



CS-SH-PN-031

Breckenridge Disposal Site Remediation Project Health & Safety Plan

Revision 0

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1.0 PURPOSE AND SCOPE

1.1 Purpose

The EnergySolutions Industrial Safety & Hygiene Program establishes the program activities required to provide a safe working environment for our employees and subcontractors and improve safety performance while complying with regulatory requirements.

The safety of EnergySolutions employees, subcontractors, and the public is our principal core value. EnergySolutions shall perform all work activities in a safe and professional manner that will not create a hazard to health, property, and/or the environment. All EnergySolutions employees and subcontractors are responsible for full compliance with EnergySolutions procedures, OSHA, and MIOSHA regulations.

All EnergySolutions employees and subcontractors are encouraged to report safety or health concerns to their supervision without fear of reprisal. Supervision shall not reprimand or take disciplinary action against employees or subcontractors for reporting such concerns. If immediate supervision fails to act, then the employee is encouraged to report the concern to the next level of line management, once again, without fear of reprisal. EnergySolutions employees may also report their safety or health concerns to MIOSHA and/or the Nuclear Regulatory Commission (NRC) without fear of reprisal. Safety and health concerns may also be reported using the EnergySolutions Silent Whistle Program, phone number (877) 874-8416.

EnergySolutions employees and subcontractors are responsible for complying with all facility safety and health policies, and procedures, to ensure that safety is the key consideration during the performance of all work activities, including the support of all safety and health proactive programs and committee actions.

1.2 Site History

Between 1967 and 1970, the Breckenridge Disposal Site was used for the disposal of process wastes from an yttrium recovery operation managed by Michigan Chemical Corporation (MCC). These disposal activities were authorized under U.S. Atomic Energy Commission (AEC) License Number SMB-0833 and were performed in accordance with 10 CFR 20.304, "Disposal by Burial in the Soil." The buried waste material is a solid waste byproduct known as filtercake, which originated from a rare-earth metal (yttrium) extraction process. Disposal records reported that the filtercake was typically a dense, clay-like material containing elevated levels of naturally occurring uranium and thorium. After site operations ceased, AEC License Number SMB-0833 was terminated.

The Breckenridge Disposal Site (Site) is located on Madison Road about 4 miles east of downtown St. Louis, Bethany Township, Michigan. The Breckenridge property is a narrow triangular-shaped parcel of land that is mostly flat and grassy with scattered large

trees. The Site, bounded by Madison Road on the north, by Bush Creek on the east, and by farmland on the west, is about 5,100 square meters (m²) in size. The nearest residence is located approximately 0.2 kilometers to the east across Bush Creek. A six-foot high chain-link fence controls access to the Site. Figures 1 and 2 of the work plan provide the site location and site layout maps.

The Breckenridge Disposal Site work scope is to remove radioactive waste filtercake or contaminated soils from the Site and release the Site for unrestricted use.

2.0 REFERENCES

Compliance with the following references ensures that *EnergySolutions* performs their work activities in a manner that is protective of the environment, ensures the safety and health of its employees, subcontractors, and the general public; and complies with the applicable federal and state regulations; and the *EnergySolutions* procedures and requirements.

Regulations and procedures not identified below that are applicable to *EnergySolutions* work activities shall be incorporated into the work activity and included below upon notification to the *EnergySolutions* Health & Safety Officer.

- 2.1 10 CFR 26 – Fitness For Duty Programs
- 2.2 29 CFR 1910 – Occupational Safety and Health Standards
- 2.3 29 CFR 1926 – Safety and Health Regulations for Construction
- 2.4 CL-SH-PR-052: Safe Rail Operations
- 2.5 ES-AD-PR-005, First Notifications
- 2.6 ES-SH-PR-008, Adverse Weather and Temperature Extremes
- 2.7 ES-SH-PR-015, Lifting and Rigging
- 2.8 ES-SH-PR-018, Medical Surveillance
- 2.9 ES-SH-PR-101, Job Hazard Analysis
- 2.10 ES-SH-PR-104, Emergency Response
- 2.11 ES-SH-PR-106, Personal Protective Equipment
- 2.12 ES-SH-PR-108, Lifting and Rigging
- 2.13 ES-SH-PR-109, Excavation and Trenching

- 2.14 ES-SH-PR-200, Industrial Hygiene Program
- 2.15 ES-SH-PR-301, Bloodborne Pathogens
- 2.16 ES-SH-PR-303, Hazard Communication
- 2.17 ES-SH-PR-305, Hearing Conservation
- 2.18 ES-SH-PR-306, Adverse Weather and Temperature Extremes
- 2.19 ES-SH-PR-401, Medical Surveillance
- 2.20 ES-SH-PR-402, Case Management of Occupational Injuries
- 2.21 MIOSHA Construction Safety and Occupational Health, Part 4 - 42
- 2.22 MIOSHA Health Standards for Construction, Rule 325
- 2.23 MIOSHA Part 9 - Excavation, Trenching, And Shoring
- 2.24 MIOSHA Part 10 - Lifting and Digging Equipment
- 2.25 MIOSHA Part 21 – Powered industrial Trucks
- 2.26 MIOSHA Safety Standards for Construction, Part 1 – 91
- 2.27 NIOSH Pocket Guide to Chemical Hazards
- 2.28 OSHA Technical Manual Section V: Chapter 2 - Excavations: Hazard Recognition In Trenching And Shoring

3.0 GENERAL

3.1 Definitions

- 3.1.1 Bloodborne Pathogens (BBP) - Microscopic organisms present in human blood that can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
- 3.1.2 Buddy System - A system of organizing employees into work groups in such a manner that each employee of the work group is designated to be observed by at least one other employee in the work group. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.
- 3.1.3 Competent Person - A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions

which are hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

- 3.1.4 Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.
- 3.1.5 Hazardous Chemical - A Hazardous Chemical is a substance that presents a significant health or physical hazard. The term includes chemicals that are toxic, corrosive, sensitizing, irritating, flammable, combustible, reactive, explosive, oxidizing, or carcinogenic, and those that have target-organ effects.
- 3.1.6 Job Hazard Analysis (JHA) - Carefully studying and recording each step of a job, identifying existing or potential job hazards (both safety and health hazards), and determining the best way to perform the job to reduce or eliminate these hazards.
- 3.1.7 Near Miss - An event that does not result in an occupational injury, illness, or property loss, but had the potential to do so.
- 3.1.8 Material Safety Data Sheet (MSDS) - A document, provided by the manufacturer or importer of a chemical substance, that presents hazard and safety information on that substance in a standard format.
- 3.1.9 Physical Agent - Physical agents are non-chemical hazards such as noise, heat, stress, lasers, microwaves, or ultraviolet radiation. For the purposes of this procedure, this term does not include ionizing radiation.

3.2 Industrial Safety & Hygiene Program Responsibilities

EnergySolutions employees and subcontractors have specific responsibilities to the Industrial Safety & Hygiene Program, which are detailed below.

- 3.2.1 Project Director
 - 3.2.1.1 Ensure that the project is properly staffed with qualified and competent employees that are adequately trained prior to any work evolutions.
 - 3.2.1.2 Ensure that all activities are performed in accordance with applicable DOT, NRC, MIOSHA, and all applicable Breckenridge procedures, permits, and licenses.
 - 3.2.1.3 Ensure that all applicable documentation is prepared and approved prior to any work evolutions.

- 3.2.1.4 Provide the necessary equipment and supplies to safely and efficiently accomplish the work.
- 3.2.2 Project Manager and/or Designee
 - 3.2.2.1 Adequately evaluate and address employee safety and health concerns with the involvement of the Corporate Director Safety & Health or designee.
 - 3.2.2.2 Adherence to the regulatory and procedural requirements of the References in Section 2.0.
 - 3.2.2.3 Conducting safety briefings and, as necessary, informing all site personnel of potential hazards due to revised tasks and/or site conditions.
 - 3.2.2.4 Coordinate with emergency responders and medical service organizations to establish provided services and verify that Attachment 5.1 - Emergency Response Information (typical) is current, accurate, and posted in a prominent location.
 - 3.2.2.5 Ensure that all *EnergySolutions* employees and subcontractors perform their work activities in accordance with the References in Section 2.0, as applicable.
 - 3.2.2.6 Ensure that all field personnel operating specialized machinery, such as forklifts, cranes, drilling equipment, or earthmoving equipment, have demonstrated competency and have received documented training.
 - 3.2.2.7 Ensure that daily Pre-Job Briefings for *EnergySolutions* and subcontractor employees are conducted and documented.
 - 3.2.2.8 Ensure that there are adequate resources available to support the Industrial Safety & Hygiene Program.
 - 3.2.2.9 Ensure the availability of workplace instructions that are clear and appropriate for the potential risks (produced, where practicable, with the involvement of those undertaking the actual work activity).
 - 3.2.2.10 Evaluate the site for the presence of hazards that have not been adequately identified in the Job Hazard Assessments (JHA) and modify, suspend, or stop work as necessary to

- ensure implementation of the safety measures required to protect personnel.
- 3.2.2.11 Industrial Safety & Hygiene regulatory compliance for all *EnergySolutions* and subcontractor work activities.
 - 3.2.2.12 Maintain or ensure that an individual with current training in First Aid and CPR is available on site.
 - 3.2.2.13 Maintain first aid and Michigan Occupational Safety and Health Administration (MIOSHA) illness/injury logs, report accidents and injuries through the appropriate channels, and conduct accident/incident investigations and documentation as required.
 - 3.2.2.14 Maintaining Industrial Safety & Hygiene related field project records.
 - 3.2.2.15 Perform a Job Hazard Analysis (JHA) of all work activities prior to commencing work activities.
 - 3.2.2.16 Perform frequent Industrial Safety & Hygiene surveillances of *EnergySolutions* and subcontractor work activities. The surveillances will monitor Industrial Safety & Hygiene performance and implementation of the References in Section 2.0.
 - 3.2.2.17 Post and keep current all employee right-to-know information.
 - 3.2.2.18 Provide Competent Person functions as required by OSHA regulations.
 - 3.2.2.19 Providing a minimum three-day notification (excluding weekends and holidays) to the State of Michigan (Miss Dig) in advance of the start of excavation
 - 3.2.2.20 Report all incidents to the Director Health Physics & Radiological Engineering and Corporate Director, Safety & Health.
 - 3.2.2.21 Verifying that onsite personnel have current certification of the applicable training and medical surveillance requirements identified in this HASP.

- 3.2.3 Corporate Director, Safety and Health
 - 3.2.3.1 Ensuring that all employees who are required to use respiratory protection have been medically certified.
 - 3.2.3.2 Development, implementation & maintenance of the EnergySolutions Industrial Safety & Hygiene Program.
 - 3.2.3.3 Direction of Industrial Safety & Hygiene Program applications.
 - 3.2.3.4 Direction and management of the Incident Reporting System.
 - 3.2.3.5 Industrial Safety & Hygiene Program regulatory reporting & safety statistic management.
 - 3.2.3.6 Leading Medical Surveillance Program.
- 3.2.4 Radiation Protection Supervisor
 - 3.2.4.1 Attend Pre-Job Briefings for EnergySolutions and subcontractor work activities, as available.
 - 3.2.4.2 Review and approve all JHA's prior to commencing work.
- 3.2.5 EnergySolutions Employees and subcontractors
 - 3.2.5.1 Notify the Project Manager of any special medical conditions (i.e., allergies, diabetes, pregnancy, back history, claustrophobia, etc.) that may affect their ability to safely perform certain tasks.
 - 3.2.5.2 Notify their supervisor of any prescription and/or non-prescription medication that they may be taking that might cause drowsiness, anxiety, or other unfavorable side affects.
 - 3.2.5.3 Notify their supervisor or the Project Manager of any conditions or concerns, which are not addressed by the protective measures, specified in this HASP, or which are addressed but the employee does not understand.
 - 3.2.5.4 Participate in initial site orientation/training and provide any required documentation, medical clearance, respirator fit test, certification, etc., prior to starting work on the site.

- 3.2.5.5 Perform only those tasks that they have been trained in and feel competent to complete safely.
- 3.2.5.6 Practice good housekeeping by keeping the work areas neat, clean and orderly.
- 3.2.5.7 Properly use PPE specified by the Radiation Work Permit (RWP), JHA, and this HASP.
- 3.2.5.8 Sign Attachment 5.2 - HASP Acknowledgement Form and other required documents after orientation to indicate that they participated in and understood the information presented in orientation.
- 3.2.5.9 Take all reasonable precautions to prevent injury to themselves and to their fellow employees, and being alert to potentially harmful situations.

3.3 Precautions and Limitations

Nothing in this Health and Safety Plan shall be interpreted to conflict with or supersede federal, state, and local regulations, including *EnergySolutions* procedures.

4.0 REQUIREMENTS AND GUIDANCE

4.1 OSHA Regulations

EnergySolutions is committed to performing all work activities in accordance with applicable Federal and State regulations. Michigan is an OSHA Agreement State; OSHA has approved the State of Michigan administering their OSHA Program (MIOSHA) as stated in 29 CFR 1952 Subpart T - Michigan. In accordance with 1952.263(a), the Michigan Occupational Safety and Health Act was enacted on June 18, 1974 and is effective January 1, 1975.

The applicable MIOSHA regulations are detailed in Reference 2.21 - MIOSHA Construction Safety and Occupational Health, Part 4 - 42, Reference 2.22 - MIOSHA Health Standards for Construction, Rule 325, and Reference 2.26 - MIOSHA Safety Standards for Construction, Part 1 – 91.

EnergySolutions will comply with the applicable federal regulation detailed in Reference 2.2 - 29 CFR 1910 – Occupational Safety and Health Standards and 2.3 - 29 CFR 1926 – Safety and Health Regulations for Construction if a MIOSHA regulation does not exist. The applicable MIOSHA regulations are listed in Section 2.0.

4.2 Resolution of Conflicting Requirements

Conflicting requirements will be resolved by the Corporate Director Safety & Health prior to commencing work activities, so that only one approved method of performing work is incorporated into the Breckenridge Disposal Site Remediation Plan. Controlling the interpretation of requirements is necessary so that clear and unambiguous direction is provided to the workforce.

If conflicting requirements are identified during the performance of the Breckenridge Disposal Site Remediation Plan, the affected work activity shall be placed in a safe condition and immediately cease. The EnergySolutions Corporate Director Safety & Health and Project Manager shall be promptly notified. The source of the conflicting requirements shall be investigated and resolved before the work activity is allowed to resume.

4.3 Stop Work Authority

All project personnel have the authority to stop work when health or safety concerns occur. The affected work activity shall be placed in a safe condition and immediately cease until the EnergySolutions Project Manager and/or Corporate Director Safety & Health has investigated and resolved the health or safety concern.

4.3.1 The Corporate Director Safety & Health shall ensure that the necessary actions to correct health and safety concerns are implemented prior to resuming affected work activities, including identification of causal factors, development and implementation of corrective actions, and training of applicable personnel.

4.3.2 Health or safety incidents shall be documented on an EnergySolutions First Notification Report in accordance with Reference 2.5 - ES-AD-PR-005, First Notifications.

4.4 Incident Reporting

All EnergySolutions employees or subcontractors are responsible for reporting events that may injure personnel, damage equipment, or impact the environment, regardless of the perceived severity. Reports shall be made to their immediate supervision and the Project Manager, who will initiate an investigation of the event. All events, including Near Misses, will be documented on an EnergySolutions First Notification Report in accordance with Reference 2.5 - ES-AD-PR-005, First Notifications.

Some events may not meet the criteria of Reference 2.5 - ES-AD-PR-005, First Notifications for reporting purposes; however may be documented for tracking purposes as determined by the Project Manager.

Personnel shall call **911** if available onsite or call the police department as listed in Attachment 5.1 for any event where Emergency Response vehicles (i.e., ambulance) are required.

4.5 Buddy System

EnergySolutions uses a buddy system for all fieldwork activities, including excavation entries and work activities involving potential thermal stress, hot work, lockout/tagout, fall protection, and operation of powered equipment. Individuals may be allowed to work alone under very limited and low hazard circumstances, however these circumstances are considered exceptional in nature.

4.6 Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, toxic gas, which interferes with the oxygen-carrying capacity of blood. Carbon monoxide is non-irritating and can overcome persons without warning. Carbon monoxide is a byproduct of incomplete combustion and requires special monitoring equipment to determine its presence. Work activities that produce carbon monoxide include operation of internal combustion engines.

4.6.1 Safety requirements for carbon monoxide producing work activities include:

4.6.1.1 Ensuring that oxygen air monitoring is performed prior to and continuously during personnel entry into excavations if internal combustion engines are operating adjacent to or in the vicinity of excavation as specified in Section 4.10.6.

4.6.1.2 Evaluation and implementation of alternate work practices, as appropriate, to eliminate or minimize the production of carbon monoxide.

4.7 Contractor Control

Subcontractors will be utilized to perform specific work activities. EnergySolutions shall ensure that work performed by subcontractors is executed per contract document requirements, the work plan, in accordance with applicable EnergySolutions procedures, within the planned budget and schedule, and meets EnergySolutions standards and expectations.

The EnergySolutions Project Manager is the single point of contact directly responsible for overseeing the work activities being performed by subcontractor personnel. The Project Manager is responsible for ensuring that the quality, schedule, budget and performance requirements of the contract are met.

- 4.7.1 Safety Expectations - The subcontractor shall be aware of the *EnergySolutions* focus on personnel and equipment safety.
 - 4.7.1.1 Each subcontractor shall perform their work activities consistent with *EnergySolutions* Standards.
 - 4.7.1.2 Each subcontractor shall promptly report any injury to the Task Manager and conduct injury investigations in accordance with their safety plan.
 - 4.7.1.3 Each subcontractor shall promptly report to the Project Manager any prescription medications or work restrictions ordered by a physician or licensed health care professional for work related injuries and illnesses.

4.8 Drugs and Alcohol

EnergySolutions has zero tolerance for the use or abuse of alcohol or controlled substances. The Fitness for Duty process complies with 10 CFR 26 and is designed to provide reasonable assurance that *EnergySolutions* employees and subcontractors are not under the influence of any substance, legal or illegal, or mentally or physically impaired from any cause, which could adversely affect their ability to safely and competently perform their duties.

For Cause testing shall be performed for all employees and subcontractors involved in an injury requiring medical treatment, accident, near miss, or negligent or careless act.

4.9 Electrical Safety

- 4.9.1 All 120 VAC electrical portable tools and associated cords will be used with a Ground Fault Circuit Interrupter (GFCI). GFCI's shall be visually inspected and tested by the user before each day's use.
- 4.9.2 Extension cords must be inspected prior to use to ensure the cord, plug, and receptacles are free of damage.

4.10 Excavations

EnergySolutions work activities will involve trenching, digging, excavating, penetrating, or disturbing soils. These work activities shall be performed in accordance with Reference 2.13 - ES-SH-PR-109, Excavation and Trenching, Reference 2.23 - MIOSHA Part 9 - Excavation, Trenching, And Shoring, and Reference 2.28 - OSHA Technical Manual Section V: Chapter 2 - Excavations: Hazard Recognition In Trenching And Shoring.

- 4.10.1 An Excavation Permit (Attachment 6.2 of Reference 2.13 - ES-SH-PR-109, Excavation and Trenching) shall be used for the excavation.
- 4.10.2 Excavation soil and rock deposits shall be classified in accordance with Reference 2.23 - MIOSHA Part 9 - Excavation, Trenching, And Shoring.
- 4.10.3 A Competent Person shall be on site whenever excavation work activities are being performed.
- 4.10.4 The State of Michigan (Miss Dig) requires a minimum three-day notification (excluding weekends and holidays) in advance of the start of excavation at (800) 482-7171 or 811. The Project Manager is responsible for performing this prior notification.
- 4.10.5 Damage to underground utilities is credible if *penetration of the earth is required*, i.e., installation of tent stakes, environmental monitoring, etc., even if an excavation is not required or performed.
- 4.10.6 Oxygen monitoring shall be performed before personnel entry into excavations that are more than 4 feet deep. Entry shall not be made into excavations if the oxygen content is less than 19.5%.
- 4.10.7 A standard guardrail consisting of a midrail and toprail (between 38” and 45” above the ground) shall be erected around excavations greater than 4 feet in depth to prevent personnel from falling into the open excavation unless acceptable alternative methods are used to prevent personnel from falling into the open excavation.

Table 1 –Underground Utility Flag Color Codes

Red		Electric
Orange		Telephone; Cable TV; Fire and Police communications
Yellow		Gas and Oil
Green		Storm Drains
Brown		Sewer Systems
Blue		Water Systems
Pink		Survey

4.11 First Aid / Medical Care For Injuries

The EnergySolutions Project Manager, Radiation Protection Supervisor, or the Project Health Physicist shall be certified in First Aid and CPR. All injuries, no matter how slight, shall be reported to the Project Manager. EnergySolutions shall:

- 4.11.1 Ensure that there are first aid supplies at the jobsite and that the supplies are readily accessible.
- 4.11.2 Ensure the availability of medical personnel for advice and consultation on matters of occupational health.
- 4.11.3 Provide proper equipment for the prompt transportation of an injured person to a physician or hospital and a communication system for contacting the necessary emergency service. The telephone numbers of a physician, hospital, or emergency service shall be conspicuously posted at the jobsite (Attachment 5.1 - Emergency Response Information (typical)).
- 4.11.4 First aid kit supplies shall be sealed in individual packages, stored in a weatherproof container, and checked by the EnergySolutions Project Manager or designee before commencing work activities and at least weekly on each job to ensure that expended items are replaced.

4.12 Flammable and Combustible Liquids

Gasoline and / or diesel fuel will be required to operate heavy equipment. Specific safety requirements include:

- 4.12.1 Flammable liquids shall be stored and transported in an approved, properly labeled safety container.
- 4.12.2 Storage areas for flammable and combustible liquids shall be posted NO SMOKING. Smoking is prohibited when refueling heavy equipment.
- 4.12.3 When pouring, pumping, or transferring gasoline or other flammable liquids between containers, keep metallic contact between the containers by physical contact or bonding together to prevent discharging sparks of static electricity. When filling gasoline tanks of vehicles and equipment:
 - 4.12.3.1 The engine must be shut off.
 - 4.12.3.2 All open flames, including smoking materials, shall be extinguished.

4.12.3.3 The nozzle of the gasoline hose shall be in contact with the metal opening of the gas tank to prevent static discharge.

4.13 Forklifts (Powered Industrial Trucks)

Forklifts shall be operated in accordance with Reference 2.25 - MIOSHA Part 21 – Powered industrial Trucks.

4.13.1 An ABC fire extinguisher shall be readily available and in operable condition on each forklift.

4.13.2 “Free Rigging” (the direct attachment to or placement of rigging equipment, i.e., slings, shackles, rings, etc.), onto the tines of a forklift for a below the tines lift is prohibited unless written approval from the manufacturer is provided. The Project Manager shall obtain the manufacturers written approval prior to free rigging.

4.13.3 A daily inspection of the forklift shall be performed and documented. Forklifts requiring maintenance shall not be operated until repairs have been made.

4.13.4 An operable backup alarm is required on all forklifts.

4.13.5 Drive the forklift in reverse with the load trailing; using signalmen and spotters, whenever the load being carried obstructs forward view.

4.13.6 Lower forks, neutralize controls, shut-off power and set brakes whenever leaving forklift unattended. The operator shall remain in the forklift whenever a load is elevated.

4.13.7 Never allow personnel to stand or pass under the elevated portion of any forklift, whether loaded or unloaded.

4.13.8 Personnel operating forklifts shall be trained and authorized to operate the specific make / model. Training shall be performed initially / prior to operation and on a triennial basis.

4.13.9 Seat belts (if so equipped) shall be worn when operating the forklift.

4.13.10 Wheel chocks shall be installed on all forklifts when parked unattended on an incline.

4.14 Hazard Communication (Right To Know)

EnergySolutions is committed to eliminating or minimizing personal exposure to chemical hazards in accordance with Reference 2.16 - ES-SH-PR-303, Hazard Communication. Chemical hazards are managed by proper housekeeping,

establishing barriers with appropriate postings, training, monitoring of the chemical hazard, and compliance with the applicable procedures and regulations.

4.14.1 Material Safety Data Sheets (MSDS) shall be available in a readily assessable location at the work site for all hazardous chemicals; the planned location is the Project Manager's Desk. The MSDS contents shall be incorporated into the Hazard Communication Training provided to all EnergySolutions employees and subcontractors.

4.14.2 All chemical products must be reviewed and approved by the Project Manager, prior to bringing onto Breckenridge Property.

4.15 Hazards, Biological

Biological hazards include plants and animals/insects that when present or contacted present a potential hazard to EnergySolutions employees or subcontractors. The Project Manager shall perform a Hazard Assessment of the work area for biological hazards prior to commencing work activities and provide training to employees and subcontractors for the identified biological hazards.

4.16 Hearing Conservation

The EnergySolutions Hearing Conservation Program has been established to protect employees from the adverse effects of excessive noise. Elements of the Hearing Conservation Program include:

4.16.1 Audiometric testing.

4.16.2 Implementation of administrative controls (such as job rotation, re-assignment to tasks with less exposure to noise, and establishment of quiet zones for work breaks) to minimize worker exposure whenever engineering controls are not feasible.

4.16.3 Training.

4.16.4 Use of hearing protection in posted areas, operating power tools, and whenever noise levels are equal to or exceed 85 dBA.

4.17 Heavy Equipment

Heavy equipment (backhoes, mobile cranes, flatbed trucks, etc.) will be required to safely perform the Breckenridge Disposal Site Remediation. Heavy equipment operators shall be alert of personnel at all times; personnel shall be alert of heavy equipment operations at all times.

4.17.1 An ABC fire extinguisher shall be readily available and in operable condition on each piece of heavy equipment.

- 4.17.2 An operable backup alarm is required on all heavy equipment.
- 4.17.3 Wheel chocks shall be installed on all wheeled heavy equipment when parked unattended on an incline.
- 4.17.4 Every effort shall be made by all personnel to maximize their distance from operating heavy equipment including:
 - 4.17.4.1 As necessary, establishing safety barriers or assigning dedicated spotters to keep personnel out of the pathway of operating heavy equipment.
 - 4.17.4.2 Evaluate alternate pathways to maintain adequate distance from the heavy equipment operating area.
 - 4.17.4.3 If personnel entry / passage through a heavy equipment operating area is required:
 - 4.17.4.3.1 When safe (i.e., not during a crane lift), establish eye/verbal contact with the heavy equipment operator.
 - 4.17.4.3.2 Indicate where you need to pass through and obtain permission from the heavy equipment operator prior to entry.
 - 4.17.4.3.3 Enter and pass through the heavy equipment operating area after verification that heavy equipment movement has ceased.
 - 4.17.4.3.4 After passing through the heavy equipment operating area, establish eye/verbal contact with the heavy equipment operator to signal him/her that you have cleared the area.
- 4.17.5 Seat belts (if so equipped) shall be worn when operating heavy equipment.

4.18 Housekeeping

Housekeeping shall be performed on an ongoing basis and at the end of each shift to maintain a safe working environment. At the completion of the work activity the work area should be returned to a condition equivalent to, or better, than when work commenced. Housekeeping includes:

- 4.18.1 Combustible scrap and debris shall be removed in a safe manner from the work area at reasonable intervals.

- 4.18.2 Garbage capable of rotting or becoming putrid shall be placed in a covered container. Container contents shall be disposed of at frequent and regular intervals.
- 4.18.3 Material which may be dislodged by wind and that could create a hazard when left in an open area shall be secured.
- 4.18.4 Materials, including scrap and debris, shall be piled, stacked, or placed in a container in a manner that does not create a hazard to an employee.

4.19 Job Hazard Analysis

A Job Hazard Analysis (JHA) will define minimum requirements and responsibilities to identify, analyze and control potential hazards or risks associated with specific work activities and equipment operation with the goal of preventing occupational injuries and illnesses.

- 4.19.1 Prior to commencing work, *EnergySolutions* will conduct a hazard assessment for each activity. The Project Manager and Radiation Protection Supervisor (RPS) will complete this assessment. For each hazard identified, a hazard control will be developed and documented in the job specific JHA. Specific safety hazards that will be addressed include:

- 4.19.1.1 Control of radioactive airborne contamination.

- 4.19.1.2 Fall protection, excavation, and ladder safety.

- 4.19.2 JHA's shall be performed in accordance with Reference 2.9 - ES-SH-PR-101, Job Hazard Analysis. The JHA shall be incorporated into the Pre-Job Briefing.

4.20 Ladders

- 4.20.1 A ladder shall be used to enter excavations greater than 4 feet in depth. The ladder shall project at least three rungs above ground elevation and shall be within 25 feet lateral distance to the personnel in the excavation.

4.21 Material Handling

Material handling is defined as the movement, either manually or with equipment, of material from one location to another for use and/or storage.

- 4.21.1 Personnel shall not lift weight greater than 50 pounds without assistance.

- 4.21.2 Personnel shall not move large or bulky objects that obstruct forward vision without use of an additional spotter.
- 4.21.3 Proper manual material handling requirements include:
 - 4.21.3.1 Plan the work in advance. Consider the size, shape, and weight of materials to be handled and determine the most efficient and safest method to accomplish the task.
 - 4.21.3.2 Ensure that the proper tools are available for the work to be performed.
 - 4.21.3.3 Consider alternate methods to reduce the risk of injury.
 - 4.21.3.4 Select employees so that work assignments match the worker to the job in terms of knowledge and physical abilities.
 - 4.21.3.5 Review unusual or high-risk operations to ensure that hazards are mitigated.
 - 4.21.3.6 Ensure that proper personal protective equipment is available and worn.
 - 4.21.3.7 Avoid hazards such as sharp edges, odd sizes or shapes of loads, hazardous or fragile material, uneven weight distribution, and obstructed routes of travel while lifting and carrying.
 - 4.21.3.8 Ensure that when more than one person is involved in lifting, that they move materials in unison. Each employee should be alert for what the others are going to do and when.
- 4.21.4 Proper material storage requirements include:
 - 4.21.4.1 Ensure that both temporary and permanent storage are neat and orderly.
 - 4.21.4.2 Ensure that material/equipment is placed in a stable, secure manner so as not to fall or become inadvertently displaced where it could cause personnel injury.

4.22 Medical Exposure Records

EnergySolutions maintains medical exposure records for *EnergySolutions* employees who must be medically evaluated to perform their work activities and/or who are monitored to assess potential exposures to workplace hazards.

4.22.1 These medical exposure records are maintained in accordance with Part 1020 of Reference 2.2 - 29 CFR 1910 – Occupational Safety and Health Standards.

4.22.2 *EnergySolutions* maintains medical exposure records on site. These shall be transferred to the *EnergySolutions* Corporate Director, Safety & Health at the completion of the Breckenridge Disposal Site Remediation Project.

4.22.3 Medical exposure records are confidential. Each employee has the right to examine and copy these records. The individual responsible for maintaining and providing access to these records is the Project Manager.

4.23 Medical Surveillance Program

EnergySolutions employees are required to participate in a medical monitoring program as described in Reference 2.8 - ES-SH-PR-018, Medical Surveillance. The program describes the frequency of monitoring and the type of examinations to be performed. The physical is intended to verify that the individual is medically fit to work in an occupational environment.

4.23.1 Physical evaluations are required for all personnel who are:

4.23.1.1 Crane Operators.

4.23.1.2 Performing work activities that require medical evaluation in accordance with OSHA regulations, as determined by the Corporate Director Safety & Health.

4.23.2 The physical examination may include some or all of the following:

4.23.2.1 Audiogram

4.23.2.2 Blood analysis

4.23.2.3 Fitness For Duty

4.23.2.4 Medical and occupational history questionnaire

4.23.2.5 Physical examination

4.23.2.6 Pulmonary Function Test

4.23.2.7 Visual acuity

4.23.2.8 Follow-up tests at the discretion of the physician.

4.23.3 The Physician or Licensed Health Care Professional (PLHCP) will provide a letter to *EnergySolutions* confirming the individual's fitness for work and the ability to wear a respirator (if required).

4.23.4 Medical surveillance records shall be retained for the duration of the individual's employment plus thirty years. The Project Manager shall establish an Employee Medical Exposure File to maintain these records for each individual in the Medical Surveillance Program.

4.24 Personal Protective Equipment (PPE)

EnergySolutions will provide PPE to our employees, other than specialized PPE (i.e., prescription safety glasses or safety shoes/boots). PPE shall be worn in accordance with Reference 2.11 - ES-SH-PR-106, Personal Protective Equipment. PPE shall be inspected by the user prior to use. Defective or damaged PPE shall be destroyed to prevent further use.

4.24.1 The Hazard Assessment performed by the Project Manager will identify PPE required for a specific work activity.

4.24.1.1 The minimum PPE requirements for *EnergySolutions* work activities should be work gloves, hard hat, safety glasses, and safety shoes/boots.

4.24.1.2 PPE requirements will be disseminated at the Pre-Job Briefing.

4.25 Pre-Job Briefings / Post Job-Critiques

4.25.1 Pre-Job Briefings are performed prior to performing work activities to ensure that personnel fully understand how to perform the work activity in a safe manner. The Project Manager or designee is responsible for performing the Pre-Job Briefing with all personnel directly involved in the work activity.

4.25.1.1 Pre-Job Briefings shall be performed daily or more frequently if the Project Manager determines that work conditions have significantly changed from the daily Pre-Job Brief.

4.25.1.2 Pre-Job Briefings shall be documented on Attachment 5.3 - Pre-Job Briefing Form; completed Pre-Job Briefing Attendance Forms will be maintained with the Breckenridge Disposal Site Remediation Work Plan.

4.25.1.3 Pre-Job Briefings are not required for administrative tasks and housekeeping activities.

4.25.2 Post-Job Critiques, including Lessons Learned, shall be performed as deemed necessary per the Project Manager or the work plan.

4.26 Safety Barriers and Postings

EnergySolutions shall establish safety barriers, barricades, and warning systems (signs), as appropriate, to notify personnel of safety hazards in the work area.

4.27 Sanitation

Proper sanitary facilities will be provided for *EnergySolutions* employees and subcontractors. These facilities include:

4.27.1 Potable water.

4.27.2 Toilets.

4.27.3 Washing facilities.

4.28 Severe Weather

Severe weather conditions may cause the suspension of outdoor work activities. As severe weather approaches, the affected work activity shall be placed in a safe condition and immediately cease. *EnergySolutions* will provide shelter and evacuation instructions to *EnergySolutions* employees and subcontractors.

4.28.1 In accordance with Reference 2.6 - ES-SH-PR-008, Adverse Weather and Temperature Extremes, when lightning is visible, and thunder is audible, and appears to be within 3 miles (approximately) all *EnergySolutions* employees and subcontractors working outdoors shall leave high points (i.e., roofs, ladders, etc.).

4.28.2 Personnel in an exposed area (open field, top of a cell, etc.) shall go inside a building or an enclosed vehicle with rubber tires.

4.28.3 The distance of the lightning from the work area may be estimated by applying a distance of one mile for every five seconds between seeing the lightning and hearing the thunder.

4.28.4 Outdoor work activities may resume when lightning and/or thunder has ceased for a minimum of 30 minutes.

4.29 Thermal Stress (Heat and Cold Stress)

4.29.1 Heat Stress is not anticipated to be a concern as the Breckenridge Disposal Site Remediation Project is scheduled to commence in November.

4.29.2 Cold Stress

4.29.2.1 Four factors contribute to cold stress: cold air temperatures, high velocity air movement, dampness of the air, and contact with cold water or surfaces. A cold environment forces the body to work harder to maintain its temperature. Cold air, water, and snow all draw heat from the body. Wind chill is the combination of air temperature and wind speed.

4.29.2.2 Causal Factors - workers are at increased risk when:

4.29.2.2.1 They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.

4.29.2.2.2 They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).

4.29.2.2.3 They are in poor physical condition, have a poor diet, or are older.

4.29.2.3 Cold weather presents challenges that must be recognized and properly managed to ensure the safety of our employees. Winter safety controls shall be in accordance with Reference 2.6 - ES-SH-PR-008, Adverse Weather and Temperature Extremes. Proper control measures include:

4.29.2.3.1 Dress properly for cold weather.

4.29.2.3.2 Use the clearest, salted and/or sanded pathways whenever available, even if this means taking a longer route.

4.29.2.3.3 Wear boots or overshoes with clean grip soles; personnel are encouraged to wear foot traction

devices when walking on snow-covered surfaces.

- 4.29.2.3.4 Take short steps (maintain your body weight over your feet)

4.30 Tool Safety

EnergySolutions will use power and hand tools to perform our work activities. Important safety requirements include:

- 4.30.1 All power tools shall be equipped with a three-wire (ground) system and three-pole plug, or be double-insulated. Always inspect the plug to ensure the third (ground) prong has not been cut off when using the three-wire system.
- 4.30.2 Knives - the improper use of knives can cause serious injury.
 - 4.30.2.1 The Project Manager shall provide an approved knife, if required.
 - 4.30.2.2 Cut-resistant gloves should be worn when using a knife.
 - 4.30.2.3 Fixed blade knives shall be sheathed when not in use.
 - 4.30.2.4 Knife blades shall be maintained in a sharp condition. A dull blade presents greater risk due to the additional force required to cut through the material.
 - 4.30.2.5 Razor knives shall have automatic self-retracting blades.
- 4.30.3 Never throw or drop tools from one worker to another, or to a different elevation.
- 4.30.4 The ignition wire shall be disconnected from the spark plug prior to performing maintenance on any gasoline-powered equipment. A minimum 20-pound ABC fire extinguisher is required to be available in the area when operating gasoline-powered tools.
- 4.30.5 The proper tool shall be used for the job. Makeshift tools or use of a tool beyond its capability is prohibited (i.e., a knife is not a pry bar; scissors are not a knife, etc.)
- 4.30.6 Tools shall receive a pre-use inspection by the tool operator to verify that the tool is safe to use. Defective or damaged tools shall be tagged out of service and not used until repaired by qualified personnel.

4.30.7 Use Ground Fault Circuit Interrupters (GFCI) for all portable 120 & 240 VAC electrical tools.

4.31 Training Requirements

The proper training is required to perform work on the Breckenridge Disposal Site Remediation Work Plan. The EnergySolutions Project Manager shall establish a Training Record for EnergySolutions employees and subcontractors to document base competency, prior training that is transferable to EnergySolutions, and to track completion of the project-specific specific training. A list of required training is listed in Table 2 - Training Requirements.

4.31.1 All EnergySolutions employees and subcontractors will review this HASP; this review will be documented on Attachment 5.2 - HASP Acknowledgement Form.

4.31.2 All EnergySolutions employees and subcontractors will receive Site Familiarization training regarding site hazards, site-specific safety requirements, and required PPE. Periodic retraining, as determined to be necessary by the Project Manager, will be held to address changes in field conditions or the introduction of new activities or equipment.

4.31.3 EnergySolutions, or another qualified training provider, as appropriate, will provide any other Industrial Safety training required to perform work activities.

4.31.4 The Project Manager shall ensure that all personnel operating specialized machinery, such as forklifts, cranes, drilling equipment, or heavy equipment, have demonstrated competency or have undertaken documented training.

Table 2 - Training Requirements

Training Certification	Project Manager	Site Workers	Equipment Operators
Biological Hazards	Yes	Yes	Yes
Bloodborne Pathogens	Yes	No	No
CPR / First Aid	Footnote a		
Emergency Response (Attachment 5.1)	Yes	Yes	Yes
Hazard Communication: Right-to-know	Yes	Yes	Yes
Heavy Equipment Operator	No	No	Yes
Personal Protective Equipment (PPE)	Yes	Yes	Yes
Powered Industrial Truck Operation	No	No	Yes
Radiation Worker Training	Yes	Yes	Yes
Site Familiarization / Safety Orientation	Yes	Yes	Yes

^a As a minimum, one individual will have CPR / First Aid training

Attachment 5.1 - Emergency Response Information (typical)

POST IN A PROMINENT LOCATION



NOTIFICATION NUMBERS

ORGANIZATION	NAME	24-HOUR NUMBERS
Project Manager	Bob Hornbeck	(865) 789-2563
Project Health Physicists	Mike Carr	(865) 250-2149
Site Radiation Protection Supervisor	Chuck Irion	(865) 310-2009
Corporate Director Safety & Health	Robert Bergamaschi	(240) 381-7017
Work Care Incident Intervention		(888) 449-7787

OTHER EMERGENCY NOTIFICATION NUMBERS

ORGANIZATION	ADDRESS	24-HOUR NUMBERS
Gratiot Community Hospital	300 E. Warwick Drive	(989) 463-1101
Alma Fire Chief	525 E. Superior Street	(989) 463-8359
Police Department	108 West Saganaw	(989) 681-5285

