Department of Energy
Washington, DC 20585
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U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Deputy Director
Mail Stop T8-F5
Washington, DC 20555-0001

Subject: Aeolian Deposition in the Rock Riprap Cover, Field Work Plan, Bluewater, New Mexico, Disposal Site, August 2019 (NRC Docket No. 40-8902)

To Whom it May Concern:

Enclosed is the final Field Work Plan, *Aeolian Deposition in the Rock Riprap Cover, Field Work Plan, Bluewater Disposal Site, New Mexico, August 2019,* for the U.S. Department of Energy Office of Legacy Management cover study at the Bluewater, New Mexico, Disposal Site. This Work Plan was requested by the Nuclear Regulatory Commission for informational purposes.

Please contact me at (970) 248-6550 or Bernadette.Tsosie@lm.doe.gov if you have any questions. Please send any correspondence to:

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Sincerely,

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Aeolian Deposition in the Rock Riprap Cover, Field Work Plan Bluewater Disposal Site, New Mexico

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Attachment 1 Site-Specific Emergency Response Information, Bluewater, New Mexico, Disposal Site

Abbreviations

AED	automated external defibrillator
$CaCO_3$	calcium carbonate
CFR	*Code of Federal Regulations*
cm	centimeter
CXE	categorical exclusion evaluation
DOE	U.S. Department of Energy
EC	Environmental Compliance
ET	evapotranspiration
ft	feet
ICP-MS	inductively coupled plasma mass spectrometry
JSA	job safety analysis
LM	Office of Legacy Management
LMS	Legacy Management Support
LTS&M	long-term surveillance and maintenance
mL	milliliter
NEPA	National Environmental Policy Act
PIC	person in charge
PPE	personal protective equipment
UMTRCA	Uranium Mill Tailings Radiation Control Act
USDA	U.S. Department of Agriculture
UTV	utility task vehicle
VWC	volumetric soil moisture
XRD	x-ray diffraction

1.0 Introduction

1.1 Study Basis

Natural processes are changing the engineering properties of disposal cell covers (Waugh et al. 2015; NRC 2011). The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is evaluating the pros and cons of these changes in order to better inform long-term surveillance and maintenance (LTS&M) decisions (DOE 2015). At many arid and semiarid sites, aeolian dust is filling the interstitial spaces in rock riprap layers that were designed to control wind and water erosion (NRC 2002). This project will evaluate effects of dust accumulation on cover protectiveness, and address the premise that we can improve remedy sustainability and reduce maintenance costs by managing rock-armored covers as evapotranspiration covers (Waugh et al. 2018).

1.2 Background

Aeolian soil deposition is common in desert environments (e.g., Goldstein et al. 2008) where many Uranium Mill Tailings Radiation Control Act (UMTRCA) disposal cells are located. Rock fragments that occur naturally on desert soil surfaces, and gravel applied as a mulch by ancient and traditional farmers, have both been shown to accelerate dust (silt and clay) accumulation (e.g., Goosens 1994; Xiao-Yan and Lian-You 2003). Dust deposition can lead to the formation of new soil horizons (e.g., McFadden et al. 1998); change the morphology, hydrology, chemistry, erodibility, fertility, and ecology of desert soil profiles (e.g., Dietze et al. 2012); and change the hydraulic conductivity and water storage capacity of soil profiles (e.g., Shafer et al. 2007; Reynolds et al. 2006; Turk and Graham 2011). Desert pavements derived from aeolian deposition may have partially hydrophobic surfaces (Belnap 2006) and, hence, an increased overland runoff flow velocity and a greater potential for erosion (Rodríguez-Caballero et al. 2012). Also, calcium carbonate in dust can accumulate in the underlying soil profile (e.g., Van der Hover and Quade 2002); and nutrients and propagules in the dust can change the composition and productivity of desert ecosystems, producing islands of fertility (e.g., Reynolds et al. 2001; Garner and Steinberger 1989).

Similar to the processes described above, aeolian dust deposition in the interstitial spaces of rock-armored covers may influence the long-term protectiveness of disposal cell covers in both positive and negative ways:

1. Effectively increase radon barrier thickness and radon attenuation.
2. Change the trajectory of ecological succession from deep-rooted to shallow-rooted plant communities.
3. Increase soil water storage capacity and evapotranspiration (ET), effectively accelerating a natural conversion to an ET cover.
4. Increase overland flow velocity, channelize surface runoff, and potentially increase the erodibility of rock, bedding, and radon barrier layers.
5. Lead to the formation of a calcium carbonate layer in the radon barrier, altering water movement and radon diffusion.

1.3 Study Objectives

This study will address several technical and management questions related to the long-term protectiveness of disposal cell covers:

1. What are the rates of soil infilling rock layers?
2. What are the chemical, physical (engineering), biological, and morphological properties of these emerging rock/soil matrixes?
3. How will soil formation influence ecological succession, radon attenuation, water percolation, and erosion of rock-armored covers?
4. How can LM use this information to improve the LTS&M of rock-armored disposal cells?

2.0 Project Scope

2.1 Field Work

All field work will be performed within the DOE boundary of the Bluewater site. Test areas will be identified on the Main Tailings Disposal Cell, the Carbonate Tailings Disposal Cell and in undisturbed areas (off-cell analogous study locations) where desert pavement is likely (Figure 1). Field work includes the characterization of vegetation and thus will be conducted during the growing season, approximately May through September 2019.

2.1.1 Observe Spatial Deposition Patterns

Aeolian deposition was first documented on the site in 2001 during an annual inspection. Inspectors observed a 1000-foot (ft)-wide zone on the eastern half (leeward) of the main tailings disposal cell where the interstitial spaces of the rock riprap layer were filling with soil. Deposition in some locations appeared to be related to construction anomalies, such as different rock sizes and linear features resulting from how rock was placed. At that time, the dust layer was approximately 4 inches below the rock riprap surface and there was no vegetation. By 2004, annual weeds including Russian thistle (*Salsola tragus*) and burningbush (*Bassia scoparia*) began to preferentially establish in areas where dust was accumulating. By 2010, shrubs (fourwing saltbush) (*Atriplex canescens*) and trees (Siberian elm) (*Ulmus pumila*) were observed growing in the dust layers along the eastern slope. At present, aeolian sediments nearly fill riprap interstices on the leeward sides of the main tailings disposal cell cover and the grasses squirreltail (*Elymus elymoides*) and purple threeawn (*Aristida purpurea*) are becoming the dominant species. Less dust accumulation has been observed on the western half (windward side) of the main tailings disposal cell. Dusts are also beginning to accumulate on the top slope of the cover in areas where surface vegetation reduces wind velocity, thereby depositing sediments.

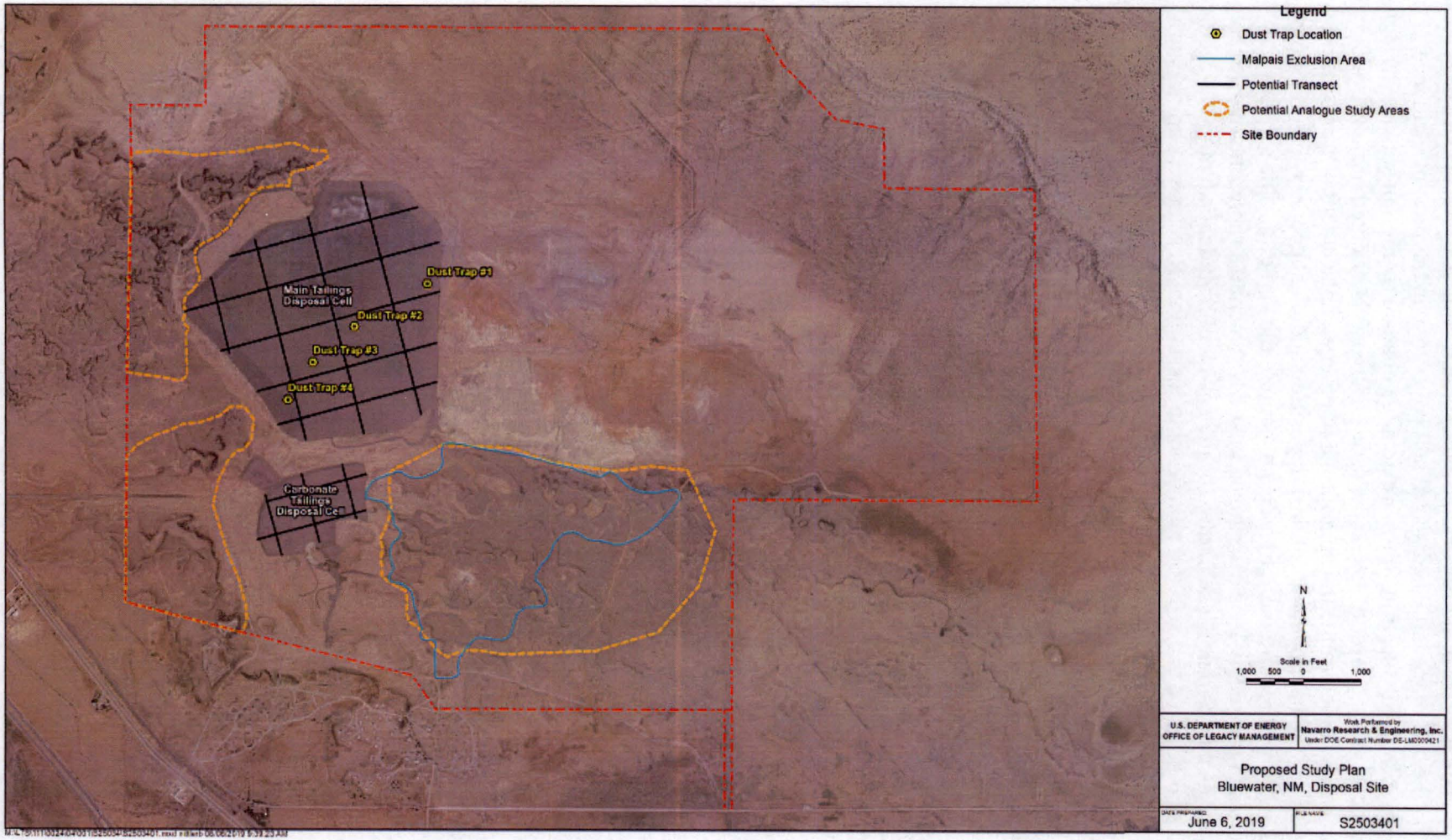

Figure 1. Bluewater, New Mexico, Disposal Site, Showing Areas of Interest for Investigation

Researchers will walk a series of transects crossing the main tailings disposal cell cover and may walk transects on the carbonate tailings disposal cell cover to map the present incidence of dust deposition, and to inform the locations for more detailed characterization in subtask 2.1.3, below. A series of transects oriented west to east and a series of transects oriented north to south will be walked. Researchers will determine the appropriate number and placement of transects after initial observations of the heterogeneity of dust deposition and plant ecology. For example, greater heterogeneity will require more transects to capture the variation. The starting and ending points of each transect will be determined onsite to generate a representative coverage map (see Figure 1 as an example). The corners of the cells will be independently observed. An observation will be made every 300 ft along each transect line. Researchers anticipate approximately 50–60 observations on the main tailings disposal cell and approximately 10 observations on the carbonate disposal cell. The scale and placement of transects in Figure 1 may be modified onsite to capture the needed detail. Observations will include incidence of dust infill (on a scale of 0–5 where 0 = none visible and 5 = rock armor full), plant species and abundance, and photographs of any other observed surface features (i.e., depressions and animal burrowing).

2.1.2 Monitor Dust Accumulation

Custom-designed sediment traps were placed along a SW-to-NE prevailing wind transect on the main tailings disposal cell (Figure 1) during the 2016 *Effects of Soil-Forming Processes on Cover Engineering Properties* field campaign (NRC 2019). Paired traps (one with artificial vegetation to roughly simulate bunchgrass and one without vegetation to roughly simulate open riprap) will be used to measure accumulation rates and to collect samples for laboratory analysis. The artificial vegetation was custom designed to simulate the more-abundant grasses observed on the cover. Short-term accumulation rates in the dust traps will be compared to long-term accumulation rates in open and vegetated areas as observed in the transects (Section 2.1.1).

During this project, dust samples from each trap will be collected and maintenance will be performed on the traps for re-installation. The total volume and weight of each sample will be used to calculate a per unit area deposition rate over the collection period. Depending on sample condition (i.e., whether algae or other biologicals emerge) and quantity, samples will be analyzed for plant-available nutrients, pH, organic matter, total carbon, total nitrogen, electrical conductivity, and calcium carbonate ($CaCO_3$). Total mineralogy of a subset of samples will be performed by x-ray diffraction (XRD).

2.1.3 Characterize Rock and Soil Layer Morphology and Ecology

Along the walking transects, up to 10 small test pits and up to 9 larger gradient test pits will be further characterized. Gradient test pits will be long test pits to evaluate the effects of surface features (e.g. vegetation) on the cover in a gradient away from that feature. Test pits will emphasize the windward-to-leeward transect orientation at the middle of the cell. Additional small test pits (up to 2) will be made at desert pavement analog sites in young lava flows (off the cell). Part of the eastern potential analog area contains the Malpais Exclusion Area in which windblown contaminated material was left in place (Figure 1). No ground-disturbing work will take place in this area at this time. Reconnaissance of this area may be conducted to identify future analog sites, if necessary.

Test pits on the cells will be no deeper than the top 2 inches of the radon barrier and no deeper than 12 inches in the analog locations. The total area of each small test pit (on and off cell) will not exceed 3 × 3 ft. The gradient pits will not exceed 3 ×15 ft in size. Excavations of riprap will be made by hand or with a small spade. Morphological parameters will include plant species and abundance, rock layer depth, depth of infilled dust, depth of rock fines, incidence of carbonate accumulation on undersides of rock armor, presence and taxonomy of biological soil crusts, presence of hydrophobicity, percentage of volumetric soil moisture (VWC) under rock armor, and plant rooting patterns (if applicable). A pair of puck samples, 2 inch diameter × 2 inch deep, will be collected from each test pit directly underneath the rock armor from the radon barrier for bulk density characterization. Additionally, a 500-milliliter (mL) sample of dust, and a 500 mL near-surface radon barrier sample will be collected from each test pit for laboratory analysis. The radon barrier material that was removed will be replaced with material from onsite stockpiles that meets the original design specifications, which will be compacted with hand tools. The density of the replaced material will be calculated using the mass of material needed to fill the volume of the material removed. Near-surface field saturated hydraulic conductivity will be measured with an automated DualHead Infiltrometer. The rock riprap layer will be restored after sampling is complete. At the analog locations, excavated soil will be redistributed to approximate the original condition. A map showing the transect lines and test pit locations will be generated at the conclusion of the field work.

2.2 Laboratory Analysis

Chemical, physical, and biological characteristics of the collected aeolian soils and near surface barrier materials will be analyzed by Applied Soils, LLC (in Berkeley, California) unless samples are sent to another laboratory compliant with North American Proficiency Testing Program guidelines. Laboratory analyses include but are not limited to:

1. Plant-available nutrients by modified Morgan extraction and inductively coupled plasma mass spectrometry (ICP-MS) (U.S. Department of Agriculture [USDA] Kellogg Soil Analysis Method 4D2a2d1-22a-b1)
2. pH 1:1 dilution (USDA Kellogg Soil Analysis Method 4C1a2a1)
3. Total organic matter by wet oxidation (Cornell Nutrient Analysis Laboratory S2740)
4. Total carbon, total nitrogen (USDA Kellogg Soil Analysis Method 6A4a1a1-3)
5. Nitrate, nitrate, ammonia (Cornell Nutrient Analysis Laboratory S2506/S2503)
6. Electrical conductivity (USDA Kellogg Soil Analysis Method 4f1a1a)
7. CaCO3 (Cornell Nutrient Analysis Laboratory S2611)
8. Total mineralogy by XRD (samples sent to Mineralogy, Inc. of Tulsa, Oklahoma)
9. Particle size distribution (Cornell Nutrient Analysis Laboratory S1885)
10. Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens. (ASTM D7263)
11. Soil microbial characterization (Earthfort laboratory of Corvallis, Oregon)

2.3 Evaluation of the Effects of Aeolian Deposition on Cover Performance

Field and laboratory results will be used to project long-term effects of dust accumulation on radon attenuation, rainwater and snowmelt storage and percolation, and erosion on the Bluewater disposal cells. Table 1 contains a list of questions this study will attempt to answer and what data will be required to answer them.

Table 1. Data Evaluation Matrix

Study Question	Data Needs	Data Interpretation and Analysis	
		Variables	Data Analysis
Which subset of desert UMTRCA sites are likely to have dust accumulation in rock riprap?	As-built designs of UMTRCA covers; geomorphology literature on regional dust accumulation	• Cover cross-section design and layout geometry • Riprap rock sizes and shapes, sources, and layer thicknesses • Type of material underlying the rock • Regions in the western U.S. with historically high dust accumulation	• List sites with rock riprap in areas where dust deposition is likely • Select one or two sites with high dust accumulation potential as test cases for sampling methods
What are the rates and patterns of soil accumulation and how do rates vary across sites?	Quantity of soil accumulation in rock layers	• Soil layer thickness in rock riprap at different locations on covers • Void volume in rock riprap layer • Age of disposal cell cover	• Calculate annual deposition rates for selected sites and for different locations on covers (e.g., windward and leeward)
How can aeolian dust be differentiated from construction deposits?	Soil and riprap chemistry and mineralogy	• Soil particle size distribution • Particle minerology and chemistry	• Analyze chemical, textural, and mineralogical characteristics of sources
What are the diagnostic soil morphological properties developing in rock riprap layers?	Soil morphology of rock and soil layers and of analog sites	• Field pedology and taxonomy • Soil chemistry (sodicity, salinity, pH, cations, organic carbon) • Soil fertility (macro- and micronutrients) • Soil biology (roots, fungi, fauna)	• Document soil morphology and taxonomy • Evaluate stage of soil development and project long-term pedogenesis
Is aeolian dust influencing water movement through and storage in covers?	Physical and hydraulic soil properties	• Soil physical properties: bulk density, water content • Saturated hydraulic conductivity • Soil water retention characteristics	• Calculate additional water storage capacity • Compare hydraulic conductivity of aeolian soil and radon barrier
Is dust accumulation influencing plant ecology on covers?	Edaphic soil properties and plant and animal species	• Edaphic soil properties • Seed bank • Plant community composition, species abundance, and LAI • Macrofauna and soil fauna	• Evaluate soil fertility and propagule accessibility • Estimate ET, water balance • Characterize plant and animal habitats and succession
Is dust accumulation changing radon flux rates?	RAECOM model input data	• Soil bulk density and porosity • Soil moisture content • Effective soil layer thickness	• Compare RAECOM output for as-built and current conditions
Will dust accumulation channelize water flow and increase rates of erosion?	Geotechnical evaluation	• Evidence of channelized flow • Slope length • Rock and bedding size and shape	• Calculate erodibility of riprap, bedding, and radon barrier layers

Abbreviation:
LAI = leaf area index

3.0 Safety and Health

This section describes the project safety and health requirements. All work shall be conducted in accordance with safety regulations required by DOE and state and local agencies.

Workers are responsible for identifying safety concerns, potential hazards, or unsafe conditions to management. Each worker has the right, responsibility, and authority to report unsafe or environmentally unsound conditions or practices and pause / stop work activities without fear of reprisal to prevent injuries or accidents.

3.1 Job Safety Analysis

All Legacy Management Support (LMS) contractor and subcontractor personnel shall adhere to the hazard controls specified in the approved job safety analysis (JSA). Workers shall not perform any work not covered by the JSA or for which the JSA does not provide adequate protection. The LMS Safety and Health representative can modify the JSA to reflect changed conditions or as requested by a worker.

3.2 First Aid and CPR

LMS shall provide a person who is trained in first aid and CPR to be onsite at all times while work is being performed. LMS shall also provide an automated external defibrillator (AED) and a first aid kit that meets the requirements of ANSI/ISEA Z308.1-2009, "American National Standard for Minimum Requirements for Workplace First Aid Kits and Supplies" and supplemental supplies as necessary. The type and quantity of supplemental supplies needed shall be determined after consultation of a person competent in first aid who is aware of the hazards found in the particular work environment and based on the number of people who may need first aid at any one time.

3.3 Personal Protective Equipment (PPE)

The requirements for specific PPE, including when to wear it, will be determined by LMS in the approved JSA. LMS reserves the right to adjust PPE requirements to protect personnel from hazards.

Minimum adequate dress and PPE for personnel on a jobsite shall consist of the following:

1. Full-length trousers, slacks, or jeans in good condition.
2. Boots with sturdy soles. Boots must extend above the ankle to provide ankle support when walking on the riprap.
3. Shirts that cover the shoulders, with sleeves at least T-shirt length.
4. Leather, cotton, or synthetic work gloves, when required, to protect from abrasions, cuts, bruises, and to make it easier to safely grasp objects.

5. Safety glasses, with side shields or wraparounds when required, that meet the requirements of ANSI/ISEA Z87.1, "American National Standard for Occupational and Educational Personal Eye and Face Protection Devices." Glasses must be stamped with the ANSI/ISEA certification.
6. High-visibility vests, when required.

LMS will provide drinking water to all workers onsite.

4.0 Environmental Compliance

In accordance with LM's and LMS's Environment, Safety, and Health policies and the joint LM/LMS Environmental Management System, all federal, contractor and subcontractor employees performing work at LM sites shall follow safe and environmentally sound work practices. Work shall be conducted in a manner that protects workers and the public, complies with DOE directives, and complies with all applicable federal, state, and local regulatory requirements and agreements and permits under the LM contract. In addition, work shall be conducted in a manner that prevents pollution, minimizes the generation of waste materials, and conserves natural and cultural resources to the extent that such activities are technically and economically feasible. Personnel are responsible for informing the person in charge (PIC) of any unsafe or environmentally unsound conditions and have the authority to pause or stop work activities without fear of reprisal if necessitated by such conditions.

4.1 Waste Management

LMS and subcontractor personnel shall properly manage all waste that it generates. The site shall be kept clean and orderly at all times, and personnel shall clean up debris and waste material from the site daily.

4.1.1 Waste Reduction and Recycling

All personnel are encouraged to minimize the waste generated during the project and maximize the amount of material that is reused, salvaged, or recycled.

4.2 Spills

If any fluids are spilled from vehicle operations (fuel, hydraulic fluids, coolant, lubricants, etc.), personnel shall immediately notify the PIC who will notify the Environmental Compliance (EC) group as soon as possible and follow their directions to clean up the spill. Equipment leaks and other types of spills shall be diapered, contained, absorbed, or otherwise blocked to prevent ground surface contamination until the leak is repaired or the equipment is replaced. Personnel shall clean up and subsequently manage spilled materials and associated wastes (e.g., contaminated soils), including storage, until EC can arrange for offsite disposal and management of the waste.

4.3 National Environmental Policy Act

The proposed study has been assessed under a National Environmental Policy Act (NEPA) categorical exclusion evaluation (CXE). An environmental review and concurrence email from LM documented that there are no new impacts or changed conditions resulting from the proposed actions. It has been determined that the proposed actions would not individually or cumulatively have a significant effect on human health or the environment, thereby supporting classification of this action as a CXE under DOE NEPA regulations in Title 10 *Code of Federal Regulations* Part 1021.410 (10 CFR 1021.410). Because categorical exclusions apply to the actions proposed in this Work Plan, the aeolian deposition study at the Bluewater site does not require a NEPA Environmental Assessment or Environmental Impact Statement. All NEPA obligations for this study have been met.

4.4 Cultural Resources

The proposed work would be conducted through the use of hand tools, which precludes the potential to cause effects in accordance with 36 CFR 800.3(a)(1). Therefore, this planned work will be conducted in accordance with the requirements of the National Historic Preservation Act.

The unexpected discovery of cultural materials during construction or excavation would constitute a changed condition that has not been fully evaluated. Cultural materials are broadly defined as the physical objects and remnants of a culture. Implementation of a pause or stop work order would be required in that immediate area if potential cultural material is unexpectedly discovered during construction or excavation. Work in the area of the discovery shall halt immediately. The field team will notify the LMS EC site point of contact for further instruction. LMS will notify LM of the inadvertent discovery. The cultural materials must be evaluated by an archaeologist or historian meeting the Secretary of the Interior's professional qualification standards (36 CFR 61) before the pause work order can be lifted.

4.5 Migratory Bird Treaty Act

Personnel shall not work outside of the approved work areas or travel in vehicles off of established roads without approval. Although migratory birds could be present at or near the site, the work would not be expected to cause appreciable disturbances. Personnel shall not harass or otherwise disturb nesting birds; remove nests, eggs, or young birds; or in any way cause a "take" of a migratory bird. If an active nest or eggs are discovered in the work area, a pause or stop work order would be required and personnel shall notify the EC point of contact to resolve any Migratory Bird Treaty Act concerns before work can continue.

4.6 Endangered Species Act

The majority of the work will take place on the disposal cell covers which are modern engineered features that has no sensitivity with respect to biological resources. Some work will also take place in the surrounding basalt rock flow analogous study area. There are no known federal- or state-listed threatened or endangered species or designated critical habitats at the site. Several species of listed birds could appear at the site while in transit, but would not be affected by the work activities.

5.0 Training Requirements

Workers are responsible for performing tasks in accordance with provided training and may not perform tasks for which they have not been adequately trained.

5.1 Initial Project Briefing

All field personnel shall attend the initial project briefing on the first day of work before conducting any fieldwork. The briefing will be held when all personnel are at the site. This briefing will include discussion of the JSA, the minor work task and the pause or stop work procedure and will give all personnel the opportunity to ask questions or amend the JSA if needed to reflect actual field conditions.

5.1.1 Cultural Resources Briefing

As part of the initial project briefing, cultural resources will be discussed to help avoid the inadvertent disturbance of cultural resources, should they be present. This briefing will cover what constitutes a suspected cultural resource, where they are most likely to be found, what they might look like, and the process to follow for the first surface screening of any potential sampling area. The briefing will also detail what steps to take if a suspect cultural resource is discovered during work activities. This briefing may be held before the first day of field work.

5.2 Daily Safety Briefing

At the beginning of each day's work and before specific tasks with significant or changed safety and environmental considerations are begun, the PIC shall conduct a safety and health and operations meeting for all personnel. The scope of the upcoming day's operations and activities will be reviewed. Hazards associated with those activities will be identified and the safety or environmental implications and the procedures to be implemented to mitigate the hazards will be described. Relevant safety documentation associated with the upcoming work will be reviewed. Any issues or concerns from previous days' activities will be discussed and the JSA may be modified to reflect changed conditions. Documentation of the briefing will include what topics were discussed and which personnel attended.

5.3 Heat Stress

Training in the recognition, control, and monitoring of heat stress (LMS course HS418) and training in how to use a heart rate monitor (LMS course 418JPM) is required for all LMS personnel when work is performed outdoors and the temperature is reasonably expected to exceed 80 °F.

5.4 Utility Task Vehicles

Full-size vehicles will not be driven on the disposal cell covers; instead, a utility task vehicle (UTV) will be used to haul sampling equipment to sampling locations on the cell covers and may be used to travel on site roads. At no point will UTVs be used off of established roads or tracks except on the cell covers. All personnel who drive a UTV must have completed the

UTV safety training (LMS courses HS344 and HS344R) and the trailer towing safety training (LMS course HS276). A helmet approved by the U.S. Department of Transportation must be worn by everyone riding in the UTV. UTVs will not be refueled at the site.

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Attachment 1

Site-Specific Emergency Response Information
Bluewater, New Mexico, Disposal Site

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Contractor to the U.S. Department of Energy Office of Legacy Management

Site-Specific Emergency Response Information

Site name: Bluewater, New Mexico, Disposal Site **Date:** 2/15/2019

Site address: East of Highway 509, 4.5 miles northwest of the intersection with Highway 605 near Grants, New Mexico

Site Phone number: No onsite phone
DOE 24 Hour Emergency:
877-695-5322

Hazard profile (summary of *Site Hazard Survey* [LMS 1567] information)

☐ Decommissioned reactor	☐ No Cellular Service	☐ Water treatment plant
☒ Disposal cell	☐ Public access	☒ Wildlife
☒ Monitoring wells	☒ Rough Terrain	☐ Other Enter text

Please indicate the type of phone number provided (W = work, C = cell, H = home, O = other)

LMS site lead

Name	Primary phone number	Secondary phone number
Alison Kuhlman	970-248-6580 W	720-319-6426 C

LM site manager

Name	Primary phone number	Secondary phone number
Bernadette Tsosie	970-248-6550 W	202-617-6055 C

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Site-Specific Emergency Response Information

Medical emergency support facility or hospital:			Cibola General Hospital
Fire:	**911**	or	Bluewater Fire Department 505-876-4942 or Milan Fire Department 505-287-7366
Ambulance:	**911**	or	Cibola County Dispatch 505-287-9476
Air rescue:	**911**	or	Enter text
Police or sheriff:	**911**	or	Cibola County Dispatch 505-287-9476 or New Mexico State Police Grants 505-287-4377

Nearest available telephone:
Personnel must bring a cellular phone to the site.

Cell Phone Service Onsite or Homestake

Nearest emergency room: Cibola General Hospital
1016 Roosevelt Ave
Grants, New Mexico 87020

AllOne Health (800) 350-4511
Call if worker is taken to healthcare facility.

Site-Specific Emergency Response Information

Emergency assembly area:
All affected personnel should immediately proceed to vehicle parking area (locations will vary).

Evacuation warning system:
Site-specific briefing includes local method for warning personnel of emergency conditions. Mobile phones or vehicle horns will be used to warn personnel who may be beyond voice communication.

Directions from site to emergency facility (Please paste or attach a map of the site location *and* a map from the site to the emergency facility):

1. Turn LEFT (east) on County Road 63 and proceed 4.3 miles to NM Highway 605.
2. Turn RIGHT on Highway 605 and proceed 5.1 miles to NM Highway 122 (Old Route 66).
3. Turn LEFT on Highway 122 and follow it through Milan and into Grants to First Street (Highway 122 turns into Santa Fe Ave.).
4. Turn LEFT onto First Street at the Pizza Hut and proceed NORTHEAST to Roosevelt Avenue (Highway 547). First Street is a one-way street.
5. Turn RIGHT onto Roosevelt and go EAST to Bonita Street (Hospital Pharmacy) and turn left to hospital.

Site GPS coordinates:

Longitude -	Latitude -
107.947483	35.270623

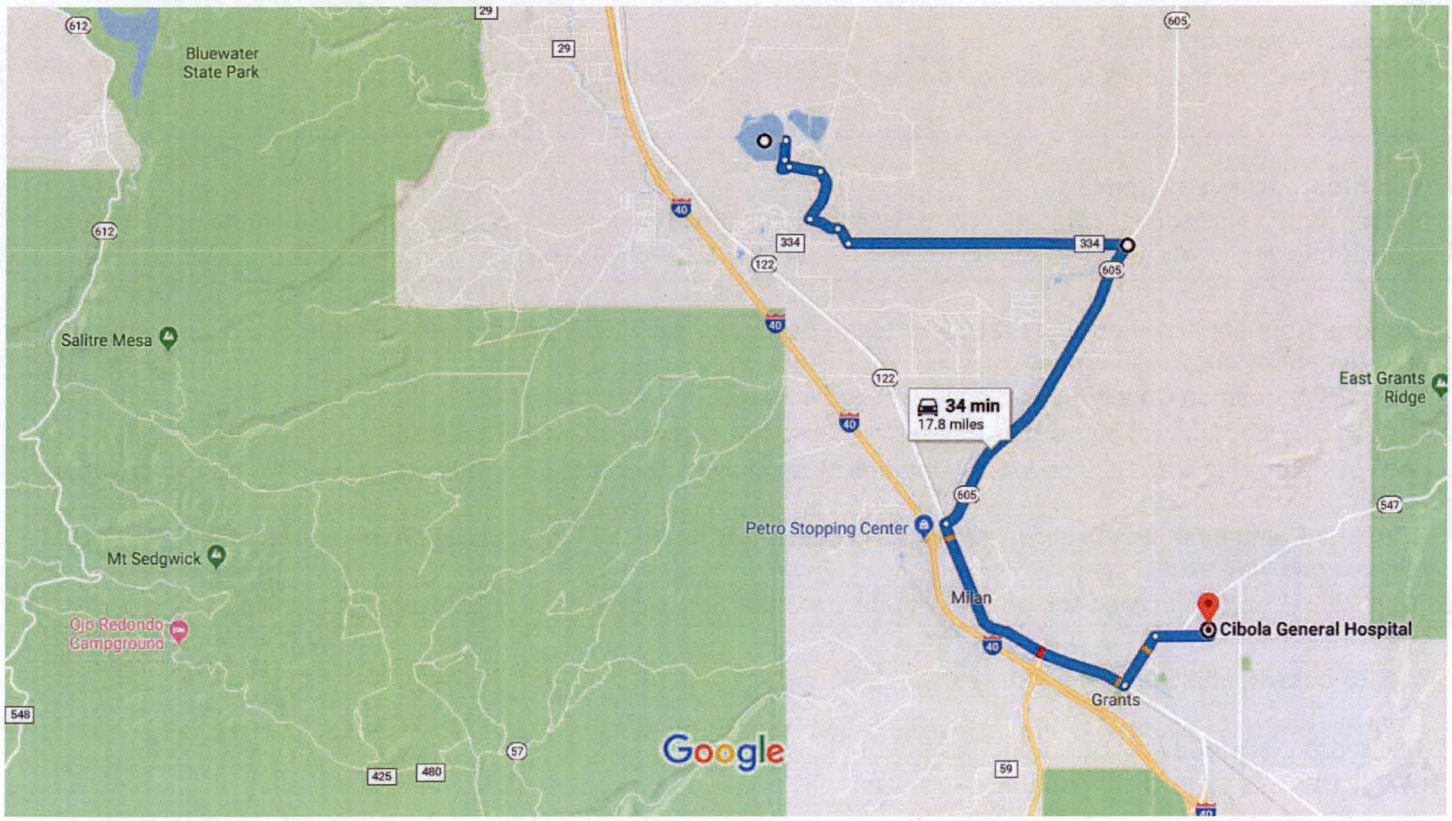
Personnel accountability process and responsible individuals
Per the *General Emergency Plan for Unoccupied Sites and Activities*, in the event of an emergency, "site workers notify the LM site/program manager and LMS site lead/task manager of the emergency and provide information about personnel accountability."

Define how the accountability process will work at your site, who is responsible for performing the task, how it is documented, etc.:
The responsible party (as designated in work control documents) will contact the site lead as soon as practicable in case of an incident or emergency situation.

Google Maps

Cibola County, New Mexico 87005 to Cibola General Hospital

Drive 17.8 miles, 34 min



Map data ©2019 Google 2 mi

Cibola County

New Mexico 87005

Take State Rte 334 to NM-605 W

16 min (6.9 mi)

1. Head south

0.3 mi

2. Continue straight

0.3 mi

3. Turn right

0.5 mi

4. Turn right

0.8 mi

5. Turn left

0.5 mi

6. Slight right

0.3 mi

7. Turn left onto State Rte 334

4.3 mi

Continue on NM-605 W. Take Rte 66 to Cordova Ct Ave in Grants

17 min (10.8 mi)

8. Turn right onto NM-605 W

5.1 mi

9. Turn left onto Rte 66

Pass by Allsup's Convenience Store (on the right in 4.0 mi)

4.0 mi

10. Turn left after Pizza Hut (on the left)

157 ft

11. Continue straight to stay on 1st St

Pass by Allsup's Convenience Store (on the right in 0.4 mi)

0.8 mi

12. Turn right onto W Roosevelt Ave

0.8 mi

Continue on Cordova Ct Ave to your destination

39 s (482 ft)

13. Turn left onto Cordova Ct Ave

417 ft

14. Turn left

Destination will be on the right

66 ft

Cibola General Hospital

1016 Roosevelt Ave, Grants, NM 87020

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

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