ppm for 5 minutes or remains above 25 ppm for more than 2 hours.
Respirable Silica	> 0.05 mg/m^3—Respirable Silica		Don APR. Evaluate engineering controls.
Respirable Dust	> 1.5 mg/m^3—15 min. TWA—MINIRAM RTA[b]		Don APR. Evaluate engineering controls.
Total Dust	> 5 mg/m^3		Don APR. Evaluate engineering controls.
Noise	85 dBA or greater		Institute engineering controls and/or use approved hearing protection.

[a]Nominally, the cleanup standard for Ra-226 is 5/15 pCi/g. However, area averaging techniques or the application of supplemental standards may permit higher soil concentrations to exist within the approved regulatory framework. Respirable dust monitoring serves as a real time proxy for airborne metals concentration.

8.2 Industrial Hygiene Monitoring/Sampling

8.2.1 Sampling/Monitoring Methods and Instrumentation

Industrial hygiene sampling (time-integrated) and monitoring methods are specified in the *Health and Safety Procedures Manual* (STO 201). Samples are collected using National Institute for Occupational Safety and Health (NIOSH) or OSHA methods wherever possible and analyzed

by an American Industrial Hygiene Association-accredited laboratory. Industrial hygiene instruments are maintained and checked for proper day-to-day operation by the MPSC according to the procedures in the *Health and Safety Procedures Manual* and the technical instrument manuals. Instruments are selected for use after considering accuracy, mobility, potential interference with performance, alarms, remote sensing, battery life, calibration required, explosion proofing, and sampling range.

8.2.2 Characterization Sampling/Monitoring

Tables 8–1 and 8–2 list the methods to be used for characterization monitoring and sampling that are applicable to the hazards present at a specific location. Sample collection for characterization shall be performed under a reasonably consistent set of environmental conditions to facilitate data interpretation. Real-time instrumentation (monitoring) may be used whenever feasible. Real-time instrument readings shall be documented in conjunction with quantitative sampling so that the information is representative of the same sample periods.

Table 8–2. Examples of Industrial Hygiene Monitoring and Sampling Methods

Monitoring Code	Type of Monitoring/ Sampling	Method of Monitoring/Sampling	Location of Monitoring/Sampling
IH-1	Combustible Gas	RTA—Orion, Passport	Area
IH-2	Oxygen	RTA—Orion, Passport	Area
IH-3	Metals	37-millimeter (mm) cassette sample—MCE—total metals NIOSH 7300	Breathing zone of workers subject to highest levels
IH-4	Acids	Silica gel tube—200/400 mg NIOSH 7903	Breathing zone of workers subject to highest level
IH-5	Bases	37-mm cassette sample—MCE OSHA ID-121	Breathing zone of workers subject to highest level
IH-6	Organic Vapors	1) MiniRae 2) NIOSH or OSHA integrated sampling methods	Breathing zone of workers subject to highest levels
IH-7	Carbon Monoxide	RTA—Orion, Passport	Breathing zone of workers subject to highest levels
IH-8a	Respirable Dust and Silica	10-mm cyclone—37-mm cassette—PVC NIOSH 7500	Breathing zone of workers subject to highest levels
IH-8b	Respirable Dust	RTA—MINIRAM	Breathing zone of workers subject to highest levels
IH-8c	Total Dust	37-mm cassette sample—MCE—total dust NIOSH 0500	Breathing zone of workers subject to highest levels
IH-9	Noise	Noise dosimeter/noise survey meter	Hearing zone of workers subject to highest levels
IH-10a	Heat Stress	Oral temperature/pulse rate/WBGT	All workers in Contamination Reduction Zone
IH-11	Cold Stress	Dry bulb temperature and wind speed	Area
IH-12	Asbestos	25-mm MCE filter-open face OSHA reference method.	Breathing zone of workers subject to highest levels

Initial characterization sample sets representing the time-weighted-average exposure levels shall be collected, analyzed, and reported for each identified task that has a potential for exposure.

8.3 Radiological Monitoring Methods and Frequencies

Routine radiological monitoring and sampling shall be performed in accordance with the minimum frequencies in Tables 8–3 and 8–4.

Table 8–3. Methods for Radiological Exposure Monitoring

Monitoring Code	Type of Monitoring	Method of Monitoring
Rad-1a	External Radiation Exposure Rate	Survey meter
Rad-1b	External Radiation Dose (personnel)	Personnel thermoluminescent dosimeter (TLD)
Rad-1c	External Radiation Exposure	Area TLD
Rad-1d	Internal Radiation Dose	Bioassay sample analysis (urine or fecal), Radtrak (radon dosimeter)
Rad-2a	Radiological Surface Contamination	Survey meter (frisker)
Rad-2b	Radiological Surface Contamination	Survey meter (frisker), tape press, large area wipes, smears
Rad-3a	Airborne Radioparticulates	Representative personnel sample
Rad-3b	Airborne Radioparticulates	Low-volume area air sample
Rad-3c	Airborne Radioparticulates	High-volume area air sample
Rad-4a	Airborne Radon Daughter Concentration	High-volume area sample (Modified Kusnetz Method)
Rad-4b	Airborne Radon Daughter Concentration	Real-time area monitoring (e.g., Pylon AB-5)
Rad-4c	Airborne Radon Monitoring (time integrated)	Area radon dosimeter
Rad-4d	Radon Exposure (time integrated)	Personnel radon dosimeter

Table 8–4. Routine Radiation Monitoring/Sampling Frequency

Frequency	Location or Condition	Monitoring Code
Daily	Office spaces located in Radiological Buffer Areas where the external radiation exposure could exceed 100 mrem per year.	Rad-1a
Weekly	Routinely occupied Radiological Buffer Areas and Radiation Areas.	Rad-1a
Upon initial entry	High Radiation Areas.	Rad-1a
Weekly	Continuing operations in High Radiation Areas.	Rad-1a
Continuously	Operations in Radiation and High Radiation Areas where radiation levels are expected to change such that controls would have to be changed.	Rad-1a
Weekly	Operating HEPA-filtered ventilation units.	Rad-1a
Weekly	Temporary Radiation Area boundaries to ensure that radiation areas do not extend beyond posted boundaries.	Rad-1a
Monthly	Or upon entry, if entries are less frequent than monthly, in Radioactive Material Areas.	Rad-1a
Monthly	On contact with potentially contaminated ducts, piping, and hoses in use outside radiological facilities.	Rad-1a

9.0 Project Site Control

9.1 Site Security

Site control is established by a perimeter fence at the Moab site. The work zone is defined as the area within this fence line.

Currently there are no site controls at the Crescent Junction site or vicinity properties. As work progresses at these sites the requirements of Sections 9.2, 9.6, 9.7, 9.8, 9.9, and 9.10 of this HSP may become applicable.

9.2 Site Map

The Site Manager shall ensure that a sign board is posted at the entrance to the work site. The sign board shall present emergency phone numbers, equal employment opportunity posters, and OSHA posters. The sign board shall also include a site map of the work area and indicate, if appropriate, the locations of

- First-aid station(s).
- Evacuation route(s).
- Fire control equipment.
- Communications equipment.

9.3 Site Work Zones

To reduce the spread of hazardous substances from the contaminated area to the clean area, at the Moab site, zones should be delineated on the site where different types of operations will occur, and the flow of personnel among the zones should be controlled. Three frequently used zones are the Exclusion Zone, Contamination Reduction Zone (CRZ), and Support Zone. Because this site is principally contaminated with radioactive material and additional regulation applies to the posting and control of this hazard, the radiological terms and postings will be generally used to define the Exclusion, Contamination Reduction, and Support Zones at the Moab site.

- Exclusion Zone—the contaminated area. The Exclusion Zone is where the highest possibility for worker exposure to hazardous materials occurs. This HSP defines all parameters for work in this zone. The radiological terms and signs used to demark the Exclusion Zone are “Contamination Area,” “Airborne Radioactivity Area,” and “Radiation Area.” Access to the Exclusion Zone requires a Radiological Control Technician to be on site.
- Contamination Reduction Zone/Corridor (CRZ/C)—the area where decontamination takes place. The entry/exit routes between the Exclusion Zone and the Support Zone are in the CRZ. The radiological term and sign used to demark the CRZ/C is Radiological Buffer Area (RBA).
- Support Zone—the uncontaminated area to which general public access is controlled and where workers should not be exposed to hazardous conditions. The Support Zone is a clean area where administrative and support functions are located. Normal work clothes are

appropriate for the Support Zone. The radiological term and sign used to demark the Support Zone is Controlled Area.

9.4 Site Control Log

An access log (for at least the current day) of all persons entering an Exclusion Zone will be maintained at the control point to the zone. The log will record the date, name, status (i.e., worker, visitor), company or agency, and time of entry and exit.

9.5 Classification of Persons for Site Access

9.5.1 Site Workers

Site workers must complete all applicable training and medical requirements prior to being granted unescorted access in the Exclusion Zone.

9.5.2 Visitors

Visitors are untrained (HAZWOPER, Radiological Worker Level II) persons who do not require access to the site as part of their routine job duties and are not directly assigned to the project as an employee. This category includes personnel who will not be exposed to hazardous substances above PELs. Some examples include

- Senior level DOE, Contractor, or subcontractor personnel.
- Federal and state regulators.
- Vendors.
- Public officials.
- Subcontract technical professionals.

NOTE: *In emergency situations, it may be necessary to classify persons as visitors even though they may be exposed or required to wear PPE while on the site. In such cases or when personnel do not appear to fit into any of the defined worker classes, the MPSC will evaluate and determine personnel classification. Such persons may include:*

- *Local emergency response personnel.*
- *Utility workers.*
- *Specialized technical workers.*

Visitors to the Moab Mill site must check in immediately upon arrival at the Moab site administrative office. Only visitors with legitimate reason for access, and who are authorized by the Site Manager and MPSC, will be allowed access to the work areas. Each visitor or group of visitors will require an escort by qualified personnel.

Visitor access shall be limited to a maximum of seven consecutive days and will not normally apply to persons performing work tasks on the site. Visitor access is intended for tour groups,

inspections by regulators, etc., and not for actual site work tasks. Visitor access beyond seven days must have written approval from the Project Manager and H&S Manager.

9.5.3 General and Occasional Site Worker

General and occasional site workers are persons engaged in hazardous substance characterization, removal, or other activities that expose or potentially expose workers to hazardous substances and health hazards in the Exclusion Zone or CRZ. This category includes DOE, Contractor, subcontractor, and other personnel performing activities at the site and who are required to wear PPE while on site. Some examples include

- Personnel performing field measurements or obtaining samples.
- H&S staff personnel
- Equipment operators.
- Laborers.
- DOE project personnel.

9.5.4 Management and Supervisors

Management and supervisors are persons directly responsible for, or who directly supervise, on-site employees engaged in hazardous waste operations. This category includes

- Contractor Site Manager, field engineers, project managers, and program managers.
- Subcontractor field supervisors and project managers.

9.5.5 Employees in the Support Zone

Employees in the Support Zone are persons covered under the scope of HAZWOPER who are working in the Support Zone and who do not enter the Exclusion Zone or CRZ. This category includes

- Technical office support personnel.
- Administrative support personnel.

9.6 Buddy System

A “buddy system” will be implemented when a task to be performed or the area where a task is performed involves significant hazards or risk to personnel safety and health. Buddy system means that two or more individuals are assigned to work together as a team to perform a task. The buddies should be close to one another. In cases where they cannot be close to each other, radio or other acceptable form of communication is allowed. The buddies should be close enough to one another to communicate verbally without the aid of radios, telephones, or other means of voice amplification and immediate assistance would be available if necessary.

For tasks that are planned in this HSP, the need for a buddy system has been evaluated. Tasks that require the use of the buddy system are identified in the Task-Specific Hazard Control Requirements column of the Appendix A table, where applicable. For tasks that are not

specifically identified in this HSP and that are controlled through the use of alternate mechanisms (e.g., JSA, SWP, or RWP), the need for the buddy system shall be evaluated and, if required, identified in that permit.

Workers using the buddy system must

- Stay within visual and clear voice communication distance with the partner(s).
- Observe the partner(s) for signs of overexposure to hazardous materials and environmental stresses, such as heat and cold exposure.
- Periodically check the integrity of the partner's PPE.
- Immediately notify the Site Manager or safety personnel if emergency assistance is needed.

9.7 Site Work Zone Posting and Access Controls

Site control will include a barrier at the work area perimeter. The requirements for access controls are necessary to clearly identify and control employee exposure to the hazardous substances and safety and health hazards. If any of the criteria for an Exclusion Zone are met, access controls shall be established according to the *Health and Safety Manual* (STO 2), Standard 2.15 and the *Site Radiological Control Manual* (STO 3) to protect any individual from exposure to hazards at the site.

9.7.1 Work Zone Access Requirements

To enter the Support Zone, CRZ, or Exclusion Zone, personnel must complete the applicable training requirements. They must also complete additional task-specific training for the task they are engaged in, according to task table in Appendix A and associated work permits.

9.7.2 Access Control Point Requirements

When the criteria for establishing an Exclusion Zone have been met, access to each Exclusion Zone shall be controlled through a designated Access Control Point. The Access Control Point shall be physically secured (fences, ropes, or barricades) and clearly marked with signs according to the *Health and Safety Manual* (STO 2), Standard 2.15, and the *Site Radiological Control Manual* (STO 3), All personnel and equipment shall enter and exit the Exclusion Zone through a designated Access Control Point. No access to Exclusion Zones shall be permitted unless a Radiological Control Technician is on site to provide required oversight and monitoring.

9.7.3 Signs, Signals, and Barricades

Signs, signals, and barricades used to identify radiological hazards shall comply with the *Site Radiological Control Manual* (STO 3) and the *Health and Safety Procedures Manual* (STO 201), Procedure HS-370.01, "Radiological Posting." Signs, signals, and barricades used to identify other site hazards (including traffic control) shall comply with 29 CFR 1926, Subpart G.

9.8 Site Communications

9.8.1 On-Site Communications

Before accessing the site, each person shall establish communications with off-site personnel and with other personnel on the site with whom he or she may need to communicate. Communication must be maintained between each on-site worker or group of workers and off-site personnel.

No authorized site worker shall access the vicinity properties, Moab, or Crescent Junction sites without having at least one other person at the site who

- Is aware of the work (activity) being done on the site.
- Is in communication with the worker(s) on the site.
- Is able to communicate to off-site personnel and immediately summon emergency assistance should it become necessary.

If hand signals or codes (e.g., a series of blasts on a horn or a flash of headlights) or radios are used to communicate information on the site, these signals or codes should be communicated to all individuals on the site and should not conflict with other signals or codes already in use on the site (e.g., emergency signals).

9.8.2 Off-Site Communications

When any person is on the site, at least one person in communication with on-site personnel shall be capable of immediately communicating with off-site personnel. The off-site communications system must be capable of notifying project Key Personnel and executing the emergency action procedures outlined in Sections 11.0 and 13.0 of this plan.

9.9 Health and Safety Inspections

The Site Manager or MPSC will perform periodic H&S inspections when work is being performed to verify HSP implementation and effectiveness. A report that includes results of the inspection and any corrective actions taken will be filed in the project records and a copy sent to the H&S Manager.

9.10 Sanitation

The sanitation requirements of this section are based on 29 CFR 1926.51 and 29 CFR 1910.141. The following accommodations shall be provided for site workers:

9.10.1 Drinking Water

9.10.1.1 Outside the Exclusion Zone

Provisions for drinking water outside the Exclusion Zone and the CRZ/C include

- Potable water adequate for the number of workers at the site, in containers with a tight-fitting cap.

- Water dispensers (if used) are equipped with a tap to dispense the water. (Water shall not be dipped from the container.)
- All containers used to dispense drinking water shall be clearly marked for exclusive use as a drinking water container.
- Single-serve disposable cups with a sanitary container for the unused cups and a receptacle for the used cups.

9.10.1.2 Inside the Exclusion Zone

Drinking water in a Contaminated Area or Exclusion Zone will be considered only when the following conditions are met as determined by the Contractor and controlled by a Radiological Control Technician (RCT).

- Potential for heat-induced stress is present and represents a significant hazard compared with the radiological and chemical hazards present.
- Administrative and engineering controls to reduce the potential for heat-induced stress in workers on the site performing a specific task are either ineffective or not reasonable and prudent.

Only when these two conditions are met will the consumption of drinking water in a Contamination Area (Exclusion Zone) be permitted. When it is determined that drinking will be permitted, the following controls are required.

1. Drinking containers will be protected from contacting contaminates before they are issued to the worker.
2. Drinking containers are sealed, single serve, disposable containers.
3. The participating workers shall remove their outer gloves and frisk their hands and face. If contamination is detected, the worker shall proceed to the personnel access control point for radiological survey and decontamination.
4. If the worker's hands and face frisk clean, then the worker shall wash their face with wet wipes.
5. Drinking containers and wet wipes may not be shared among workers.
6. Dispose of drinking containers after single use. Workers may not reseal the container and save contents for later consumption.
7. Worker will don gloves and reseal as required before returning to the work area.

9.10.2 Toilet and Washing Facilities

Toilet and washing facilities shall be provided.

Washing facilities shall

- Use potable water. (Potable wash water containers shall be clearly marked for exclusive use as washing water containers including prohibition of drinking.)
- Be in the immediate vicinity of any toilet facility.

9.10.3 Showers and Change Rooms

Because worker exposures to hazardous substances at the vicinity properties, Moab, and Crescent Junction sites are not expected to exceed the applicable PELs, sanitation showers are not expected to be required under the provisions of 29 CFR 1910.120 (n). Sanitation showers may be required and will be provided before work proceeds if

- Site conditions change so that present evaluations are not applicable.
- Monitoring data indicate that personnel are being routinely exposed above the applicable PELs.
- OSHA substance-specific standards (e.g., asbestos regulations) require showers and change rooms.

Change rooms, as designed to facilitate personnel showers under the provisions of 29 CFR 1910.120 (n)7, are not provided because sanitation showers are not currently required. Workers are permitted to wear modest trunks and T-shirts under their PPE. Personal, modest clothing (at least, shorts/T-shirt) must be worn at all times in areas and facilities shared by men and women. Items of value should not be brought to the work site.

End of current text

10.0 Decontamination

10.1 Contamination Prevention

Minimizing worker contact with contaminants starts by working in a safe manner so that contact with contaminants is avoided as much as possible. Workers should avoid touching exposed portions of skin or personal clothing while in the Exclusion Zone.

10.2 Decontamination Location and Layout

The RBA is the CRZ at this site. H&S staff shall assist the Site Manager in establishing the location and layout of the RBA/CRZ along with PPE removal and decontamination stations.

Radiological decontamination will follow the *Health and Safety Manual* (STO 2), Standard 3.1, "Radiation Protection Standard," and the *Site Radiological Control Manual* (STO 3) wherever applicable.

10.3 Personnel Decontamination

PPE removal, including proper sequence and technique, is the primary method by which personnel decontamination is effected on these sites. When radiological contamination in excess of the surface contamination standards is present in the work area, personnel shall monitor for the presence of surface contamination following PPE removal.

After the PPE removal sequence has been completed, if radioactive contamination is detected on the worker during the frisk, personnel shall follow the *Health and Safety Procedures Manual* (STO 201), Procedure HS-330.04, "Personnel Skin and Clothing Decontamination," and the *Site Radiological Control Manual* (STO 3) for removal of radioactive contamination from personnel.

10.3.1 Emergency Eyewash Stations

Emergency eyewash stations will be provided at the site and will be strategically located.

10.3.2 Emergency Shower Station

Emergency shower station will be provided at the site and will be strategically located.

10.4 Equipment Decontamination

All materials and equipment leaving a Contamination Area are subject to radiological survey. If contamination is detected on equipment, applicable requirements established by the MPSC will be followed.

10.5 Vehicle Decontamination

All vehicles exiting posted Contamination Areas are subject to decontamination and radiological survey. Vehicles shall be decontaminated in accordance with the *Health and Safety Procedures Manual* (STO 201), Procedure HS-330.06, "Decontamination Procedure for Wheeled Vehicles."

All vehicles must have all residual visible materials removed. After all residual visible material is removed, the vehicle shall be surveyed in accordance with the *Health and Safety Procedures Manual* (STO 201), Procedure HS-330.01, "Contamination Surveys and Equipment and Material Release."

10.6 PPE and Decontamination Solution Storage and Disposal

PPE removed from the RBA/CRZ shall be either decontaminated or properly bagged to contain any contamination. Waterproof, nondisposable PPE will be properly decontaminated.

All used disposable clothing shall be placed in bags, marked or labeled as required, and stored in a designated storage location pending arrangements for disposal. All items that cannot be sufficiently decontaminated will be evaluated by the MPSC and Environmental Services staff and designated as radioactive, hazardous, or mixed waste. All decontamination solutions will be collected and retained for evaluation prior to disposal.

11.0 Emergency Response/Contingency Plan

11.1 Background

11.1.1 Purpose

This plan is designed to minimize the impact of any emergency or unusual occurrence on the safety and health of DOE personnel, Contractor and subcontractor personnel, and the public.

11.1.2 Scope

The emergency response plan addresses and specifies emergency planning, emergency prevention, a course of response, personnel responsibilities, reporting and notification criteria, and minimum equipment and training needed to cope with work place emergencies, including

- Fires.
- Medical emergencies.
- Spills of hazardous materials.
- Floods.
- Public disturbances.

Immediate actions may be performed in any sequence, depending on the occurrence. At no time shall any emergency response action be performed if on-scene personnel determine that the action would endanger individuals.

Hazardous materials response, as defined in 29 CFR 1910.120 (q), is outside the scope of this section.

11.1.3 General Information

In the event of an emergency, site workers shall immediately notify the Site Manager or MPSC to report the emergency. Whatever means are available will be used to make the notification.

11.2 Emergency Response Key Personnel

This section identifies the personnel who are crucial to handling an emergency response event, their responsibilities, organizations, and work phone numbers (see Table 11–1). Table 11–1 shall be posted in a conspicuous location at the site.

11.2.1 DOE Personnel

DOE personnel will notify DOE project, area, and Headquarters offices of emergency conditions, classifications, and status, as required.

Table 11–1. Emergency Response Key Personnel and Contacts

Key Person/Agency	Contact Name	Work Phone No.
DOE Moab Federal Project Manager	Don Metzler	970-248-7612
DOE Public Affairs Specialist	Don Metzler	970-248-7612
Project Manager (acting)	Ken Karp	970-248-6564
Moab Site Manager (Site Emergency Response Director)	Irwin Stewart	435-259-5131
Crescent Junction Site Manager	Jim Erickson	970-248-6395
Moab Project Safety Coordinator (MPSC)	Tom Guthrie	435-259-4892
Health and Safety Manager	Michael Hurshman	970-248-6468
Environmental Services Manager	Cheri Bahrke	970-248-6038
Fire Department	Moab Fire Dept./Thompson Fire Dept.	911
Sheriff's Dispatcher	County Sheriff's Office	911
Emergency Medical Assistance/Ambulance	Allen Memorial Hospital	911
Weather Data	National Weather Service (Salt Lake)	435-524-513

11.2.2 DOE Public Affairs Specialist (DOE Moab Federal Project Director)

The DOE Moab Federal Project Director, acting as the public affairs specialist, is responsible to:

- Serve as the primary spokesperson for DOE for the Moab Project.
- Obtain DOE emergency manager and emergency director approvals prior to issuing news releases.
- Provide interface between the media and DOE.
- Notify DOE area and Headquarters offices as directed by the DOE Moab Federal Project Director.

11.2.3 Project Manager

The Moab Project Manager interfaces between the Moab and Crescent Junction sites field organizations, Contractor management, and DOE personnel.

11.2.4 Site Manager (Site Emergency Response Director)

The Site Manager shall

- Maintain executive control of all emergency situations affecting Moab and Crescent Junction sites operations.
- Direct emergency response actions using personnel and resources to mitigate consequences of the emergency.
- Authorize site-wide evacuation of personnel, as needed.
- Maintain a Contractor succession of authority.

- Ensure that the DOE Headquarters Operations Center is promptly notified of emergency situations within 15 minutes after categorizing the event as an emergency. Notification to DOE Headquarters is normally made by the H&S Manager.
- Authorize assistance from off-site organizations (e.g., health departments, hospitals, ambulance services).
- Classify abnormal conditions and activities for the Moab site.
- Protect the safety and health of the public and Moab site personnel.

11.2.5 Moab Project Safety Coordinator

The MPSC shall

- Ensure that emergency response communications systems are available and operational.
- Develop, implement, and update the emergency response plan.
- Assist the Site Manager with emergency response actions.
- Advise the project emergency response director on the safety and health aspects of an emergency condition or event.

11.2.6 Health and Safety Manager

The H&S Manager shall oversee H&S actions related to an emergency and assist the Site Manager and MPSC, as necessary. The H&S Manager is the point of contact for reportable occurrences, including emergencies.

11.2.7 Environmental Services Manager

The Environmental Services Manager ensures that in the event of a release or spill of regulated materials the appropriate regulatory agencies are notified when required.

11.3 Planning

The objective of emergency planning is to be prepared to safely respond to anticipated emergencies before they occur and before activities involving hazardous materials and wastes begin. Emergency planning also ensures that the emergency response plan is compatible and coordinates with the emergency response plans and capabilities of the local emergency response service organizations. The Project Manager, H&S Manager, and DOE Moab Federal Project Manager will determine the methods by which emergency planning issues are coordinated with local emergency service organizations.

11.3.1 Training

Employee training is an integral part of the emergency prevention plan and is critical to the timely and proper execution of the emergency action procedures for this site. The required site pre-entry briefing shall include elements that address emergency prevention and preparedness.

11.3.1.1 Visitor Training

All visitors to the Moab and Crescent Junction sites facilities must be familiar with the emergency signals and alarms and the appropriate response to each of these.

The Moab site pre-entry briefing for visitors will provide this orientation.

Visitors must be escorted by a qualified host while on any Moab site property or facility and must follow the directions of the designated escort in the event of an emergency.

11.3.1.2 Evacuation Routes

The following guidelines shall be used to assist in establishing emergency evacuation routes:

- Place evacuation routes upwind from the contamination area (Exclusion Zone), wherever possible.
- Run evacuation routes through the access control point (CRC).
- Consider the accessibility of potential routes.
- Ensure that the primary and alternate routes are completely separate.
- Clearly identify evacuation routes on a posted site map.
- Ensure that evacuation routes are accessible to personnel wearing PPE.
- Establish a routine to ensure that evacuation routes are kept free of obstruction.

11.3.2 Safe Distances and Relocation/Assembly Areas

In the event of a site evacuation, all Moab site personnel should assemble at the parking area outside of the fenced exclusion zone.

In the event of a site evacuation, all Crescent Junction site personnel should assemble at the Sealand containers staging area on Grand County Road 175.

11.3.3 Evacuation Procedure

[1] **Exit** the building or affected area through the nearest available exit (all affected personnel).

[2] **Help** disabled or impaired persons to evacuate the affected area (all affected personnel).

[3] **Go** to the designated relocation/assembly area. Assist visitors to the designated relocation/assembly area.

[4] **Inform** the person(s) performing personnel accountability of any personnel remaining in the affected evacuation area (all affected personnel).

[5] **Do not** eat, drink, smoke or chew (all affected personnel).

[6] **Account** for personnel from the area being evacuated (project managers, office manager, or their designees).

[7] **Await** instructions from the project manager for follow-up actions

11.4 Emergency Communications Systems

To facilitate readiness in the event of an emergency, the emergency response director shall ensure that the following requirements for emergency communications are in place:

- An effective means of communications shall be available for all work locations in the event of an emergency.
- Emergency communications systems shall be periodically tested to ensure that they are operable.

11.4.1 Emergency/Evacuation Warning System

The information in Table 11−2 shall be conspicuously posted on the site. The emergency warning signals, alarms, and communications systems must be tested at least monthly.

Table 11–2. Emergency Alarms and Warning Signals

Emergency	Alarm or Warning Signal	Action To Be Taken
Evacuation	Primary—A single long blast from an air horn or automobile Secondary—Hand-held radio	• Immediately evacuate the affected area • Proceed to the designated relocation/assembly area • Await further instructions

11.5 Personnel Accountability

Personnel accountability during emergencies involving an evacuation is performed to ascertain that all persons in the evacuation area are accounted for and are either safe or being appropriately attended. In addition, the personnel accountability system organizes individuals in the affected area into organized groups through which orderly follow-up response may be affected.

The Site Manager shall maintain a site accountability list to be used in the event of an emergency.

11.6 Reporting of Emergency Conditions

11.6.1 Notifications

- Contractor and subcontractor employees shall immediately notify the site manager of any situation that may constitute an emergency or require emergency response actions.
- The site manager shall notify the program manager and the H&S manager.
- The program manager and the H&S manager shall classify the emergency in accordance with the criteria in the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."

- The program manager shall verbally report the emergency to contractor management and DOE in accordance with the *Health and Safety Manual* (STO 2, Standard 4.1, "Occurrence Reporting and Processing of Operations Information.")
- All notifications to agencies and organizations other than the contractor and DOE Office of Environmental Management shall be approved by and coordinated through the program manager and the DOE Public Affairs Specialist.

11.6.2 Reporting Requirements

- All emergencies must be reported using the Incident Report (form GJ 1743e) regardless of the nature of the emergency involved (see the *Health and Safety Manual* [STO 2], Standard 4.1, "Occurrence Reporting and Processing of Operations Information.").
- Additional reports may be required depending upon the nature and classification of the event.

11.7 Fire Action Plan

***Note**: Immediate Actions are the responsibility of all on-site personnel. Supplemental Actions are the responsibility of various organizations and individuals (identified following each action). Supplemental Actions should be carried out as quickly as is reasonable after Immediate Actions are complete.*

11.7.1 Immediate Actions

[1] **Stop** or secure the operation causing the fire (e.g., secure hot work, de-energize electrical equipment).

[2] **Warn** others in the area using whatever means are available (e.g., voice, car horn, radio).

[3] **Contact** the Moab Fire Department at 911. Inform the Moab Fire Department of any other hazards that are known to be present in the fire area.

[4] **Identify** any other hazards that may be present (e.g., radioactive or chemical hazards, presence of volatile or combustible materials).

[5] **Isolate** the affected fire area and establish control boundaries, if possible.

[6] **Move** personnel upwind and out of the affected fire area.

[7] **Notify** the following key personnel:

- Site manager.
- MPSC.

[8] Direct the responding fire and emergency response services units to the location of the fire from an upwind direction if possible. Do not deny emergency response services entry because of radiological or hazardous materials posting and access regulations.

11.7.2 Supplemental Actions

[1] Establish an access control point at a safe distance upwind from the fire area (MPSC).

[2] Remove and isolate personnel who may have initially responded to the fire in a hazardous materials area without appropriate PPE from the affected area. Decontaminate personnel in accordance with the *Health and Safety Procedures Manual* (STO 201), Procedure HS-330.04, "Personnel Skin and Clothing Decontamination," and other appropriate measures for the type of contamination (MPSC).

[3] Obtain radiological and hazardous materials monitoring data at the perimeter of the isolated fire area, when conditions permit, to determine the extent of any spread of hazardous materials outside the established control areas (MPSC).

[4] Initiate the reporting requirements as outlined in Section 11.6 of this plan (site manager).

[5] Develop a follow-up action plan for reentry and recovery of the affected fire area. The follow-up action plan for recovery must be documented and approved by H&S and the program manager (site manager).

[6] Initiate the post-emergency response incident investigation process as outlined in Section 11.12 of this plan (program manager).

11.8 Medical Emergency Action Plan

Never move a victim in need of medical assistance unless:

1. Directed by a competent medical authority,
2. The injury will obviously not be aggravated or complicated by a move, or
3. The victim is in a location where greater physical harm would be likely if not moved.

While all employees are responsible for immediate actions and all employees are expected to carry out the immediate actions, no employee is required to render first aid for which he or she has not been trained or is uneasy in rendering.

Never delay the access of a responder to a medical emergency to apply administrative controls or to prescribe PPE. As time and circumstances allow, appropriate administrative controls and PPE compatible with the ability to render medical assistance may be employed in a medical emergency.

Decontamination of victims, medical emergency responders, and any associated equipment and materials will be commensurate with the nature and severity of the medical emergency. Under no circumstance will decontamination take precedence over treatment of the victim(s) unless both a competent medical authority and the victim agree that the medical treatment has a lower priority than decontamination.

NOTE: *"Immediate Actions" are the responsibility of all on-site personnel. "Supplemental Actions" are the responsibility of various organizations and individuals (identified following each action). "Supplemental Actions" should be carried out as quickly as is reasonable after "Immediate Actions" are complete.*

[1] **Stop** any activity and secure any equipment that may have caused the medical emergency.

[2] **Stop** all construction and project activities in the immediate vicinity of the medical emergency.

[3] **Warn** all personnel in the immediate vicinity of the medical emergency using whatever means is available (e.g., car horn, voice, radio)

[4] **Notify** the following key personnel:

- Site Manager
- Moab Project Safety Coordinator

[5] **Request** assistance from the Allen Memorial Hospital.

[6] **Assess** the scene to determine

[a] If the scene is safe to enter.

[b] Cause of medical emergency.

[c] The number and location of victim(s).

[d] The presence of hazardous materials (radioactive or nonradioactive) in the immediate vicinity.

[7] **Place** a person at the site entry point to inform and direct emergency response personnel.

[8] **IF** the scene is safe to enter,
THEN check the victim(s) to determine the extent of injuries
AND identify required emergency first aid.

[9] **Render** necessary first aid to the victim(s) until relieved by trained response personnel.

11.8.1 Supplemental Actions

[1] **Notify** and apprise the Site Manager of the medical emergency conditions and situation (person in charge at the scene).

IF the victim(s) are contaminated,

[2] **THEN arrange** for an emergency response team member to meet the victim(s) at the destination medical facility (Site Manager).

[3] **Initiate** the reporting requirements as outlined in Section 11.6 of this plan (Site Manager).

[4] **Initiate** the post-emergency response incident investigation process as outlined in Section 11.2 of this plan (Site Manager).

11.9 Spill of Hazardous Materials

Emergency response guidance for spills of hazardous materials (radioactive or nonradioactive) are addressed in Section 13.0 of this HSP.

11.10 Flood Action Plan

The objective of the flood action plan is to take actions that might reduce the consequences of a flood rather than to take preemptive actions. Actions are directed at protecting personal safety first and DOE property (including materials, buildings, and equipment) second from a flood or high water condition.

The actions taken in the event of a flood will largely depend upon the amount of warning received before a flood actually occurs. In every case, personal safety shall have the highest priority.

Flood conditions could occur from a sustained period of rain or from runoff associated with rapid snow melt.

Upon receipt of information or forecast that a potential flood condition exists, the Project Manager will determine if a Flood Alert should be declared.

11.10.1 Flood Alert

A Flood Alert will constitute a warning that flood conditions are anticipated. Once a Flood Alert is declared, actions will be initiated, culminating in a state of readiness for personnel and equipment necessary to carry out a subsequent evacuation.

11.10.1.1 Flood Alert Actions

[1] **IF** a Flood Alert is declared,
THEN

- **[a]** **Notify** all project personnel that a Flood Alert has been declared.
- **[b]** **Contact** the National Weather Service, the City of Moab, and the U.S. Geological Survey offices for information regarding projected flows, upstream reservoir levels, planned reservoir releases, and stage heights for the reservoir and downstream waterways.
- **[c]** **Notify** the Site Manager of the intensity, timing, and possible duration of the forecasted high water condition.
- **[d]** **Move** vehicles and equipment to high ground.
- **[e]** **Assemble** radioactive check sources (and other hazardous materials as directed by the MPSC.

[2] **IF** protection of the well field is required as determined by the Site Manager,
THEN

- **[a]** **Shut Off** all power to associated systems.
- **[b]** **Follow** directions provided by the Site Manager regarding other protective measures, such as placement of sandbags.

11.11 Public Disturbance Action Plan

Because the range and magnitude of public disturbances that may occur can vary greatly, the Site Manager must determine the appropriate response actions needed to safeguard DOE, Contractor and subcontractor personnel, and DOE property and equipment. The time interval between receipt of warning of a public disturbance and the occurrence of the event may vary from several days to no warning at all. Therefore, the priority with which the response actions are carried out will also vary greatly. A public disturbance is defined as a demonstration by activists or threat to DOE operations that is relative to a DOE or Contractor operation conducted as a part of the Moab Project and which

- Disrupts DOE, Contractor, or its subcontractors operations.
- Adversely affects DOE or Contractor property.
- Jeopardizes the safety and well being of DOE, contractor, or its subcontractors employees.
- Adversely affects the reputation or public image of DOE or the contractor.

Note: *Immediate Actions are the responsibility of all on-site personnel. Supplemental Actions are the responsibility of various organizations and individuals (identified following each action). Supplemental Actions should be carried out as quickly as is reasonable after Immediate Actions are complete*.

11.11.1 Immediate Actions

[1] **Record** the date, time, manner, and circumstances surrounding the identification of, or warning of, a public disturbance.

[2] **IF** DOE or Contractor property is being damaged or DOE, Contractor, or subcontractors personnel are in immediate danger,
THEN call the Police Department at 911.

[3] **Notify** the following key personnel.

- Site Manager
- Moab Project Safety Coordinator

11.11.2 Supplemental Actions

[1] Contact and request assistance from the local law enforcement agencies, as needed (Site Manager).

[2] Initiate the reporting requirements as outlined in Section 11.6 of this plan (Site Manager).

[3] Initiate the post-emergency response incident investigation process as outlined in Section 11.12 of this plan (Site Manager).

11.12 Post-Emergency Response Incident Investigation

- A critique shall be initiated as soon as practicable following stabilization of the emergency condition.
- If classification of the emergency or results of the critique indicate that further investigation is required, the program manager and the H&S manager shall initiate additional investigation as required in the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."
- Lessons learned from the critique and investigation shall be formally documented and distributed to appropriate personnel in an effort to prevent a similar emergency condition. Lessons learned report guidelines are available in the *Quality Assurance Manual* (STO 1), Quality Assurance Instruction 3.1, "Lessons Learned." In addition, lessons learned will be incorporated into project personnel training and used to amend this procedure as well as to institute corrective measures and procedures to avoid similar occurrences in the future.

11.13 Emergency Route

A map from the Moab Mill site and the Crescent Junction Disposal site with the routes to designated medical facilities in Moab, Utah, is located in the front of this plan, and a copy will be posted on the site sign board.

End of current text

12.0 Confined-Space Entry

Confined space is defined as a space that

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit. For example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.
- Is not designed for continuous employee occupancy.

A permit-required confined space is a confined space that has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a small cross-section.
- Contains any other recognized serious safety or health hazard.

Examples of confined spaces include, but are not limited to, the following: well vaults, tanks, boilers, vessels, bins, manholes, tunnels, pipelines, underground utility vaults, or any open top space more than 4 feet in depth, such as pits, tubes, trenches, or vessels. The hazards present determine if a permit is required for entry.

All confined space entries will be performed in accordance with the *Health and Safety Manual* (STO 2), Standard 2.5.

End of current text

13.0 Spill Response Plan

13.1 Policy

It is the policy of the Contractor to conduct and manage activities in accordance with applicable laws and regulations and to

- Prevent or minimize to the extent possible the spilling of petroleum products, hazardous substances, or radioactive materials during remediation.
- Prevent or minimize to the extent possible the spread of petroleum products, hazardous substances, or radioactive materials resulting from remedial activities.
- Report spills to local, state, and federal authorities as required by this plan in accordance with applicable laws and regulations.

13.2 Scope

This spill response plan shall be implemented to prevent, contain, and report spills of petroleum products, hazardous substances, or radioactive materials during characterization activities at the vicinity properties, Moab, and Crescent Junction sites.

13.3 Prevention of Spills

13.3.1 Inspections

The MPSC shall schedule routine periodic inspections of all equipment used for spill containment and cleanup to ensure availability. Heavy equipment used at the site shall be routinely inspected to reduce the possibility of spills resulting from equipment defects or malfunction.

13.3.2 Training

DOE employees, Contractor employees, and subcontractor field personnel will be trained in this spill response plan during the pre-entry briefing and periodically during regular tailgate safety meetings at the job site.

13.3.3 Personal Protective Equipment

The MPSC will determine the PPE requirements for use during emergency containment and subsequent cleanup activities associated with a spill of petroleum products, hazardous substances, or radioactive materials.

13.3.4 Spill Response Kit

The MPSC shall prepare and maintain a spill response kit(s) for use during emergency response to spills.

Emergency spill response kits shall be assembled and staged at designated locations for use in response to a spill.

The inventory requirements for the spill response kit for use during emergency containment and response activities associated with a spill are listed in Table 13–1.

Table 13–1. Spill Response Kit Inventory

Cotton coveralls	Air sample filters
Tyvek coveralls	Plastic bags
Canvas gloves	Plastic bags for radiological material
Nitrile gloves	Duct tape
Silvershield or 4H gloves	Barrier rope
Cotton glove liners	Contamination area signs
Rubber overshoes	Traffic cones or triangles
Vinyl shoe covers	Absorbent pads
Plastic shoe covers	Bulk absorbent material (kitty litter)
Clip board	Handsoap with pumice
Survey maps	Liquid soap
Pens	Cornstarch
Marking pen	Scrub brush
Steno pad or substitute	Wash tub
Smears	Long handled shovel

13.4 Procedures for Response to Spills

Note: *Immediate Actions are the responsibility of all on-site personnel. Supplemental Actions are the responsibility of various organizations and individuals (identified following each action). Supplemental Actions should be carried out as quickly as is reasonable after Immediate Actions are complete.*

13.4.1 Response to a Spill of Petroleum Products or Hazardous Substances of Known Composition

13.4.1.1 Immediate Actions

[1] **Stop** or secure the operation causing the spill (e.g., secure a dump gate, upright a container, stop a pump, close a valve).

[2] **Warn** others in the area using whatever means are available (e.g., voice, telephone, radio, car horn).

[3] **Identify** any other hazards that may be present (e.g., the potential for fire or explosion).

[4] **Isolate** the affected spill area and establish control boundaries, if possible.

[5] **Contain** the spill to prevent further spread (e.g., by moving soil to create berms and using absorbent material).

[6] **Minimize** individual exposure to the spilled product or contaminant.

[7] **Move** personnel upwind, upstream, and upgrade.

[8] **Notify** the following key personnel:

- Site Manager.
- Moab Project Safety Coordinator.

13.4.1.2 Supplemental Actions

[1] Determine the extent of the spill area and verify the adequacy of the control boundaries already established (MPSC/Environmental Services).

[2] Install liners around the spill to stabilize the material and prevent further spread (as directed by MPSC/Environmental Services).

[3] Remove personnel who may have initially responded to the spill without PPE from the spill area (MPSC). MPSC will determine appropriate decontamination procedures.

[4] Obtain air samples in the affected and adjacent spaces to assess the airborne contaminant concentrations (MPSC).

[5] Initiate the reporting requirements as outlined in Section 13.5 of this spill response plan (program management/Environmental Services).

[6] Establish PPE requirements for the spill response team entry (MPSC).

[7] Develop a follow-up action plan for recovery of the spilled material (responsible contractor or subcontractor). The follow-up action plan for recovery must be documented and reviewed by the Environmental Services point-of-contact and approved by the program manager.

[8] Initiate the spill incident investigation process as outlined in Section 13.6 of this spill response plan (program management).

13.4.2 Response to a Spill of Hazardous Substances of Unknown Composition

13.4.2.1 Immediate Actions

[1] **Evacuate** personnel in the spill area to a safe distance.

[2] **Warn** others in the area using whatever means are available (e.g., voice, telephone, radio, car horn).

[3] **Isolate** the affected spill area and establish control boundaries, if possible.

[4] **Minimize** individual exposure to the unknown contaminants.

[5] **Move** personnel that may be affected by the spill to a position upwind, upstream, and upgrade.

[6] **Notify** the following key personnel:

- Site Manager.
- Moab Project Safety Coordinator.

13.4.2.2 Supplemental Actions

[1] Determine the extent of the spill area and verify the adequacy of the control boundaries already established (MPSC/Environmental Services).

[2] Install liners around the spill to stabilize the material and to prevent further spread (as directed by MPSC/Environmental Services).

[3] Remove personnel who may have initially responded to the spill without PPE from the spill area (MPSC). MPSC will determine the appropriate decontamination procedures.

[4] Obtain air samples in the affected and adjacent spaces to assess the airborne contaminant concentrations (MPSC).

[5] Initiate the reporting requirements as outlined in Section 13.5 of this spill response plan (program management/Environmental Services).

[6] Establish PPE requirements for the spill response team entry (MPSC).

[7] Develop a follow-up action plan for recovery of the spilled material (responsible Contractor or subcontractor). The follow-up action plan for recovery must be documented and reviewed by the Environmental Services point of contact and approved by the program manager.

[8] Initiate the spill incident investigation process as outlined in Section 13.6 of this spill response plan (program management).

13.4.3 Response to a Spill of Radioactive Materials

13.4.3.1 Immediate Actions

[1] **Stop** or secure the operation causing the spill (e.g., secure a dump gate, upright a container, stop a pump, close a valve).

[2] **Warn** others in the area using whatever means are available (e.g., voice, telephone, radio, car horn).

[3] **Isolate** the affected spill area and establish control boundaries, if possible.

[4] **Minimize** individual exposure to radiation and contamination.

[5] **Move** personnel upwind, upstream, and upgrade. Secure unfiltered ventilation if the spill occurs in an enclosed space where building or area ventilation is in use and may cause the further spread of airborne contamination.

[6] **Notify** the following key personnel:

- Site Manager.
- Moab Project Safety Coordinator.

13.4.3.2 Supplemental Actions

[1] Stabilize the material to prevent further spread (as directed by MPSC/Environmental Services).

[2] Determine the extent of the spill area and verify the control boundaries already established (MPSC/Environmental Services).

[3] Remove personnel who may have initially responded to the spill without PPE from the spill area and survey them for radioactive contamination (MPSC).

[4] If survey indicates radioactive contamination
Then decontaminate personnel in accordance with the *Health and Safety Procedures Manual* (STO 201), Procedure HS-330.04, "Personnel Skin and Clothing Decontamination."

[5] Obtain air samples in the affected and adjacent spaces to assess the airborne radioactive contamination levels (MPSC).

[6] Initiate the reporting requirements as outlined in Section 13.5 of this spill response plan (program management).

[7] Establish PPE requirements for the spill response team entry (MPSC).

[8] Develop and document a follow-up action plan for recovery of the spilled radioactive material (responsible contractor or subcontractor). The follow-up action plan must be approved by the program manager.

[9] Initiate the spill incident investigation process as outlined in Section 13.6 of this spill response plan (program management).

13.5 Notification and Reporting Requirements

13.5.1 Notifications

- All notifications to agencies and organizations other than the Contractor and DOE shall be approved by and coordinated through the contractor program manager and the DOE Public Affairs Specialist.
- The person or persons identifying a spill shall immediately notify the Site Manager of any spill.
- The Site Manager shall notify the program manager, H&S manager, and the Environmental Services manager.
- The program manager and the H&S manager shall classify the spill event in accordance with the criteria of the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."
- The program manager shall verbally report the incident to Contractor management and DOE in accordance with the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."
- All petroleum product releases shall be reported to the Contractor Environmental Services point of contact to determine notification or reporting requirements.

- Releases of hazardous substances above the reportable quantity must be verbally reported by the program manager to the National Response Center at 1-800-424-8802.

13.5.2 Reporting Requirements

- All spills or releases of petroleum products, hazardous substances, or radioactive materials must be reported using the Incident Report (form GJ 1743e), regardless of the quantity of the spill or the activity involved.
- All spills classified as reportable in accordance with the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."
- Any quantity of radioactive material with total activity in excess of concentrations listed in 49 CFR 173.436 spilled outside of posted and controlled Radiological Areas while in transport shall be reported to DOE by the program manager in accordance with the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."

13.6 Spill Incident Investigation

- A critique shall be initiated as soon as practicable following stabilization of the spill.
- If classification of the event or results of the critique indicate that further investigation is required, the program manager and the H&S manager shall initiate additional investigation as required in the *Health and Safety Manual* (STO 2), Standard 4.1, "Occurrence Reporting and Processing of Operations Information."
- Lessons learned from the critique and investigation shall be formally documented and distributed in an effort to prevent a similar spill. Lessons learned report guidelines are available in the *Quality Assurance Manual* (STO 1), Quality Assurance Instruction 3.1, "Lessons Learned." In addition, lessons learned will be incorporated into project personnel training and used to amend this spill response plan to institute corrective measures and procedures to avoid similar occurrences in the future.

14.0 References

The following references directly support the implementation of this HSP and shall be available.

Title 10, *Code of Federal Regulations*, Part 835, "Occupational Radiation Protection."

Title 29, *Code of Federal Regulations*, Part 1910, "Occupational Safety and Health Standards—General Industry."

Title 29, *Code of Federal Regulations*, Part 1926, "Safety and Health Regulations for Construction."

STO 2. *Health and Safety Manual*, S.M. Stoller Corporation under contract to U.S. Department of Energy, Grand Junction, Colorado, continuously updated.

STO 3. *Site Radiological Control Manual*, S.M. Stoller Corporation under contract to U.S. Department of Energy, Grand Junction, Colorado, continuously updated.

STO 201. *Health and Safety Procedures Manual,* S.M. Stoller Corporation under contract to U.S. Department of Energy, Grand Junction, Colorado, continuously updated.

U.S. Department of Energy (DOE), 1996. *Handbook for Occupational Health and Safety During Hazardous Waste Activities*, Office of Environment, Safety and Health, Office of Environmental Management.

End of current text

Appendix A

Moab and Vicinity Properties
Task-Specific Requirements Table

Moab Site and Vicinity Properties Task-Specific Requirements—Monitoring

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Monitoring	MON.1	Monitor atmosphere. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	
	MON.2	Place or retrieve area monitoring detectors. Collect monitoring device media. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

Moab Site and Vicinity Properties Task-Specific Requirements—Site Tour/Inspection

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Site Tour/Inspection	ST.1	Tour/inspect site on foot or in open vehicle. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Untrained individuals must be escorted. • Individuals must keep away from immediate work activity and as practical away from more hazardous areas.	MPSC on site.
			Dust level ≥1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Untrained individuals must be escorted. • Individuals must keep away from immediate work activity and as practical away from more hazardous areas.	
	ST.2	Tour/inspect site from within closed radiologically clean vehicle. • Hazards inherent to ongoing site activity.	In Contamination Area.	D-1	None	None	RWP	• Posting/access control. • Untrained individuals must be escorted. • Windows stay completely closed. • Personnel remain in enclosed vehicle.	MPSC on site.

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

Moab Site and Vicinity Properties Task-Specific Requirements—Land Engineering Survey

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Land Engineering Survey	LES.1	Perform land survey of property. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock. • Unstable (slippery) footing • Drowning	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check. • Use buddy system. • Wear USCG-approved flotation device (as applicable). • Ring buoys every 200 ft of shoreline (as applicable). • Skiff or lifeline at site (as applicable).	
	LES.2	Locate utilities using a nonintrusive line tracer or power line detector. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, “Training Program.”
[c]Breathing zone monitoring will be accomplished until the task’s exposure is quantified.

Moab Site and Vicinity Properties Task-Specific Requirements—Characterization

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Characterization[e]	CHR.1	Complete preactivity inspection checklist. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	H&S Tech	RAD-1b RAD-1d RAD-2a RAD-4d IH-3 IH-8 IH-9 IH-10	RWP	• Posting/access control. • Review available data and drawings. • Use buddy system. • Reconnoiter the site from afar before accessing site.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	H&S Tech Respirator Wearer				
			Outside Contamination Area.	D-1	H&S Tech	None	None	• Review available data and drawings. • Use buddy system. • Reconnoiter the site from afar before accessing site.	
	CHR.2	Conduct initial visual inspection for hazardous substances. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	None	
	CHR.3	Characterize RRM in soil using gamma scan (nonintrusive). • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Unstable (slippery) footing • Drowning	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Contact MPSC when measurements indicate Ra-226 concentrations >140 pCi/g.	MPSC when measurements indicate Ra-226 concentrations >140 pCi/g. Notify MPSC before accessing site or property.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Contact MPSC when measurements indicate Ra-226 concentrations >140 pCi/g. • Use buddy system. • Wear USCG-approved flotation device (as applicable). • Ring buoys every 200 ft of shoreline (as applicable). • Skiff or lifeline at site (as applicable).	
	CHR.4	Characterize RRM materials in soil using hand intrusive methods. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Contact MPSC when measurements indicate Ra-226 concentrations >140 pCi/g.	MPSC on the site when measurements indicate Ra-226 concentrations >140 pCi/g. Notify MPSC before accessing site or property.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Contact MPSC when measurements indicate Ra-226 concentrations >140 pCi/g.	

Moab Site and Vicinity Properties Task-Specific Requirements—Characterization (continued)

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Characterization[e]	CHR.5	Characterize RRM materials in soil using mechanized intrusive methods. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock. • Machine hazards (e.g., rotating or reciprocating parts, nip points, noise, ignition sources, exhaust fumes and vapors).	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Contact MPSC when measurements indicate Ra-226 concentrations >140 pCi/g. • Equipment preoperational inspection and safety check. • Hearing protection.[d]	MPSC on the site when measurements indicate Ra-226 concentrations >140 pCi/g. Notify MPSC before accessing site or property.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Contact MPSC when measurements indicate Ra-226 concentrations >140 pCi/g. • Equipment preoperational inspection and safety check. • Hearing protection.[d]	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]When noise levels exceed the action limit.
[e]See tasks SAM.5 and SAM.7 for sampling tasks associated with bodies of surface water.

Moab Site and Vicinity Properties Task-Specific Requirements—Sampling

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Sampling	SAM.1	Collect soil samples using hand tools. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Injuries from use of hand tools.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions.	
	SAM.2	Collect soil samples using mechanized tools. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock. • Machine hazards (e.g., rotating or reciprocating parts, nip points, noise, ignition sources, exhaust fumes and vapors).	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check. • Hearing protection.[d]	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check. • Hearing protection.[d]	
	SAM.5	Collect surface water samples. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Unstable (slippery) footing. • Drowning.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Use buddy system. • Wear USCG-approved flotation device (as applicable). • Ring buoys every 200 ft of shoreline (as applicable). • Skiff or lifeline at site (as applicable).	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-2	None	None	None	• Use buddy system. • Wear USCG-approved flotation device (as applicable). • Ring buoys every 200 ft of shoreline (as applicable). • Skiff or lifeline at site (as applicable).	

Moab Site and Vicinity Properties Task-Specific Requirements—Sampling (continued)

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Sampling	SAM.6	Take ground water level measurements and collect ground water samples. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Potential exposure to electrical shock. • Lifting • Uneven walking and working surfaces	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-2	None	None	None	• Equipment preoperational inspection and safety check.	
	SAM.7	Collect sediment samples for analysis using hand tools. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Injuries from use of hand tools. • Unstable (slippery) footing. • Drowning.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Use buddy system. • Wear USCG-approved flotation device (as applicable). • Ring buoys every 200 ft of shoreline (as applicable). • Skiff or lifeline at site (as applicable).	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-2	None	None	None	• Use buddy system. • Wear USCG-approved flotation device (as applicable). • Ring buoys every 200 ft of shoreline (as applicable). • Skiff or lifeline at site (as applicable).	
	SAM.8	Collect animal and plant samples for analysis. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Unstable (slippery) footing. • Drowning. • Animal bites. • Hantavirus.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Use disinfectant solutions (when animal droppings are encountered). • Do not touch droppings.	MPSC on site.
			Dust level ≥1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Use disinfectant solutions (when animal droppings are encountered). • Do not touch droppings.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]When noise levels exceed the action limit.

Moab Site and Vicinity Properties Task-Specific Requirements—Equipment Maintenance

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Equipment Maintenance	EM.1	Routine maintenance and minor repair. • Potential exposure to contaminants. • Machine hazards (e.g., rotating or reciprocating parts, nip points, noise, ignition sources, exhaust fumes and vapors). • Ground personnel in the vicinity of working equipment. • Stored energy. • Lifting and carrying heavy objects.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	RAD-1b RAD-1d RAD-2a RAD-4d IH-3 IH-9 IH-10	SWP for hot work. RWP	• Posting/access control. • LO/TO 1910.147. • Machine guarding. • Hearing protection.[d] • Eye protection. • JSAs or SWP. • Proper lifting techniques.	MPSC on site. Notify MPSC before beginning.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	SWP for hot work.	• LO/TO 1910.147. • Machine guarding. • Hearing protection.[d] • Eye protection. • JSAs or SWP. • Proper lifting techniques.	
	EM.2	Refueling of equipment. • Flammable vapors and liquids. • Exposure to fuel. • Lifting and carrying heavy objects.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	RAD-1b RAD-1d RAD-2a RAD-4d IH-3 IH-9 IH-10	RWP	• Posting/access control. • No smoking or open flame within 50 ft. • Adequate natural or mechanical ventilation to maintain the vapor concentrations at or below 10% LEL. • Electrical bonding of dispensing and receiving vessels. • Proper lifting techniques. • Approved fire extinguishing system within 75 ft of the refueling operations.	MPSC on site. Notify MPSC before beginning.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• No smoking or open flame within 50 ft. • Adequate natural or mechanical ventilation to maintain the vapor concentrations at or below 10% LEL. • Electrical bonding of dispensing and receiving vessels. • Proper lifting techniques. • Approved fire extinguishing system within 75 ft of the refueling operations.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]When noise levels exceed the action limit.

Moab Site and Vicinity Properties Task-Specific Requirements—Mobilization

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Mobilization	MOB.1	Establish site control zones and boundaries. • Injuries from use of hand tools and post driver.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP Notice to Proceed	• Posting/access control. • Gloves. • Eye protection.	MPSC on site prior to establishing zones. MPSC oversight required to post radiological signs and erect barriers.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	Notice to Proceed	• Gloves. • Eye protection.	
	MOB.2	Set up decontamination station and dust control equipment. • Lifting and carrying heavy objects.	All	D-1	None	None	Notice to Proceed	• Proper lifting techniques. • Mechanical lifting aids.	MPSC on site.
	MOB.5	Set up equipment for field tasks.	In Contamination Area.	MD-4	None	RAD-1b RAD-1d RAD-2a RAD-4d IH-3 IH-9 IH-10	RWP SWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions.	MPSC on site.
			Outside Contamination Area.	D-1		None	SWP	• Prebriefing about ongoing site activities and site conditions.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

Moab Site and Vicinity Properties Task-Specific Requirements—Remediation

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Remediation	REM.1	Remove vegetation above grade (clear and grub). • Use of chain saw. • Use of mulcher/chipper. • Lifting. • Potential exposure to high noise.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-8 RAD-1b RAD-1d RAD-2a RAD-4d	RWP. SWP, if chain saw or mulcher chipper used.	• Posting/access control. • Hearing protection.[d] • Eye protection. • Gloves and chaps. • Proper lifting techniques. • Dust control.	MPSC on site. Notify MPSC before beginning.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	SWP, if chain saw or mulcher chipper used.	• Hearing protection.[d] • Eye protection. • Gloves and chaps. • Proper lifting techniques. • Dust control.	
	REM.17	Operate dust suppression equipment. • Potential exposure to contaminants. • Ground personnel in the vicinity of working equipment.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Backup alarms. • Spotters (if necessary). • Eye contact (operator/worker).	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Backup alarms. • Spotters (if necessary). • Eye contact (operator/worker).	
	REM.18	Remediate using HEPA-filtered vacuum method. • Potential exposure to contaminants. • Ground personnel in the vicinity of working equipment. • Potential exposure to electrical shock. • Potential exposure to high noise.[d]	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Use of GFCI. • Hearing protection.[d] • Equipment inspections.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None	• Use of GFCI. • Hearing protection.[d] • Equipment inspections.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, Training Program.
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]When noise levels exceed the action limit.

Moab Site and Vicinity Properties Task-Specific Requirements—Soil Verification

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Soil Verification[d]	SV.1	Verify adequate removal of RRM material using gamma scan. • Potential exposure to contaminants. • Ground personnel in the vicinity of working equipment.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	None	None		

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, Training Program.
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]See tasks SAM.5 and SAM.7 for sampling tasks associated with ponds.

Moab Site and Vicinity Properties Task-Specific Requirements—Decontamination

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Decontamination	DEC.1	Decontaminate vehicles, debris, and equipment using high-pressure washer. • Potential exposure to contaminants. • Eye injuries. • Spread of contamination to clean areas from overspray and runoff. • Potential exposure to pressurized fluids. • Potential exposure to high noise.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	Respirator Wearer High-pressure washer instruction	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • High-pressure washer instruction (JSA or SWP). • Protection splash/eye. • Only decontamination personnel on pad while high pressure sprayer energized. • Isolate and depressurize system before attaching or detaching hoses and nozzles. • Hearing protection.[d]	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4					
			Outside Contamination Area.	MD-4		None	None	• High-pressure washer instruction (JSA or SWP). • Protection splash/eye. • Only decontamination personnel on pad while high-pressure sprayer energized. • Isolate and depressurize system before attaching or detaching hoses and nozzles. • Hearing protection.[d]	
	DEC.2	Decontaminate materials and equipment using hand decontamination methods, NOT pressure washing. • Potential exposure to contaminants. • Stored energy. • Spread of contamination to clean areas from overspray and runoff. • Potential exposure to high noise.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	Respirator Wearer	IH-3 IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • De-energize electrical equipment. • Control of kinetic energy. • Hearing protection.[d]	MPSC on site.
			Dust level ≥ 1.5 mg/m^3 in Contamination Area.	C-4					
			Outside Contamination Area.	MD-4		None	None	• De-energize electrical equipment. • Control of kinetic energy. • Hearing protection.[d]	
	DEC.3	Decontaminate PPE (if nondisposable PPE is used). • Potential exposure to contaminants. • Spread of contamination to clean areas from overspray and runoff.	Dust level < 1.5 mg/m^3	MD-4	Respirator Wearer High-pressure washer instruction	RAD-1b RAD-1d RAD-2a RAD-4d	None	• Posting/access control. • High-pressure washer instruction (JSA or SWP). • Protection splash/eye. • Only decontamination personnel on pad while high pressure sprayer energized.	MPSC on site.
			Dust level ≥1.5 mg/m^3	C-4					
	DEC.4	Remove PPE. • Potential exposure to contaminants.	Radiological Buffer Area (RBA) or CRC.	Not applicable	None	RAD-2a	RWP	• Posting/access control. • Avoid cross-contamination when removing PPE. • Touch only inside surfaces of PPE when removing. • Whole body frisk following PPE removal.	MPSC on site.

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, Training Program.
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]When noise levels exceed the action limit.

Moab Site and Vicinity Properties Task-Specific Requirements—Reconstruction

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Reconstruction (Unless otherwise specified, all reconstruction tasks are assumed to be performed in "clean" areas.)	REC.1	Haul, backfill, and compact clean material. • Ground personnel in the vicinity of working equipment. • Dust exposure.	Dust level < 5.0 mg/m^3	D-1	None	IH-8 IH-9 IH-10	None	• Dust suppression. • Spotters (if necessary). • Eye contact (operator/worker). • Backup alarms. • Ground personnel out of operating area.	MPSC on site.
			Dust level ≥ 5.0 mg/m^3	C-5	Respirator Wearer				
	REC.2	Perform final grading. • Ground personnel in the vicinity of working equipment. • Dust exposure.	Dust level < 5.0 mg/m^3	D-1		IH-8 IH-9 IH-10	None	• Dust suppression. • Spotters (if necessary). • Eye contact (operator/worker). • Backup alarms. • Ground personnel out of operating area.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3	C-5	Respirator Wearer.				
	REC.3	Rebuild structures, fences, etc. • Work overhead. • Injuries from use of hand tools. • Potential dust exposure. • Slips, trips, and falls. • Potential exposure to electric shock. • Underground utilities.	Dust level < 5.0 mg/m^3	D-1	Fall protection training in accordance with CFR 1926.503. Ladder training in accordance with CFR 1926.1060.	IH-8 IH-9 IH-10	Local government building permit	• Dust suppression. • Spotters (if necessary). • Eye contact (operator/worker). • Backup alarms. • Ground personnel out of operating area. • Use of GFCI. • Equipment preoperational inspection and safety check. • Use of fall protection when working 6 ft or more above ground level. • Locate utilities (LES.2).	
			Dust level ≥ 5.0 mg/m^3	C-5	Respirator Wearer. Fall protection training in accordance with CFR 1926.503. Ladder training in accordance with CFR 1926.1060.				
	REC.4	Install erosion control structures and materials. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Injuries from use of hand tools and post driver.	Dust level < 5.0 mg/m^3 in Contamination Area.	MD-4	None	IH-8 IH-9 IH-10 RAD-1b RAD-1d RAD-2a RAD-4d	RWP	• Posting/access control. • Gloves. • Eye protection.	MPSC on site.
			Dust level ≥ 5.0 mg/m^3 in Contamination Area.	C-4	Respirator Wearer				
			Outside Contamination Area.	D-1	None	IH-8	None	• Gloves. • Eye protection.	
	REC.5	Prepare, amend, and seed clean topsoil. • Potential exposure to chemical soil amendments. • Ground personnel in the vicinity of working equipment. • Potential exposure to high noise.	Dust level < 5.0 mg/m^3 in Contamination Area.	D-1	None	IH-8 IH-9 IH-10	None	• Hearing protection.[d] • Personnel out of operating area during machine operations.	
			Dust level ≥ 5.0 mg/m^3 in Contamination Area.	C-5	Respirator Wearer				

Moab Site and Vicinity Properties Task-Specific Requirements—Reconstruction (continued)

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Reconstruction (Unless otherwise specified, all reconstruction tasks are assumed to be performed in "clean" areas.)	REC.6	Mix and pour concrete. • Potential exposure to silica and respirable dust. • Potential exposure to corrosive material. • Machine hazards (e.g., rotating or reciprocating parts, nip points, noise, ignition sources, exhaust fumes and vapors). • Ground personnel in the vicinity of working equipment.	Dust level < 5.0 mg/m^3 in Contamination Area.	D-1	None	IH-8 IH-9 IH-10	None	• Hearing protection.[d] • Machine guarding. • Minimize generation of dust. • Backup alarms. • Spotters (if necessary). • Eye contact (operator/worker).	
			Dust level ≥ 0. mg/m^3 in Contamination Area.	C-5	Respirator Wearer				

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, Training Program.
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.
[d]When noise levels exceed the action limit.

Moab Site and Vicinity Properties Task-Specific Requirements—Equipment Operations, Ground Water Site Characterization, and Ground Water Remedial Actions

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0 PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Equipment Operations	E.0.1	Operate heavy equipment. • Potential exposure to contaminants. • Hazards inherent to operating equipment.	Dust level < 1.5 mg/m^3 in Contamination Area.	MD-4	None	IH-1/2 IH-3 IH-8a/b IH-9 IH-10c Radiological dose rate, air, and personnel monitoring	RWP	• Posting/access controls. • Briefing for site work and conditions. • Equipment operational inspection and safety checks. • Equipment operator qualifications. • Periodic safety oversight.	MPSC support for all operations inside Contamination Area.
			Dust level > 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer		RWP		
			Outside Contamination Area.	D-1	None		JSA/SWP/Lift Plan		
Ground Water Site Characterization	GW.1	• Well installation. • Water sampling. • Water discharges. • Drilling.	Dust level < 1.5 mg/m^3	MD-2	None	IH-1/2 IH-3 IH-8a/b IH-9 IH-10c Radiological dose rate, air, and personnel monitoring	RWP	• Posting/access and contamination controls if in contamination area. • Follow drilling plan requirements • Follow ground water procedures and use JSAs as necessary.	MPSC support for all operations inside Contamination Area.
			Dust level > 1.5 mg/m^3 in Contamination Area.	C-2	Respirator Wearer		RWP		
			Outside Contamination Area.	MD-5	None		JSA		
Ground Water Remedial Actions	GW.2	• General construction including excavation, heavy equipment, and electrical work. • Well Installation. • Drilling.	Dust level < 1.5 mg/m^3	MD-4	None	IH-1/2 IH-3 IH-8a/b IH-9 IH-10c Radiological dose rate, air, and personnel monitoring	RWP	• Posting/access and contamination controls if in contamination area. • Follow drilling plan requirements. • Develop JSAs for each task.	MPSC support for all operations inside Contamination Area.
			Dust level > 1.5 mg/m^3 in Contamination Area.	C-4	Respirator Wearer		RWP		
			Outside Contamination Area.	D-1	None		JSA		

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, Training Program.
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

End of current text

Appendix B

Crescent Junction
Task-Specific Requirements Table

Crescent Junction Task-Specific Requirements—Equipment Operations, Site Characterization, Site Access Road, Rail Siding, Utilities, and Support Trailer Installation

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0 PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Equipment Operations	E.0.1	• Operate heavy equipment. • Hazards inherent to operating equipment.	Dust level < 1.5 mg/m^3	D-1	None	IH-1/2 IH-3 IH-8a/b IH-9 IH-10c	JSA/SWP/Lift Plan	• Posting/access controls. • Briefing for site work and conditions. • Equipment operational inspection and safety checks. • Equipment operator qualifications. • Periodic safety oversight.	MPSC support.
			Dust level > 1.5 mg/m^3	C-5	Respirator Wearer				
Site Characterization	GW.3	• Well installation. • Water sampling. • Drilling.	Dust level < 1.5 mg/m^3	D-1	None	IH-1/2 IH-3 IH-8a/b IH-9 IH-10c	JSA	• Posting/access • Follow drilling plan requirements • Follow ground water procedures and use JSAs as necessary. • Safety oversight	MPSC support
			Dust level > 1.5 mg/m^3	C-5	Respirator Wearer				
Construction of Site Access Entrance Road, Rail Siding, installation of domestic and construction water system	CON.1	• General construction including excavation, heavy equipment, and electrical utility installation • Trenching/excavations • Support trailer installation	Dust level < 1.5 mg/m^3	D-1	None	IH-1/2 IH-3 IH-8a/b IH-9 IH-10c	JSA/SWP/Lift Plan	• Posting/access • Develop JSAs for each task. • Safety oversight	MPSC support
			Dust level > 1.5 mg/m^3	C-5	Respirator Wearer				

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, Training Program.
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

Crescent Junction Task-Specific Requirements—Site Tour/Inspection

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Site Tour/Inspection	ST.3	Tour/inspect site on foot or in open vehicle. • Hazards inherent to ongoing site activity.	Dust level < 1.5 mg/m^3	D-1	None	IH-3 IH-8 IH-9 IH-10	None	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Individuals must keep away from immediate work activity and as practical away from more hazardous areas.	MPSC on site.
			Dust level ≥1.5 mg/m^3	C-5	Respirator Wearer				

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

Crescent Junction Task-Specific Requirements—Land Engineering Survey

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Land Engineering Survey	LES.3	Perform land survey of property and rail siding. • Hazards inherent to ongoing site activity. • Exposure to electrical shock.	Dust level < 1.5 mg/m^3	D-1	None	IH-3 IH-8 IH-9 IH-10	None	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥ 1.5 mg/	C-5	Respirator Wearer			• Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	
	LES.4	Locate utilities using a non-intrusive line tracer or power line detector. • Potential exposure to contaminants. • Hazards inherent to ongoing site activity. • Exposure to electrical shock.	Dust level < 1.5 mg/	D-1	None	IH-3 IH-8 IH-9 IH-10	None	• Posting/access control. • Prebriefing about ongoing site activities and site conditions. • Equipment preoperational inspection and safety check.	MPSC on site.
			Dust level ≥ 1.5 mg/m^3	C-5	Respirator Wearer				

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.

Crescent Junction Task-Specific Requirements—Mobilization

Task Category	Task No.	Task Description and Task Hazards[a]	Location or Condition Where Task Is Performed	PPE Level Prescribed in Section 5.0, PPE	Additional Task-Related Training Required[b]	Personnel Monitoring Required[c]	Permits Required	Task-Specific Hazard Control Requirements	Health and Safety Coverage/ Notification Required
Mobilization	MOB.4	Establish site control zones and boundaries. • Injuries from use of hand tools and post driver.	Dust level < 1.5 mg/m^3	D-1	None	IH-3 IH-8 IH-9 IH-10	JSA	• Posting/access control. • Gloves. • Eye protection.	MPSC on site prior to establishing zones. MPSC oversight required to post radiological signs and erect barriers.
			Dust level ≥ 1.5 mg/m^3	C-5	Respirator Wearer				
	MOB.5	Set up decontamination station and dust control equipment. • Lifting and carrying heavy objects.	All	D-1	None	None	Notice to Proceed	• Proper lifting techniques. • Mechanical lifting aids.	MPSC on site.
	MOB.6	Set up equipment for field tasks.	All	D-1	None	IH-3 IH-9 IH-10	SWP	• Posting/access control. • Prebriefing about ongoing site activities and site conditions.	MPSC on site.
						None	SWP	• Prebriefing about ongoing site activities and site conditions.	

[a]These generic hazards may be further defined by subcontractor work practice and/or equipment used.
[b]These training requirements are in addition to the requirements in Section 6.0, "Training Program."
[c]Breathing zone monitoring will be accomplished until the task's exposure is quantified.