DOE/EIS-0355-SA-4

Final Supplement Analysis for an Alternative Evapotranspiration Cell Cover for the Crescent Junction Disposal Cell

August 2025

U.S. Department of Energy

Office of Environmental Management

Prepared by the Remedial Action Contractor under contract number 89303322DEM000073
for the U.S. Department of Energy Office of Environmental Management, Grand Junction, Colorado.

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Acronyms and Abbreviations

ARRA	American Recovery and Reinvestment Act of 2009
BLM	U.S. Bureau of Land Management
CBCH	Canyonlands Back Country Horsemen
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
CJ	Crescent Junction
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EIS	Environmental Impact Statement
EM	Environmental Management
EPA	U.S. Environmental Protection Agency
FEIS	Final Environmental Impact Statement
USFWS	U.S. Fish and Wildlife Service
LCF	Latent Cancer Fatality
m2/s	square meters per second
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NRC	U.S. Nuclear Regulatory Commission
pCi/g	Pico curies per gram
REM	Roentgen Equivalent Man
ROD	Record of Decision
RRM	Residual Radioactive Material
SA	Supplement Analysis
TAC	Technical Assistance Contractor
UDOT	Utah Department of Transportation
UMTRA	Uranium Mill Tailings Remedial Action
USFWS	United States Fish and Wildlife Service
VP	Vicinity Properties

1.0 Introduction and Purpose

1.1 Introduction

The Department of Energy Moab UMTRA Project/Program has prepared this Supplement Analysis (SA) to evaluate the existing final environmental impact statement (FEIS) listed below to consider changes that could have bearing on the potential environmental impacts previously analyzed. The DOE Moab UMTRA Project has prepared this SA to evaluate whether changes to the original design of the Crescent Junction (CJ) Disposal Cell cover require further evaluation under the National Environmental Policy Act of 1969, as amended (Pub. L. 91-190,42 United States Code [U.S.C.] 4321 et seq.) (NEPA). The 2025 DOE NEPA Implementing Procedures, Section 3.9, S*upplements to Environmental Documents and Supplement Analyses,* state that "when it is unclear whether or not a supplement to an environmental document is required, DOE may prepare a supplement analysis." This SA provides sufficient information for the Moab UMTRA Project to determine whether (1) to supplement an existing EIS or prepare an Amended ROD, (2) to prepare a new EIS, or (3) no further NEPA documentation is required.

Existing FEIS evaluated in this SA:
Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Final Environmental Impact Statement, July 2005 (DOE/EIS-0355).

1.2 Proposed Change and Review of New Information

In the FEIS, DOE evaluated the environmental impacts associated with the construction and operation of an off-site disposal cell. The *Record of Decision of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah* (2005) (ROD) identified CJ as the preferred off-site disposal location due to the following factors, including: (1) the longest isolation period (time in which contaminants could reach the ground water); (2) the lowest land-use conflict potential (3) the shortest haul distance from the rail unloading facility into the disposal cell, reducing the size of the radiological control area; and (4) flat terrain, making operations easier and safer.

Due to lessons learned and development of new approaches for cell cover design, DOE, in consultation with NRC, evaluated and proposed an alternative evapotranspiration (ET) cover design. The original design was based on traditional rock armor covers designed layer by layer rather than as a system. The interaction and performance of the layers has shown several issues including greater infiltration flux of precipitation and creation of a reversed capillary barrier. Therefore, precipitation that infiltrates the traditional rock armor cover design can accumulate moisture in underlying layers. The alternative ET cover design addresses these issues by acting as an analog to the natural surroundings which is water limited, by removing precipitation via native vegetation and evaporation.

In preparing this SA, the Moab UMTRA Project evaluated environmental conditions, requirements, and other changes that have occurred at CJ to determine whether the baseline natural environment has changed significantly since the FEIS was issued in 2005. There were no major changes in the environmental conditions or significant new circumstances that may be relevant to environmental concerns that would have bearing on the proposed action.

1.3 Background

The FEIS was prepared to evaluate whether the uranium tailings pile and associated material would be left on-site or transported to an engineered disposal cell in one of three locations (White Mesa,

Klondike Flats, and Crescent Junction) and to evaluate the most appropriate mode of transportation of the contaminated material (truck, rail, or slurry pipeline). In addition, the FEIS documented the potential effects of the tailings on the groundwater and surface water at the Project location. The ROD stated that the preferred alternative was to transport the tailings via rail to Crescent Junction, UT. An Amended ROD of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah (2008), allowed for some oversized material to be transported via truck.

Moab UMTRA Project Supplement Analysis for the Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Final Environmental Impact Statement (2022) *(*SA-3) was created to analyze the environmental impacts of the increase in tailings mass and project duration. The most recent estimated weight of total residual radioactive material (RRM) to be relocated from the Moab site to the Crescent Junction disposal site is approximately 16 million tons, however a bounding number of 20 million tons was used in SA-3 for the analysis. The 20 million tons was based on the inherent uncertainty of future remedial actions prior to final closure. The 16 million tons may slightly underestimate the final total cumulative residual radioactive material removal at completion of the project. The additional volume accommodates potential additional sub-pile material, contaminated soil outside of the source term area (ex. old mill site and Atlas Building areas) and material based on other characterization that will be part of the closure process. Based on current remediation progress in Moab, this bounding remains adequate**.** The Project duration may vary slightly from the analysis that it presented based on completion in 2025-2028. The recent contract award (February 2022) is for 10 years; therefore, the project could last potentially through 2032.

The *Draft Final Remedial Action Plan and Site Design for Stabilization of Moab Title I Uranium Mill Tailings at the Crescent Junction, Utah, Disposal Site* (RAP) was issued in June 2007 (DOE 2007a) and provided the basis for detailed design and future construction. The RAP also serves as the NRC concurrence document. The RAP was revised (Revision 1) in 2008. The segments establishing the basis of site selection and parameters used in the design were not revised. The RAP was later revised (Revision 2) in December 2012. The third revision of the RAP (Revision 3) was issued in May 2024 and includes implementation of the alternative ET cover design, radiological final status surveys and related closure activities. Additional cell cover documentation is included in the RAP (v.3), Addendums A-H (Alternative Cover Design Information) and Attachments 1-9 (Original Cover Design Information). NRC concurrence with the revised RAP (v.3) and this SA will complete the proposed alternative ET cover design process and allow construction to begin.

1.4 FEIS Purpose and Need For Action

The Moab site and vicinity properties near Moab, for which DOE was given responsibility, contain contaminated materials in concentrations that exceed 40 CFR 192 concentration limits and present a current and long-term potential source of risk to human health and the environment. DOE identified off-site disposal as its preferred alternative for disposal of mill tailings primarily because of the uncertainties related to long-term performance of a capped pile at the Moab site. The proposed alternative ET cover design is consistent with DOE's rationale for offsite disposal at the CJ site. The current conditions and the proposed design change does not invalidate or change the purpose and need for the proposed action in the FEIS.

1.5 FEIS Impact Analysis

The FEIS describes the affected environment and specifically analyzes several resource areas (18) for potential environmental impacts that could result from the installation of the CJ cell. Conservative assumptions were used in the environmental impact analysis. The FEIS concludes, potential impacts on human health and environment would be minimal Section 3.0 of this SA will consider the proposed design changes, and any possible resource area impacts that could result, if any.

2.0 Crescent Junction Cell Progression

2.1 Crescent Junction Cell Cover Design in the FEIS

The original design in the FEIS is a 9-ft-thick layered cover system. The design is typical of older UMTRA covers. The current approved Moab UMTRA Project cover design (Figure 1) consists of the following layers, from bottom to top: (1) a 1-ft-thick interim cover constructed of clean native alluvial materials, (2) a 4-ft-thick compacted clay radon barrier constructed from conditioned on-site weathered Mancos Shale, (3) a 0.5-ft-thick infiltration and bio intrusion barrier consisting of rock, (4) a 3-ft-thick frost protection soil layer, and (5) a 0.5-ft-thick rock surface layer.

This cover profile has multiple issues including 1) The cover system is very expensive to construct and requires a significant amount of imported rock 2) The surface rock armor layer and the bio intrusion barriers are repetitive 3) The cover was designed layer by layer rather than as a system 4) The surface rock layer was designed to minimize erosion. However, it created a problem with the flux of meteoric water through the cover. The cover allows infiltration into the cover profile (approximately 100 percent of precipitation) while restricting removal via ET; therefore, the cover allows full infiltration of precipitation into the cover profile and reduces surface removal of water 5) The surface rock layer on top of the finer-grained frost protection soil creates a capillary barrier in reverse. That is, precipitation goes in while the capillary barrier in reverse prevents it from coming back out. This can lead to a build-up of moisture in underlying layers. Approximately 25% of the rock armor cover was completed and remains on the cell. The material will be repurposed for use in the ET cover design.

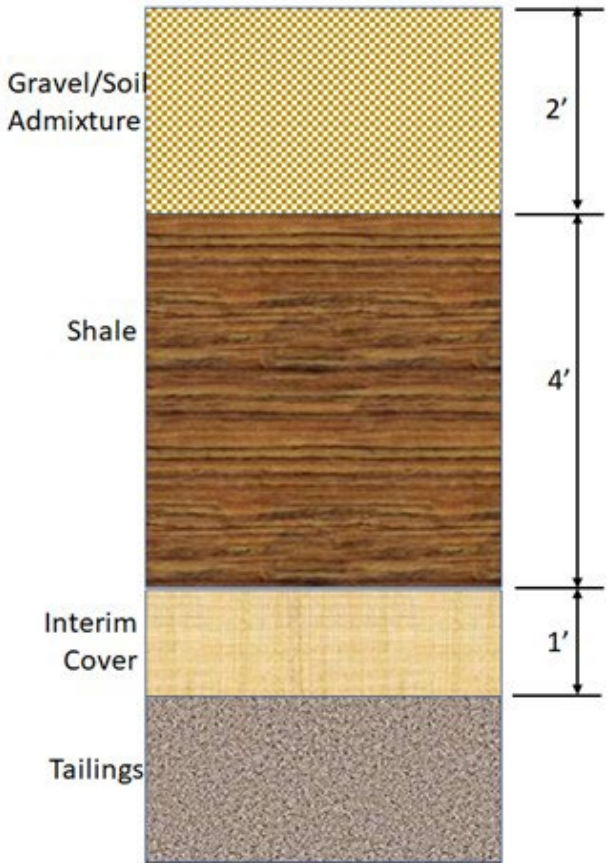

Figure 1. Approved Moab UMTRA Project Cover Design Profile

2.2 Updated Crescent Junction Cover Design

To overcome the challenges discussed in Section 2.1, DOE has proposed replacing the traditional rock armor cover with an alternative ET cover. Based on modeling, site specific circumstances, observation and field experience, alternate ET covers provide advantages over traditional rock armor covers in terms of performance and long-term maintenance. The proposed alternative ET cover design is better suited for the arid climate of Crescent Junction. The Crescent Junction Disposal Site Evapotranspiration Cover System Design Report (Dwyer Engineering LLC, Stephen F. Dwyer, PhD, PE, December 2023) demonstrates the ability to provide adequate protection for a design life of 1,000 years. The proposed alternative ET cover design meets the regulatory guidance in NUREG 1623 as well as the regulatory requirements in 40 CFR 192. The proposed alternative ET cover design meets or exceeds key performance criteria including:

- Maintain a design life of at least 200 years up to 1,000 years;
- Minimize meteoric flux into the underlying RRM (includes providing a rooting medium for native vegetation);
- Minimize erosion;
- Attenuate emanation of radon-222 (Rn-222) from the RRM to a rate less than 20 picocuries per square meter per second (pCi/m2s) average over the final cover surface; and
- Accommodate minimum reliance on active maintenance.

The proposed alternative ET cover design for the disposal cell will utilize a multi-layered system (Figure 2). This cover system serves to resist erosion, promote runoff, limit infiltration into the RRM, minimize radon emissions, reduce long-term maintenance, and reduce the risk to human health and the environment.

The first layer of the cover system to be placed on the RRM is the interim cover. The interim cover is a 1-ft-thick soil layer that acts as a protective cover during the time frame from when the tailings have been placed to the desired design elevation, to the time when the radon barrier and subsequent layers are placed. The interim cover acts as a temporary blanket that helps protect the tailings from wind and precipitation erosion during this interim time period as well as reducing the radon emanation from the RRM for worker, public, and environmental protection. It provides a clean buffer on which equipment and personnel can traverse and on which the radon barrier can be placed and compacted.

The second layer, the radon barrier, reduces the flux of radon from the RRM to less than 20 pCi/m2 /s. The compacted clay layer is constructed from conditioned on-site weathered Mancos Shale excavated from the disposal cell footprint. The radon barrier also reduces or eliminates the infiltration of moisture from precipitation events.

The third layer is a frost protection layer constructed of soil a minimum of 38.5 in. thick. This layer serves to protect the underlying radon barrier from changes to its soil structure that may reduce its ability to limit radon flux. The top layer is part of the frost protection layer designed to mitigate rill or gully formation and minimize soil loss due to erosion.

The top layer is an admixture composed of 60 percent rock to 40 percent soil by volume. The surface admixture layer is 10 inches thick. The D50 rock size is 2 inches. The top layer will be seeded with native seed mix used by the Moab UMTRA Project successfully on disturbed areas at the Crescent Junction Site. The cell construction and site hydrogeology are anticipated to effectively isolate the RRM from the uppermost Dakota aquifer. The stable geologic, seismic, and geomorphic setting of the site will ensure adequate control of the RRM for the design life of the cell.

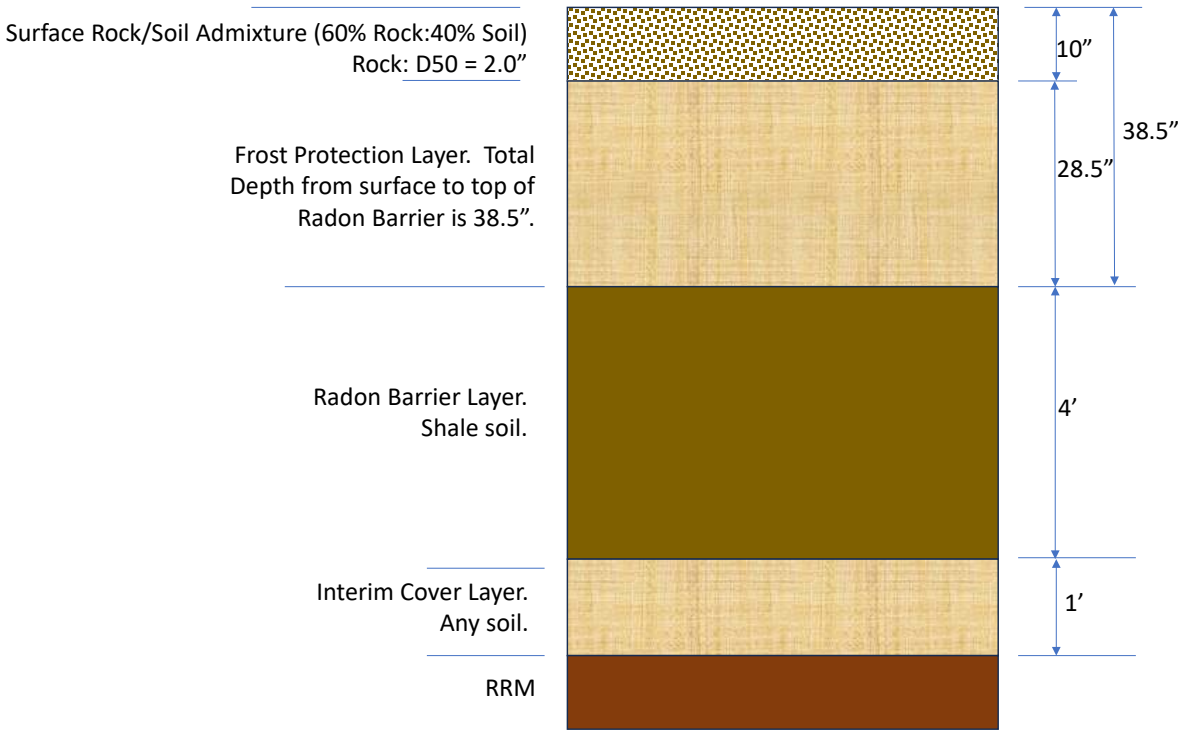

Figure 2 Alternative ET Cover Design Profile

3.0 Impact Evaluations

The *Crescent Junction Disposal Site Evapotranspiration Cover System Design Report* (Dwyer Engineering LLC, Stephen F. Dwyer, PhD, PE, December 2023) was used to confirm the performance of the proposed design change. With the proposed design change the Project was required to determine whether the proposed changes to the cell cover design would cause substantially different impacts on resource areas compared to those described in the FEIS. A qualitative resource area assessment was performed to determine whether substantial changes in impacts would occur. Resource areas evaluated in the FEIS were screened for potential impacts from changes in the cell cover design. Based on these screening results, resource areas were either included or eliminated from further analysis in this SA. The resource areas with potential to be affected by the proposed design change were further analyzed to determine whether potential impacts had been adequately covered or bound by the analysis in the FEIS.

3.1 Resource Area Screening

The Moab UMTRA Project conducted an initial screening of all 18 resource areas that were identified in the FEIS to determine which areas could be potentially affected by the proposed design change. Based on the screening, the Moab UMTRA Project determined the resource areas in Table 1 would not be affected by the proposed design change. Therefore, the impact analyses presented in the FEIS for these resource areas are still considered applicable and are not evaluated further in this SA.

The following resource areas are not analyzed in this SA because they will not be significantly affected by the new information (Table 1):

Table 1. Resource Areas Not Affected by the New Information

Resource Area Not Analyzed in Detail in this SA	Basis
Air Quality	Fugitive dust (silica) is the primary pollutant identified in the FEIS. Monitoring of fugitive dust to date demonstrates compliance during construction and operations at the Crescent Junction Site. The construction of the alternative ET cover design will be similar in type, scale, and duration as the traditional rock armor design, and continue to be monitored in compliance with the *Moab UMTRA Project Crescent Junction Fugitive Dust Control Plan* (DOE-EM/GJ1235).
Geology	FEIS identified geological resources underlying Crescent Junction were determined to be too deep for economical exploitation. Also, the footprint of the disposal cell remains 435 acres, unchanged by the alternative ET cover design.
Floodplains and Wetlands	Floodplains and wetlands remain absent at the Crescent Junction site and adjacent property, as analyzed in the FEIS, and therefore there are no impacts to floodplains and wetlands.
Aquatic Ecology	There continues to be no perennial surface waters at the Crescent Junction Site as analyzed in FEIS, and therefore there are no potential impacts to aquatic ecology.
Land Use	The 435 acres footprint of the disposal cell (BLM Land withdrawal) is unchanged by the alternative ET cover design change.

Table 1. Resource Areas Not Affected by the New Information (continued)

Resource Area Not Analyzed in Detail in this SA	Basis
Cultural Resources	A Memorandum of Agreement (MOA) with the Utah Division of State History, Utah Department of Transportation (UDOT), the Bureau of Land Management (BLM), and the Uintah-Ouray Ute Tribe states that cultural resources will be monitored before and during excavation of the disposal cell. Annual monitoring has not identified any damage to the neighboring cultural sites. The proposed alternative ET cover design will not change the footprint, construction, or operations at the Crescent Junction site.
Noise and Vibration	The FEIS did not recognize any significant impacts on noise and vibration at the Crescent Junction Site. Noise generated at the Crescent Junction site will remain within the 65 A-weighted decibel standards identified in the FEIS during construction due to the proposed alternative ET cover design.
Environmental Justice	No adverse impacts were noted in the FEIS. This SA is consistent with Executive Order 14173.
Infrastructure	There are no additional infrastructure needs to implement the proposed alternative ET cover design. The impacts on infrastructure remain as described in the FEIS at the Crescent Junction site.
Waste Management	The proposed alternative ET cover design change will not increase current generation which remains below the FEIS estimated 1,040 cubic yards per yards of solid waste per year.
Socioeconomic	The socioeconomic impacts associated with borrow areas were included in the disposal site impacts of the FEIS. The alternative ET cover design does not significantly change the aggregate expenditures considered in the FEIS which includes the construction and surface remediation at the Moab and Crescent Junction sites, ground water remediation, remediation of vicinity properties, and transportation of materials from the Moab site and vicinity properties to the Crescent Junction site. The proposed alternative ET cover design will require less borrow rock and result in a ~$20M cost savings for the Project.

3.2 Resource Area Impacts and Comparison

Recommendations for the Supplement Analysis Process, Second Edition (DOE 2019) states that for an SA, the comparison of a proposed change or new information is not limited to the preferred alternative in the existing FEIS or the alternative selected in the ROD. Comparison can be made to one or more of the alternatives that were analyzed in detail in the existing FEIS to demonstrate that the proposed change falls within the range of alternatives and impacts that were previously analyzed. This guidance is applied to the comparison of impacts between the current traditional rock armor cover design and the proposed alternative ET cover design being proposed.

Qualitative and semi-quantitative discussions and comparisons of environmental impacts are made to show that:

- The proposed alternative ET cover design is a minor variation of the range of alternatives that were analyzed in the FEIS and does not represent a new alternative.
- Environmental impacts associated with the proposed alternative ET cover design are within impacts previously analyzed in the FEIS or are an insignificant difference in what the impacts were identified in the original FEIS.

The resource areas shown in Table 2 are analyzed in this SA.

Table 2. Resource Areas Evaluated

Resource Area Analyzed	Summary of Potential Impacts in the FEIS	Summary of Potential Impacts as a Result to Changes to the Proposed Action	Difference in Potential Impacts
Soils	The primary impact to soils would be excavation to construct the new disposal cell; this impact would be short term. The maximum area of disturbance to the cell construction area would be 435 acres. The FEIS identified also considered that due to construction of low-permeability layers of the traditional rock armor cover design, soils adjacent to the cell would be subject to increased long-term erosion due to runoff from the cell. The potential for this long-term erosion to occur was reduced through the design enhancements along the edges of the cell. The FEIS determined that soil subsidence impacts would not result from construction of the cell since all soils within the cell footprint would be excavated down to bedrock. The analyses showed that for both static and dynamic conditions, the cell foundation, the slopes of the disposal cell, and the cover system will not fail or otherwise adversely affect the disposal cell. Design slopes were analyzed for both short-term and long-term conditions.	The alternative ET cover's ability to resist erosion and provide long-term stability of the cover surface is satisfied with the addition of a rock/soil admixture, sometimes referred to as a "desert pavement." The results of UMTRA cover settlement analyses indicate that primary settlement of the tailings will be 11 inches, and secondary settlement will be 11 inches. The results of the alternative ET cover design settlement analyses indicate that primary settlement of the tailings will be 9.2 inches in the center and 8.3 inches along the northern perimeter. Secondary settlement will be 12.7 inches in the center and 6.9 inches along the northern perimeter.	Based upon the area of disturbance being unchanged and physical features of the proposed alternative ET cover design change the potential impacts to soils at the Crescent Junction site remain consistent with those identified in the FEIS. The proposed alternative ET cover design profile replacing the traditional rock armor cover profile is thinner and more stable and thus the slope stability factors of safety will improve. The surface erosion admixture has been successfully deployed on radioactive and hazardous waste sites throughout the southwestern United States. Also, the rock armor will remain in the proposed alternative ET cover on side slopes. The magnitude of total settlement for the proposed alternative ET cover design remains insignificant for the total height, given a performance period of 1000 years.

Table 2. Resource Areas Evaluated (continued)

Resource Area Analyzed	Summary of Potential Impacts in the FEIS	Summary of Potential Impacts as a Result to Changes to the Proposed Action	Difference in Potential Impacts
Groundwater	The FEIS anticipated no adverse impacts on regional or local ground water quality would result from a proposed disposal cell in the Crescent Junction area because of the depth (3,000 ft) to the uppermost aquifer.	The design of the proposed alternative ET cover allows for removal of infiltrated water via ET. Thus, there are no elevated levels of moisture at depth or groundwater impacts. This is an improvement over the traditional rock armor cover design which allows infiltration into the cover profile while restricting removal via ET. The traditional cover would allow full infiltration of precipitation into the cover profile and reduce surface removal of water.	The proposed alternative ET cover has the benefit of removing infiltrated water via evapotranspiration.
Surface Water	No impacts to surface water because it is not present in the Crescent Junction area.	Surface water remains absent in the Crescent Junction area. The proposed alternative ET cover design will enhance the removal of precipitation back into the atmosphere across the cell footprint. Rock armor on side slopes will remain to mitigate erosion and shed runoff away from the cell.	Given the continued absence of surface water at the Crescent Junction site and slight reduction in expected runoff from the disposal cell no impacts to surface water are expected.

Table 2. Resource Areas Evaluated (continued)

Resource Area Analyzed	Summary of Potential Impacts in the FEIS	Summary of Potential Impacts as a Result to Changes to the Proposed Action	Difference in Potential Impacts
Terrestrial Ecology	The FEIS recognized potential impacts to terrestrial ecology from construction and operation of the CJ disposal cell would include the short-term loss of cover, foraging, and breeding habitat across the 435 acres area of disturbance. Long term the area occupied by the cell would result in permanent loss of habitat. The FEIS Biological Assessment states that at Crescent Junction it is unlikely that any species of concern (bald eagle and black-footed ferret) would be adversely affected, and potential adverse effects would be considered discountable.	Impacts of physical disturbance have been avoided or minimized by conducting site-specific investigations of vegetation and wildlife. No species of concern were identified during investigations through completion of cell excavation in 2023 which is within the anticipated 435 acres. The proposed alternative ET cover design uses a surface admixture to mitigate potential bio intrusion. The rock/soil admixture layer of 2.3-in.-diameter D50 rock, which composes 30% of the volume of this surface layer, will discourage burrowing of small mammals.	Long term, 435 acres will remain permanently lost for habitat; however, the top surface of the proposed alternative ET cover design will allow for native vegetation and non-burrowing animals to exist. Also, the traditional rock armor cover design relies on the surface rock layer to exclude bio intrusion; however, since installing rock armor over 25% the disposal cell fine grain soil has accumulated in pore spaces of the rock armor promoting intrusive plants. Also, prairie dog burrows are present along the edges of the rock armor. Absent regular maintenance to remove any vegetation from the rock armor bio intrusion would progress. The proposed design change will replace the rock armor with the admixture to allow for some native vegetation while discouraging deep woody rooted plants and burrowing animals. Vegetative success criteria will be determined in the Demonstration Plan and implemented in the Long-Term Surveillance and Monitoring Plan. In comparison the inclusion of this surface layer at the San Mateo, NM, uranium mine site closure with similar conditions has effectively discouraged burrowing of mammals in their final cover system.

Table 2. Resource Areas Evaluated (continued)

Resource Area Analyzed	Summary of Potential Impacts in the FEIS	Summary of Potential Impacts as a Result to Changes to the Proposed Action	Difference in Potential Impacts
Transportation	Transportation of cover material (borrow areas) by trucks to Crescent Junction was part of the transportation impacts considered in FEIS across multiple resource areas analyzed.	Based on NRC rock durability criteria, the basalt in the pediment-mantle material at the Fremont Junction, UT quarry was selected as the source for the Crescent Junction disposal cell cover composed of aggregate and riprap. Fremont Junction provides material for both designs. Although the distance to the disposal cell (95 mi) from Fremont Junction is significant, a conservative estimate of the volume of the deposit indicates that adequate material of high durability is available to cover construction requirements of the disposal cell. An estimated 413,619 tons of rock was necessary for the traditional rock armor cover design. In contrast the proposed alternative ET cover design change will only need 217,222 tons of rock to complete the construction.	No significant changes to impacts. The approximate 47% decrease in truck traffic necessary to transport borrow rock will only slightly reduce the negative impacts from transportation considered in the FEIS; since the overall transportation impacts are a result of the RRM shipments from Moab. However, the 47% decrease will eliminate more than 5,000 round trip trucks.
Visual Resources	The FEIS states that the BLM land surrounding Crescent Junction is classified as Class III, which means the level of change to the characteristic landscape should be moderate.	The proposed alternative ET design changes the top of the cover from all rock to a soil/rock blend with native vegetation and will appear more like the surrounding environment.	No significant changes to impacts. The elevated slopes of the disposal cell will remain covered in rock and distinct from surrounding environment. Disposal cell construction and operations will have moderate adverse effects on visual resources, primarily because construction activities and the completed disposal cell would be viewed by a large number of travelers on I-70.

Table 2. Resource Areas Evaluated (continued)

Resource Area Analyzed	Summary of Potential Impacts in the FEIS	Summary of Potential Impacts as a Result to Changes to the Proposed Action	Difference in Potential Impacts
Human Health	Potential impacts on human health. included industrial accidents and worker or public latent cancer fatalities (LCF) that could occur because of exposure to radiation. Workers may be exposed to radon gas and radioactive particulates (inhalation hazards), as well as external gamma radiation during construction and operation. Nearby residents may be exposed to radon gas and radioactive particles. In 2022 SA-3 recalculated impacts to human health due to an increased volume of waste extending the completion out to 2032. SA-3 determined that the LCF risks for the completion of the Moab UMTRA Project (1.4×10^{-4}) are well below the expected FEIS levels (1.2×10^{-3}).	The proposed alternative ET cover design has no impact to Project duration with completion expected at or before 2032. The number of personnel and hazards during construction and operations at the Crescent Junction site are unchanged by the proposed alternative ET cover design. Since 2022 the concentration of Ra-226 in tailings shipments and the measured effective dose to workers has decreased. The placement of tailings and potential for exposure during construction of the proposed alternative ET cover design is the same as for the traditional rock armor cover design. The proposed alternative ET cover design meets the regulatory guidance in NUREG 1623 as well as the regulatory requirements in 40 CFR 192.	The proposed alternative ET cover design change does not affect the construction worker and public health impacts considered in the FEIS during construction and operation of the Crescent Junction site.

4.0 Conclusion

In accordance with NEPA and the 2025 DOE NEPA Implementing Procedures, Section 3.9, Supplements to Environmental Documents and Supplement Analyses, this SA evaluates potential impacts from the proposed alternative ET cover design for the Crescent Junction disposal cell to determine whether the FEIS should be supplemented, a new FEIS should be prepared, or no further NEPA documentation is necessary.

Resource areas in the FEIS were screened for the potential to be impacted by the proposed alternative ET cover design. This resulted in an evaluation of impacts on soils, groundwater, surface water, terrestrial ecology, transportation, visual resources, and human health. Based on the evaluations in this SA, the proposed alternative ET cover design for the Crescent Junction disposal cell would not affect the outcome of the analyses for these resource areas in the FEIS. Therefore, the variations in the proposed alternative ET cover design changes are minor and fall within the bounds of the impacts evaluated in the FEIS.

This SA compared conditions since publication of the FEIS with impacts projected in the FEIS and evaluated potential impacts of the proposed alternative ET cover design change.

These analyses indicate that the proposed alternative ET cover design change does not lead to a significant environmental impact. In addition, there will be no significant changes to operations or mission and only small changes to the environment. Based on the evaluation herein, the conclusion of this SA is that identified and projected impacts, including cumulative impacts, have been and will continue to be within the bounds of those identified in the FEIS. Therefore, there is no need to either supplement the FEIS or prepare a new EIS.

5.0 Determination

The U.S. Department of Energy Office of Environmental Management Moab UMTRA Project has prepared this SA to determine if the Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, FEIS remains adequate, or if additional documentation under the NEPA is required. This SA has been prepared in accordance with NEPA and DOE Implementing Procedures, Section 3.9, *Supplements to Environmental Documents and Supplement Analyses* which outlines the type of information to be presented in a SA.

The ROD for the Moab Project FEIS, published in September 2005, announced DOE's decision to implement the preferred alternatives evaluated in the FEIS by (1) removing the uranium mill tailings and other contaminated materials from the Moab millsite and nearby off-site properties (vicinity properties) and relocate them at the Crescent Junction site, using predominantly rail transportation; and (2) implementing active groundwater remediation at the Moab site. An amended ROD was published in February 2008 that allowed DOE to use either rail or truck to transport materials. This SA compared the current conditions with the information contained in the FEIS, Amended ROD, and American Recovery and Reinvestment Act (ARRA) NEPA review of 2009. In addition, this SA considered new information to determine if there are substantive changes not included in the bounding analysis as part of the FEIS. A Notice of Availability of this SA will be published in local newspapers, posted on the Project website, distributed to the Moab Tailings Project Steering Committee, and made available in the Public Reading Room.

The evaluations in this SA indicate that the proposed Crescent Junction disposal cell alternative ET cover design change for the DOE UMTRA Project does not constitute a substantial change to the proposed action in the FEIS, DOE-0355, relevant to environmental concerns. Similarly, no significant new circumstances or information relevant to environmental concerns are bearing on the proposed action or its impacts have been identified. The DOE EMCBC concludes that the proposed new Crescent Junction Disposal Cell alternative ET cover design change is not a substantial change relative to the proposal analyzed in the EIS. Therefore, no further NEPA documentation is required.

Based on the analysis of the information presented in this SA, with the concurrence of counsel, the undersigned hereby determine that the current conditions of the Moab UMTRA Project do not constitute a substantial change from the FEIS or result in significant new circumstances or information relevant to environmental concerns. Therefore, pursuant to NEPA regulations and 2025 DOE NEPA Implementing Procedures, no further NEPA documentation is required. Should there be a change in the information upon which this analysis is based, a revised SA must be submitted and approved.

PETE YERACE

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EMCBC NEPA Compliance Officer

JOHN ZIMMERMAN

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EMCBC Director

6.0 References

National Environmental Policy Act of 1969, as amended (Pub. L. 91-190,42 United States Code [U.S.C.] 4321 et seq.) (NEPA) and the 2025 DOE NEPA Implementing Procedures

40 CFR 192 (Code of Federal Regulations), Subpart C, “Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, Implementation.”

40 CFR 1502.9 (Code of Federal Regulations), “Environmental Impact Statement, Draft, final, and supplemental statements.”

23 USC 162 (United States Code), National Scenic By-ways Program.

40 USC 2011 (United States Code), Atomic Energy Act of 1954.

42 USC 4321 (United States Code), National Environmental Policy Act of 1969.

DOE (U.S. Department of Energy), *Amended Record of Decision for the Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah*.

DOE (U.S. Department of Energy), *Record of Decision for the Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah*.

DOE (U.S. Department of Energy), *Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Final Environmental Impact Statement* (DOE/EIS-0355).

DOE (U.S. Department of Energy), Order 458.1, "Radiation Protection of the Public and the Environment."

DOE (U.S. Department of Energy), *Moab UMTRA Project Radiation Protection Program* (DOE-EM-GJ610)

DOE (U.S. Department of Energy), *Moab UMTRA Project Crescent Junction Fugitive Dust Control Plan* (DOE-EM/GJ1235).

DOE (U.S. Department of Energy), *Moab UMTRA Project Crescent Junction Site Storm Water Pollution Prevention Plan* (DOE-EM/GJ1238)

DOE (U.S. Department of Energy), *Moab UMTRA Project Moab Site Storm Water Pollution Prevention Plan* (DOE-EM/GJ1475).

DOE (U.S. Department of Energy), *Moab UMTRA Project Remedial Action Plan and Site Design for Stabilization of Moab Title I Uranium Mill Residual Radioactive Material at the Crescent Junction, Utah, Disposal Site* (DOE/EMGJ1547)

DOE (U.S. Department of Energy), *Moab UMTRA Project Flood and Drought Mitigation Plan* (DOE-EM-GJTAC1640)

DOE (U.S. Department of Energy), *Moab UMTRA Project Moab Site Fugitive Dust Control Plan* (DOE-EM/GJ2072).

DOE (U.S. Department of Energy), *Moab Project Cultural Resources Management Plan* (GJO-2002-390-TAC).

DOE (U.S. Department of Energy), *Recommendations for the Supplement Analysis Process, Second Edition, January 2019.*

Dwyer (Dwyer Engineering LLC), 2023 *Crescent Junction Disposal Site Evapotranspiration Cover System Design Report*

Golder (Golder Associates, Inc.), 2005. *Materials Handling Evaluation Study for the Moab Tailings Impoundment, Moab, Utah*, Report to S.M. Stoller, Lakewood, Colorado, September 21.

NRC (U.S. Nuclear Regulatory Commission), NUREG-1531, "Final Environmental Impact Statement Related to Reclamation of the Uranium Mill Tailings at the Atlas Site, Moab, Utah."

Public Law 106-398, Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001.

Public Law 111-5, American Recovery and Reinvestment Act of 2009.