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Environmental Assessment for Proposed Issuance of Multi-Site License to Disa Technologies for Abandoned Uranium Mine Waste Remediation

Disa Technologies, Inc.
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DRAFT FOR PUBLIC COMMENT

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Executive Summary

This document is an Environmental Assessment (EA) evaluating the proposed issuance of a license to Disa Technologies, Inc. (Disa) to use the High-Pressure Slurry Ablation (HPSA) technology at abandoned uranium mine (AUM) sites. Disa Technologies has requested a license from the U.S. Nuclear Regulatory Commission (NRC) to use HPSA technology to remediate mine waste at AUM sites. The HPSA process separates uranium and thorium fines from mine waste rock and soils and would produce licensable quantities of source material. If granted, and following site-specific review, the license would allow Disa to operate at AUM sites under NRC jurisdiction.

The HPSA technology involves mobile units that use high-pressure water streams to remove source material from the mine waste, resulting in coarse material and fines concentrates. Disa expects that the coarse material would meet NRC requirements for release and would be reintegrated into the mine site soils. The fines concentrates would be transported to licensed low-level radioactive waste or uranium recovery facilities for disposal or recycling. The NRC would separately review site-specific information and plans before Disa mobilizes to a site.

The U.S. Environmental Protection Agency (EPA) has documented at least 15,000 AUM sites, which are primarily located in 14 western states. These sites, many of which are on federal and Tribal lands, pose environmental and health risks due to elevated radioactivity from uranium and its decay products. Successful use of the HPSA process at AUM sites would reduce the radioactivity and could allow currently encumbered sites to be used for purposes such as recreation, agriculture, or traditional cultural activities.

This EA generically evaluates the potential impacts of the proposed action on various environmental resource areas, including land use, transportation, geology and soils, water resources, ecological resources, air quality, noise, historic and cultural resources, visual and scenic resources, socioeconomics, public and occupational health, and waste management. The assessment for each resource area concludes that the proposed HPSA operations would not have significant impacts if certain assumptions are met at each site. These assumptions are listed in the conclusions for each resource area. When Disa identifies a site for HPSA operation, the NRC staff would review the site-specific information and operational plans against this EA's assumptions. If any assumptions would not be met at a site, the NRC staff would conduct a site-specific environmental analysis.

The NRC evaluated the no-action alternative, under which the NRC would not issue the license. If Disa is not granted a license to operate the HPSA process, some AUM sites that would have undergone HPSA remediation might not be addressed or would require alternative remediation methods.

The NRC staff concludes that the issuance of a license to Disa for HPSA would not significantly affect the quality of the human environment, provided that all assumptions and mitigation measures described in the EA are met. The issuance of the license to Disa for the HPSA process could result in long-term beneficial impacts by reducing contamination at AUM sites and potentially making the land available for other uses. The NRC finds that an environmental impact statement is not warranted, and a finding of no significant impact is appropriate. For each site, the NRC will review the site-specific information and supplement this evaluation if necessary, as appropriate.

Acronyms and Abbreviations

APE	area of potential effect
ALARA	as low as is reasonably achievable
AQCR	Air Quality Control Region
AUM	abandoned uranium mine
BMP	best management practice(s)
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted decibels
GCRP	Global Change Research Project
EA	environmental assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ER	environmental report
ESA	Endangered Species Act
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas(es)
GPS	Global Positioning System
gpm	gallons per minute
HC	hydrocarbon(s)
HPSA	high-pressure slurry ablation
IPaC	Information for Planning and Consultation database
kg	kilogram(s)
mg	milligram(s)
l	liter(s)
LLRW	low-level radioactive waste
mrem	millirem(s)
NAA	nonattainment area
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
Pb	lead
PM	particular matter
PMN	premobilization notification
RAI	request for additional information
RCRA	Resource Conservation and Recovery Act
RSI	request for supplemental information
SER	safety evaluation report
SHPO	State Historic Preservation Office(r)
SIP	State Implementation Plan
SO_2	sulfur dioxide

SOP	standard operating procedure
Sv	sievert(s)
TCP	traditional cultural property
THPO	Tribal Historic Preservation Office(r)
tph	tons per hour
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VOC	volatile organic compound
yr	year

1.0 Introduction

On March 28, 2025, Disa Technologies, Inc. (Disa) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for a performance-based, multi-site license to use its High-Pressure Slurry Ablation (HPSA) technology to remediate mine waste at abandoned uranium mine (AUM) sites (Disa 2025a). Specifically, Disa is seeking a license under Title 10 of the *Code of Federal Regulations* (10 CFR) part 40, "Domestic Licensing of Source Material," to operate the HPSA process and possess the source material that would result from these operations. If the NRC issues this license, Disa could operate at AUM sites in areas of NRC jurisdiction.

On April 11, 2025, the NRC staff docketed Disa's application, which includes an environmental report (ER) (Disa 2025b),for detailed review. The NRC issued a notice in the *Federal Register* (*FR*) on May 12, 2025, providing an opportunity to request a hearing and petition for leave to intervene in the NRC's license application review process (NRC 2025b). The NRC staff sent Disa a request for additional information (RAI) on June 2, 2025 (NRC 2025c), and Disa provided responses on June 17, 2025 (Disa 2025d). NRC conducted an audit of the RAI responses in July 2025 in accordance with an audit plan (NRC 2025e), and Disa submitted a supplement to the application on July 31, 2025 (Disa 2025e).

The NRC staff's environmental review for the proposed license issuance is documented in this generic environmental assessment (EA). This generic EA was prepared in accordance with the NRC's National Environmental Policy Act (NEPA) implementing regulations in 10 CFR part 51 and environmental review guidance in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." The NRC is also conducting a safety evaluation that is documented separately in a safety evaluation report. The NRC staff's decision on whether to issue the license will be based on the staff's safety and environmental reviews of the application, as supplemented by Disa's responses to NRC's RAIs and Disa's application supplement.

1.1 Proposed Action

Because the HPSA process to separate uranium and thorium fines from mine waste rock and soils would result in licensable quantities and concentrations of source material, the NRC is proposing to issue a license under 10 CFR part 40 for the possession and processing of source material ore. If granted, the license would allow Disa to operate the HPSA process at temporary job sites, but only after the NRC has reviewed the site-specific characteristics and operating plans Disa will submit before mobilizing to a site. These temporary job sites would be limited to AUM sites under NRC jurisdiction. Areas of NRC jurisdiction include non-Agreement States and areas of exclusive federal jurisdiction in Agreement States and on Tribal lands.

Disa proposes to use its HPSA technology in the form of mobile units to treat mine waste at abandoned uranium mines. The length of time Disa would operate at each site depends on the amount of material to be processed and could range from about six months for small sites to almost 13 years for large sites. HPSA employs mechanical and kinetic energy to separate mineral-rich patinas containing source material (uranium and/or thorium) and other metals from host sand grains. The HPSA treatment would generate two products, coarse material and fines concentrates. Disa states that the coarse material would be an inert sand that may be reused at the mine sites. The fines concentrates, which would contain elevated levels of uranium and/or thorium and other metals, would be transported to a licensed recipient such as a low-level

radioactive waste disposal facility, a uranium recovery facility, or a storage facility. After HPSA operations conclude, Disa would demobilize and leave the site, including deposited coarse material, consistent with NRC requirements for unrestricted release. The proposed action is described further in section 2 of this EA.

1.2 Purpose of and Need for the Proposed Action

The purpose of the proposed action, issuance of the license, is to allow Disa to conduct HPSA activities safely in accordance with the conditions of the license and with applicable NRC requirements under 10 CFR part 20, "Standards for Protection Against Radiation," and part 40. Disa proposes to conduct HPSA activities in part to respond to a need identified by the U.S. Environmental Protection Agency (EPA) to remediate AUM sites, as discussed further below.

Approximately 15,000 AUM sites have been documented primarily in 14 western states, namely Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, North Dakota, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming (Disa 2025b). These sites resulted from a uranium mining industry that began in the 1940s to produce uranium for weapons and later for nuclear fuel. Most AUM sites are in Colorado, Utah, New Mexico, Arizona and Wyoming, and approximately 75 percent of these are on federal and Tribal lands (Disa 2025b, EPA 2006). Figure 1 is a uranium mine location map based on a database of the 15,000 uranium mine and mill locations identified by the EPA. Figure 2 shows two examples of AUM sites. The EPA is engaged in efforts to remediate these legacy AUM sites across the United States, with a significant focus on the Navajo Nation, which encompasses over 500 of these sites. The majority of the 15,000 sites were conventional (open pit and underground) mines that produced large amounts of bulk waste material, including bore hole drill cuttings, excavated topsoil, and barren overburden rock, as well as uranium-contaminated mine waste. Before the 1970s, many mines were abandoned without being reclaimed, and exposed mine wastes remained on the sites. These mine wastes contain elevated radioactivity from uranium, thorium and their radioactive decay products.

1.3 Alternative to the Proposed action

As an alternative to the proposed issuance of a license to Disa, the NRC considered the no-action alternative. Under the no-action alternative, the NRC would not issue the license and Disa would not operate its HPSA units at AUM sites. Possible consequences of denying a license could be that Disa submits a new application or that alternative remediation options are pursued for some AUM sites. Section 2.2 of this EA describes the no-action alternative in further detail.

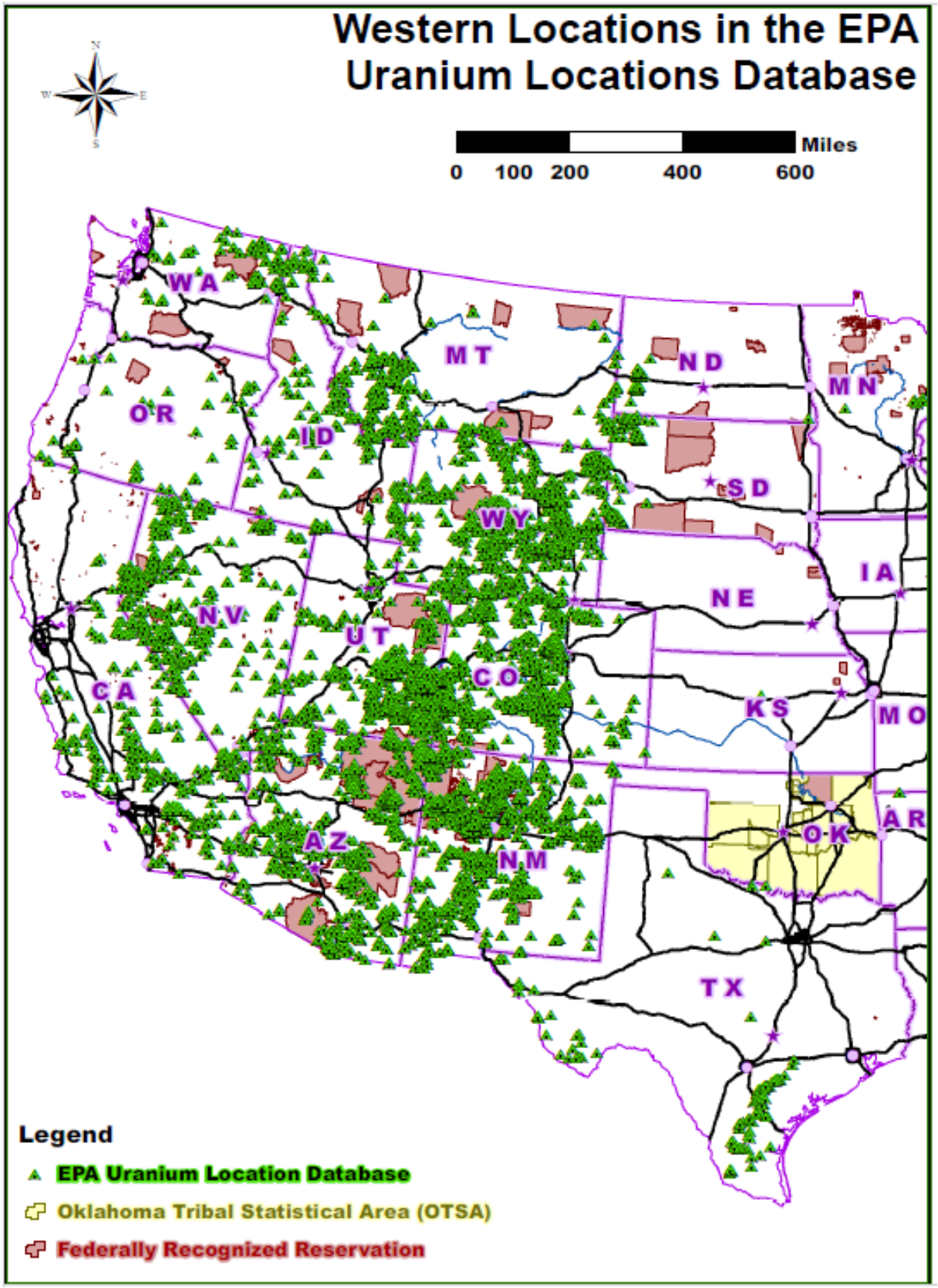

Figure 1. Locations of Western AUM Sites (EPA 2006).

Figure 2. Examples of Abandoned Uranium Mines

1.4 Scope, Analytical Approach, and Use of the EA and FONSI

This EA provides a generic evaluation of the potential environmental impacts of treating uranium mine waste using the HPSA technology at AUM sites. Because the specific locations of potential HPSA operations are not yet known, the EA uses reasonable, performance-based bounding assumptions regarding site conditions and HPSA operation. The analysis of each environmental resource area presented in section 3 of this generic EA includes specific assumptions underlying the "no significant impacts" conclusions for that resource area. When Disa later identifies specific sites, the NRC staff would review proposed HPSA operations and specific conditions at each site to determine whether the site-specific conditions meet these assumptions. If site-specific conditions and proposed operations meet the assumptions, the NRC staff could confirm that this EA's finding of no significant impact (FONSI) applies to a given site. That is, for a FONSI based solely on this generic EA to apply to a specific site, Disa must demonstrate to the NRC staff that implementation of HPSA at the site meets all assumptions in section 3 of this EA (and as also listed in the environmental information requirements for HPSA premobilization notification (PMN) in appendix A). If all assumptions are met, the NRC staff would prepare site-specific documentation to record the staff's determination for the site. If any assumptions are not met for a given site, the NRC staff would prepare a supplemental site-specific NEPA evaluation, tiered from this generic EA, to assess the potential impacts on resource areas for which the assumptions are not met. The NRC staff expects that in most cases any needed supplemental NEPA analyses would result in a site-specific FONSI. However, if the NRC staff determined that the potential site-specific impacts are significant, the staff would prepare a limited-scope supplemental environmental impact statement (EIS) and a record of decision.

The performance-based assumptions identified for each environmental resource area in section 3 of this generic EA are of two general types. The first type comprises assumptions concerning site conditions. An example is an assumption that no wetlands are present on or adjoining the site. The second type comprises assumptions regarding HPSA operations at the specific site.

An example is an assumption that implementation of the HPSA process would comport with one of several analyzed tiers of level of activity and duration.[1]

The process by which Disa and the NRC staff would use this generic EA and FONSI is illustrated in figure 3. Disa states in its ER that it cannot identify at this time the potential ecological and cultural resources on every site where it may eventually use the HPSA process. After identifying a site for HPSA operation, Disa would provide information about the site and planned operations in a PMN. The NRC staff would review the PMN and conduct a site-specific review against this generic EA, as well as conduct consultation (e.g., Section 106 consultation under the National Historic Preservation Act (NHPA) or Section 7 consultation under the Endangered Species Act (ESA)). If the NRC staff determines that all of the assumptions would be met at a site, and once the consultations are completed, the staff would notify Disa that it may proceed with implementation of the HPSA process on that site contingent upon the safety review and without further environmental review. If, however, the NRC staff determines that one or more of the assumptions would not be met, the staff would conduct a site-specific review focused on the resource areas outside what was previously evaluated. If needed, the staff may request additional information from Disa to complete the site-specific environmental review. The review would result in either a site-specific FONSI or a determination that impacts would be significant and that an EIS supplement is needed.

The ER states that permits, such as sediment and erosion control permits, water discharge permits, stormwater permits, air emissions permits, and others may be required for certain sites and indicates that Disa will obtain those permits before beginning work on those sites (Disa 2025b). Disa would provide permit status information in the PMN.

[1] The site and HPSA operation assumption types are similar to the “site parameter envelope” and “plant parameter envelope” assumption types used in the NRC’s generic EIS for licensing new reactors (NRC 2024).

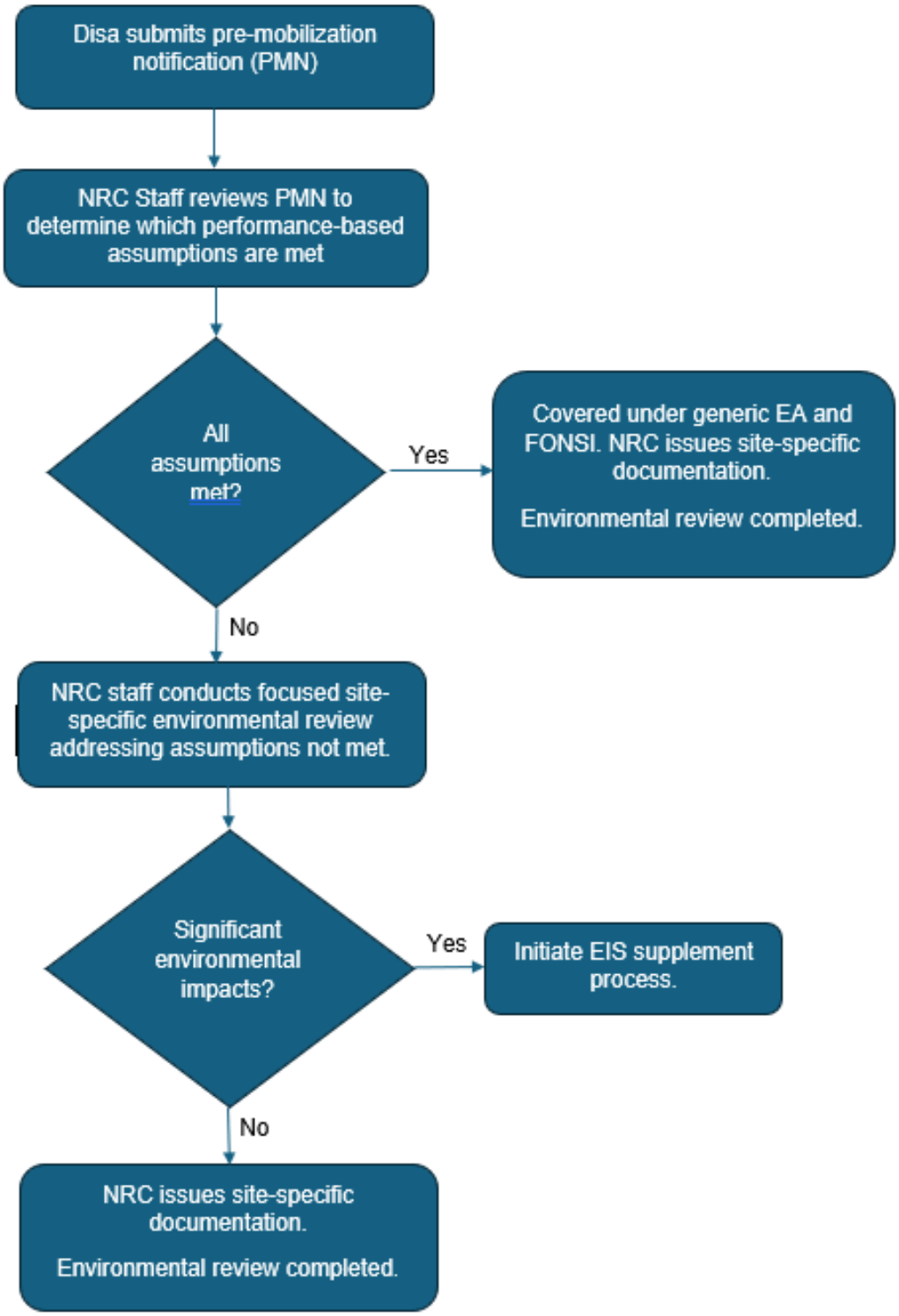

Figure 3. Process for Reviewing Site-Specific PMN Against Generic EA[2]

[2] As appropriate for each site, the NRC staff will conduct consultations under Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. The results of the consultations would be documented in the site-specific environmental review documentation.

2.0 Proposed Action and Alternatives

This section describes the activities that Disa would conduct if the NRC issues the license as requested. This section also describes the alternative of not issuing the license, referred to as the no-action alternative.

2.1 The Proposed Action

The NRC's proposed action is to authorize Disa to operate its HPSA technology at AUM sites under NRC jurisdiction. Areas of NRC jurisdiction are areas in non-Agreement States and areas of exclusive federal jurisdiction. If Disa intends to operate on a site within an Agreement State or on certain Tribal lands, Disa would need to obtain separate approvals from those governments. The HPSA operation could be used at any AUM where, consistent with its license conditions for PMN, Disa verifies and informs the NRC staff that the site is abandoned, that there was documented production of uranium, and that the site is no longer in use for that purpose. Disa would not be authorized to operate HPSA at an active uranium mine or licensed uranium mill.

Disa would bring mobile HPSA units to a site and operate as long as necessary to process the treatable mine waste material at the site. Disa would then remove all equipment, structures, materials and waste from the site, leaving only coarse material and site conditions that meet NRC requirements for release.

Disa might operate at multiple sites concurrently. The length of time Disa would operate at each site depends on the amount of material to be processed. Disa has defined five operational tiers based on the estimated gross tons of mine waste at particular sites. The smallest expected operation, or tier 1 (processing a maximum of 100,000 tons), would occur over approximately six months. The largest operation, or tier 5 (processing a maximum of 10,000,000 tons), could continue for almost 13 years (Disa 2025b). Table 1 provides some basic information about these operating tiers, and more detail is provided in table 1-1 and table 1-2 of Disa's ER (Disa 2025b).

Table 1. HPSA Operating Tiers

Operating Tier	Max. tons processed	Volume in cubic yards (based on 125 lbs/ cubic foot)	Weekly processing rate (tons)[1]	# of days	# of HPSA units	Water use (gal/day)	Area needed for treatment (HPSA units + storage)
Tier 1	100,000	59,260	2,700	185	1	8,640	6,020
Tier 2	500,000	296,296	2,700	926	1	9,360	6,020
Tier 3	1,000,000	592,593	5,400	926	2	18,720	12,540
Tier 4	5,000,000	2,962,963	8,100	3,086	3	28,080	16,610
Tier 5	10,000,000	5,925,926	10,800	4,630	4	37,440	26,180

Source: Disa 2025b.
[1]assumes five 12-hour days per week.

2.1.1 Site Identification, Preparation, and Construction

Approximately 90 days before Disa intends to operate at a specific site, Disa would provide site-specific information to the NRC in the PMN. This notification would include sufficient detail about the site and the planned HPSA operations to inform the safety and environmental reviews for

that site. For example, the PMN would include the results of background surveys conducted to calculate the background remediation criterion for the site (based on the NRC's unrestricted release limit of 25 mrem/year above background) and characterization surveys to determine the extent of needed excavation and the excavation volume. The NRC staff would use the notification information to verify that the proposed operations, site conditions, and site-specific environmental impacts fall within the assumptions and bounds in the safety review and this EA. Section 1.4 of this EA explains the site-specific evaluation process in more detail, and appendix A describes the site-specific environmental information Disa must submit for each site. Appendix A would be cited in condition 10 of the license.

Disa would conduct characterization surveys at prospective sites to determine the extent of the AUM waste, calculate the volume of abandoned mine waste to be treated, and estimate the mass of source material to be recovered. Disa anticipates treating abandoned mine waste with a typical maximum concentration of 1,500 mg/kg source material (uranium and/or thorium), although some abandoned mine waste may contain more source material (Disa 2025c). Disa would conduct background surveys to determine the radionuclide concentrations of the abandoned mine waste at a site. Because land areas containing abandoned mine sites are likely to exhibit higher background radioactivity compared to areas with no abandoned mine sites, Disa would collect background data either at the site or adjacent to the site, where no evidence of mining or disturbance is observed. The background survey information would be used to calculate the release criterion for a site using the NRC's 25 millirem above background requirement for unrestricted release and the principle of "as low as reasonably achievable" (ALARA) in 10 CFR 20.1402.

Disa would need to prepare the site and access roads for HPSA operations. Disa plans to apply gravel to existing dirt roads on a given site but would not create new roads. Disa would grade the area where the HPSA units and other equipment would be installed, applying water as needed for dust suppression. After transporting equipment and HPSA unit components to the site, Disa would assemble HPSA equipment onsite. Figure 4 shows a sample layout, which could vary depending on site conditions and refinements in the HPSA design. Disa anticipates that the total site area needed (for operations and material storage) would range from 6,020 square feet for tiers 1 and 2 to approximately 26,200 square feet for tier 5 operations. Disa estimates that one HPSA unit would be needed for operations at tiers 1 and 2, two units for tier 3, three units for tier 4, and four units for tier 5 operations (Disa 2025b).

2.1.2 Operation

As shown in figure 4, Disa would establish a restricted area to encompass all activities involving the handling of source material and in accordance with NRC requirements. Equipment and operations that are not involved in the handling or storing of source material include the post-treatment coarse material stockpile, coarse material centrifuge, empty transportation trucks, office trailer/lavatory, and coarse material centrifuge stacker. In addition, each site would have safety and related equipment for spill response and containment, including a containment berm, shovels, drums for removing and storing potentially contaminated materials, and signage.

Once the HPSA system is constructed on a site (see example in figure 5), Disa would crush abandoned mine waste to an appropriate size for the HPSA process. Water or dust enclosures would be used in the crushing process for dust suppression and to slurry the crushed waste rock. The slurried mixture would be transferred to a hopper that would feed the HPSA collision chamber using high-pressure injection nozzles. The nozzles create a high-energy impact zone in which the mineral-rich patina is separated from the host sand.

Feature Number	Equipment Description	Approximate Size [L x W x H]
1	Crusher and 0.25" Screen	56'6" x 19'1" x 15'5"
2	HPSA Processing Unit	30' x 9' x 11'
3	HPSA Unit Containment Berm	50' x 10' x 1'6"
4	Product Centrifuge/Filter Press	16' x 9' x 10'
5	Clean Coarse Centrifuge/Filter Press	16' x 9' x 10'
6	Analytical Trailer	24' x 8'6" x 8'6"
7	Loaded Transportation Truck	(24' x 8' x 5.6') x 2
8	Unloaded Transportation Truck	24' x 8' x 5.6'
9	Process Water Tank	24' x 12' x 13'
10	Process Water Treatment Unit	11' x 8' x 8'
11	Office Trailer/Lavatory	30' x 9' x 10'
12	Product Centrifuge/Filter Press Hopper	8'x 5' x 4'
13	Product Centrifuge/Filter Press Auger Conveyor	20' x 6' x 8"
14	Clean Coarse Centrifuge/Filter Press Stacker	35' x 2' x 16"
15	Front-end Loader	15' x 9' x 11'4"

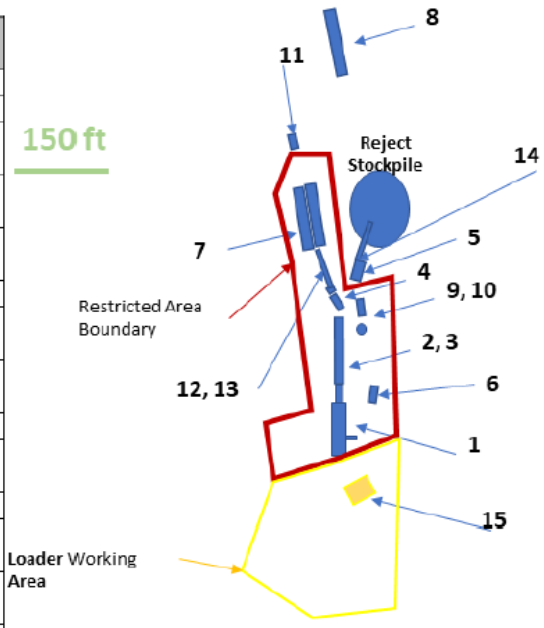

Figure 4. Example Site Layout for Single Unit HPSA Operation (Disa 2025b).

After collision in the HPSA unit, the resulting stream would be mechanically separated in a centrifuge to isolate the coarse material from the fines in which the uranium is concentrated. Excess water is also separated from the fines and coarse material during this process for reuse in the process. The ER states that the coarse material would be an inert[3] sand that would be stockpiled and remain onsite after it has been demonstrated to meet NRC requirements for unrestricted release. Disa would collect samples of the coarse material at regular intervals to measure uranium and thorium concentrations to demonstrate that the material does not contain source material in excess of the lower limit for licensing (500 mg/kg or 0.05 percent) in 10 CFR 40.13(a), "Unimportant quantities of source material" (Disa 2025c).

The fines concentrates, which would contain uranium and/or thorium and other metals, would be containerized in a lined dumpster or other suitable, covered container within the restricted area. Disa would install temporary security measures to prevent theft, such as temporary fences, locking and leak-proof containers, Global Positioning System (GPS) trackers on storage containers, security cameras, portable security systems, portable site lighting, and/or guards if necessary. Ultimately, the fines concentrates would be transported to a licensed facility such as a low-level radioactive waste disposal facility, a uranium recovery facility that can recycle the fines concentrates, or a storage facility pending disposal or recycling.

[3] Disa defines inert material as non-water soluble and non-putrescible solids together with such minor amounts and types of other materials, unless such materials are acid or toxic producing, as will not significantly affect the inert nature of such solids. The term includes, but is not limited to, earth, sand, gravel, rock, concrete in a hardened state for at least sixty days, masonry, asphalt paving fragments, and other inert solids (Disa 2025b).

Figure 5. HPSA Unit of 20 Ton/Hour Capacity (Disa 2025b).

As discussed in section 3.4.2 of this EA, a HPSA unit that processes 50 tons per hour (tph) would require approximately 200,000 gallons of water per month and a unit that processes 100 tph would require 384,000 gallons of water per month. Water would be trucked in from a local source that Disa would identify in the PMN. Process water would be recycled within the HPSA treatment system until all treatable mine waste at a site has been processed. Water loss would occur at a rate of 10 to 15 percent because some moisture from the rinsing process would be retained in the fines concentrates and the coarse material. Dewatering would involve filter presses and centrifuges. Some moisture but no free liquids would remain in the coarse material or fines concentrates.

Process water would be filtered and treated if necessary to meet NRC discharge standards in appendix B of 10 CFR part 20, as well as any other federal, state, Tribal or local permit requirements. The ER states that Disa would discharge the treated process water to the ground or to a sewer system. If the process water needs to be treated, Disa would treat it using a bag filter system and an additional filter system with absorbent media and reagents (Disa 2025d). Alternatively, Disa might reuse the water at another AUM site. No water would be discharged directly to surface water bodies (Disa 2025b). Section 3.4.2 of this EA discusses the potential impacts of water use, reuse, and discharge.

The ER states that the amount of fuel needed to operate the HPSA process would range from approximately 408 gallons of fuel per day for tier 1 operations to 1,488 gallons per day for tier 5 operations (Disa 2025b). The ER states that no permanent facilities would be left onsite, no onsite waste storage would be required, and no contaminated water would be discharged (Disa 2025b). In section 3 of this EA, the NRC staff incorporates these assumptions into its evaluation. If Disa proposes activities at any site different from those evaluated in this EA, the NRC staff will conduct a separate, site-specific analysis for those activities during the premobilization review.

2.1.3 Demobilization and Final Status Surveys

After concluding HPSA operations, Disa would dismantle and remove the HPSA equipment, perform any needed remediation activities, conduct post-remediation (final status) surveys of the site, and sample the coarse material. Disa would leave the site with the deposited coarse material in a condition that meets NRC requirements in the license and in 10 CFR part 20 for unrestricted release (25 millirem above natural background and ALARA). Disa would re-treat any coarse material that does not meet the release criteria. If re-treatment is not effective, Disa states that it would request NRC approval for alternate release criteria. This generic EA assumes that no alternate release criteria would be needed and that all sites would be eligible for unrestricted use after demobilization. Any NRC review of restricted or alternate release criteria for a site would require site-specific safety and environmental reviews.

The coarse material would contain moisture that remains after the material has been rinsed and filter pressed. Disa would grade the coarse material into the existing site topography and seed using seed mixes provided by Disa's ecological resources consultant. Disa states that, because the fine material would have been removed in the HPSA process, the quantity of windblown dust arising from the deposited, seeded coarse material would be substantially less than dust levels in the natural environment (Disa 2025d).

2.1.4 Permits and Approvals

Disa anticipates operating HPSA on Tribal lands (e.g., the Navajo Nation), federal public lands, non-Agreement State lands, and private lands. Disa would generally need to obtain approvals from other federal, state, Tribal, or local governments, as appropriate, for these sites. This EA assumes Disa would obtain all necessary permits and approvals to operate at any AUM site authorized by the NRC-issued license (i.e., sites in non-Agreement States and in Agreement States only on land that is under exclusive federal jurisdiction). Disa may need to obtain permits for water discharges, floodplain and stormwater management, and wetlands permits from the EPA, the Army Corps of Engineers, or state and local authorities. Disa may need to obtain permits for air emissions at larger (tier 4 and 5) sites. Disa may need approvals from the Department of Interior's Bureau of Land Management (BLM) and/or the Bureau of Indian Affairs. To operate on Tribal lands or lands held in trust for tribes by the federal government, Disa would need approval from affected tribes. Disa would need to ensure that all materials and wastes are shipped by licensed transporters and that receiving facilities are appropriately permitted or licensed. In the PMN for each prospective site, Disa would need to include a comprehensive list of permits, licenses, other approvals, and consultations that would be needed, as well as the status of these approvals and consultations. As part of its review of the PMN, the NRC staff will determine, given factors like those noted above, whether supplementation of this environmental assessment is required.

2.2 The No-Action Alternative

Under the no-action alternative, the NRC would not issue a license to Disa for HPSA operations. If the NRC denies the license request, Disa could submit a new application for NRC review. A consequence of denying the license could be that AUM sites potentially suitable for HPSA would need to be remediated using other means. The EPA oversees AUM site cleanup at many sites on and near the Navajo Nation and would be the primary agency evaluating site-specific alternatives for remediation. Cleanup of AUM sites on other federal or Tribal lands could be under the jurisdiction of other federal agencies, such as the BLM. Cleanup of AUM sites on private lands would likely be under the authority of the states in which they are located. In the

absence of HPSA operations, the NRC would not be involved in AUM site cleanup unless the remedial activity otherwise involves NRC-regulated material or activities. Since Disa has not yet identified specific sites for HPSA operations, this EA cannot evaluate how or when AUM sites might be remediated if HPSA is not available as a treatment option.

EPA generally uses two main approaches for remediating AUM sites. These and other approaches might be used instead of the HPSA process or in addition to it: (1) excavation and removal, and (2) consolidation and capping. Of the approximately 15,000 AUM sites, the EPA is prioritizing the cleanup of over 500 sites on and near the Navajo Nation (EPA 2025a) and has recently made decisions to remediate several sites by excavating and removing the mine waste (EPA 2024a, 2025b). These sites will be characterized to determine the extent of contamination and thus the extent of needed excavation. The mine waste material will be excavated and loaded onto trucks for transport to licensed recipients, such as a new or existing disposal facility. After all of the contaminated mine waste is removed, post-remediation surveys will be conducted before the sites are regraded and revegetated to prevent erosion and to restore the sites to a natural condition. The ongoing EPA effort to remove mine waste from the Northeast Church Rock Mine site and place it on the nearby United Nuclear Corporation Mill site is an example of an excavation and removal action (NRC 2023).

The EPA has also considered consolidating and capping mine waste in place at AUM sites.[4] Under this option, mine waste from different areas of a site would be excavated and consolidated into a repository. The repository would be capped with soil, rock, and vegetative cover to protect the waste from rain infiltration. The repository would be maintained in perpetuity with land use restrictions.

Under the no-action alternative, the HPSA process could not be used at AUM sites. The potential environmental impacts of the no-action alternative would include the direct impacts of continuing current site conditions (i.e., no change to a site) as well as the potential impacts of using remediation alternatives instead of the proposed action. The potential impacts of continuing current site conditions include the continued unavailability of AUM land for human use and the avoidance of the impacts assessed generically in this EA for the proposed HPSA operations.

Under either the proposed action or the no-action alternative, AUM site cleanup could involve the other remedial alternatives noted above. But the NRC does not have authority over AUM site cleanup generally and thus is not assessing the potential impacts of other remedial actions in this EA beyond its jurisdiction and authority.

[4] For example, see alternative 2 (section 4.3.6) of EPA's Engineering Evaluation/Cost Analysis for the Quivira Mines Site near Gallup, New Mexico (EPA 2024b).

3.0 Affected Environment and Environmental Impacts

This section generally describes the affected environment and environmental impacts of constructing, operating, and demobilizing HPSA equipment at AUM sites. This section also lists the bounding assumptions for each resource area that determine whether the FONSI in this EA applies to a particular site. This section is organized into subsections that address each of 12 environmental resource areas that could be affected by HPSA operations.

3.1 Land Use

This section addresses land use changes resulting from implementation of the HPSA technology and potential conflicts with other land uses and with Federal, state, local, and Tribal land use plans, policies, and controls.

3.1.1 Affected Environment

Disa plans to implement the HPSA technology at multiple locations from among approximately 15,000 AUM locations in 14 western states, namely Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, North Dakota, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming (Disa 2025b). Disa estimates that approximately 75 percent of the potentially suitable AUM sites are located on Federal or Tribal lands (Disa 2025b). Using defense-related AUM sites as an example, nearly 60 percent are on federal public land managed by the BLM and the US Forest Service, and 11 percent are on Tribal land (AUMWG 2022). On Tribal lands, over 600 AUM sites have been identified on the 27,000-square mile Navajo Reservation alone in Arizona, New Mexico, and Utah (EPA 2007). Numerous AUM sites are on the lands of other Tribes. Not all Tribal lands are necessarily owned or controlled by the tribes themselves. For example, the Navajo reservation includes a variety of land ownership types, including Tribal trust lands and lands owned by Tribal members and non-members (EPA 2007). The NRC staff expects that Disa may identify AUM sites on other Federal lands, such as military bases, national laboratories, national parks and monuments, Federal wildlife refuges, or designated wildernesses. Some potential sites are located on state, municipal, or private lands.

Disa characterizes most sites for potential implementation of the HPSA process as abandoned conventional open pit and underground mines (Disa 2025b). Figure 6 shows the features of a typical active underground uranium mine, and figure 7 shows the features of an open pit mine. Disa characterizes many of the AUM sites suitable for HPSA as comprising bare rock and dirt with little apparent flora and fauna (Disa 2025b). Disa notes that many AUM sites, especially those abandoned before the 1970s, were not reclaimed (Disa 2025b). The NRC staff expects that most AUM sites where HPSA would be implemented comprise physically disturbed soils supporting ruderal or sparse grassland, desert, forest or shrubland, cropland, or bare areas. Some sites may be surrounded by lands used for grazing, especially open range grazing, forestry, or agriculture; however, former excavations, grading, and abandoned structures from the former uranium mining may limit use of the sites themselves for other purposes.

The NRC staff expects that many of the sites would be in remote areas without zoning and not covered by comprehensive land use plans, although some sites on American Indian reservations could be subject to Tribal land use plans. Even in remote areas, residents sometimes build homes on or near abandoned uranium mines without being aware of the physical or radiological risks. Additionally, homes have reportedly been built directly on top of mine rock (AUMWG 2022). The NRC staff therefore expects that rural residences may be present on or close to some potential sites. The NRC staff expects that most small sites (tier 1

or 2) would not encompass floodplains or wetlands but that larger sites potentially could encompass such land features. The past soil disturbance for mining likely precludes the presence of prime or unique farmland even on the largest sites.

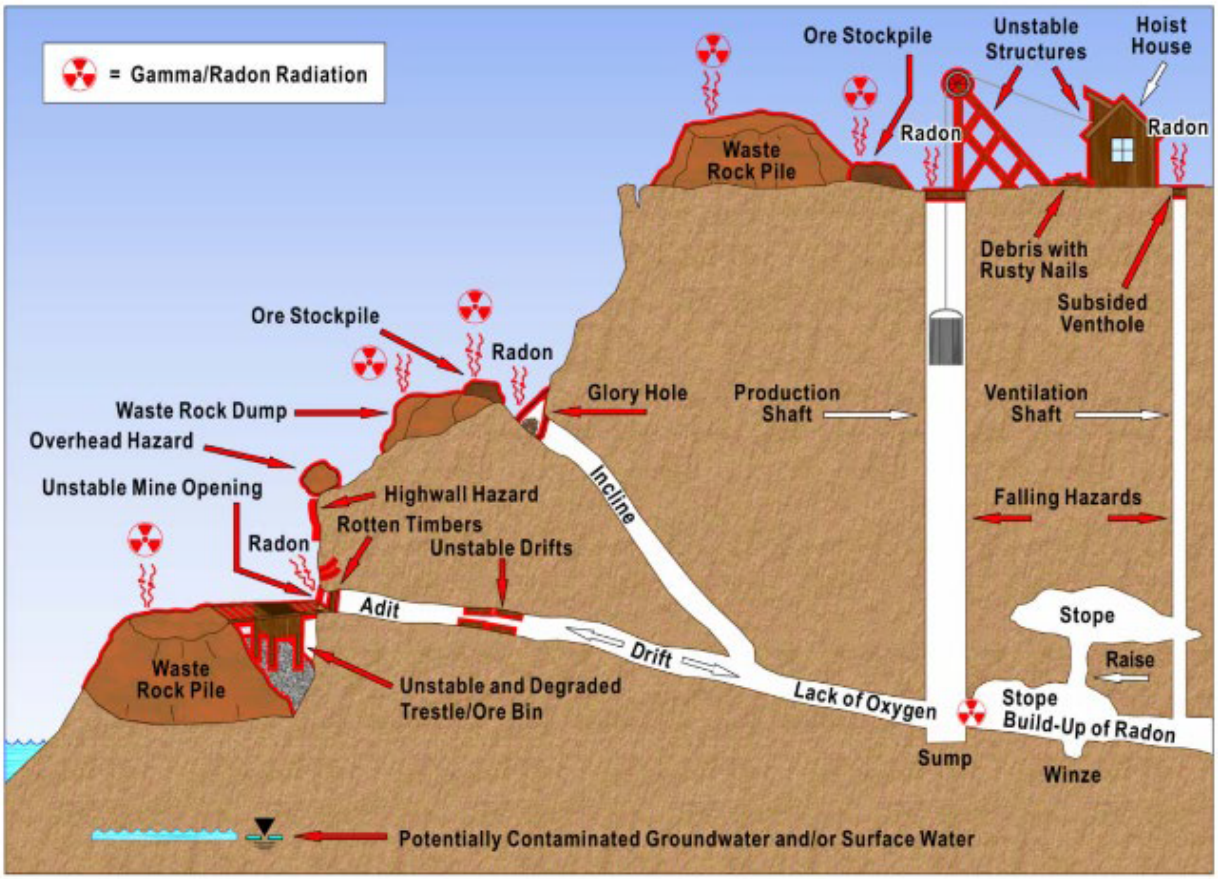

Figure 6. Typical Underground Mine (Disa 2025b).

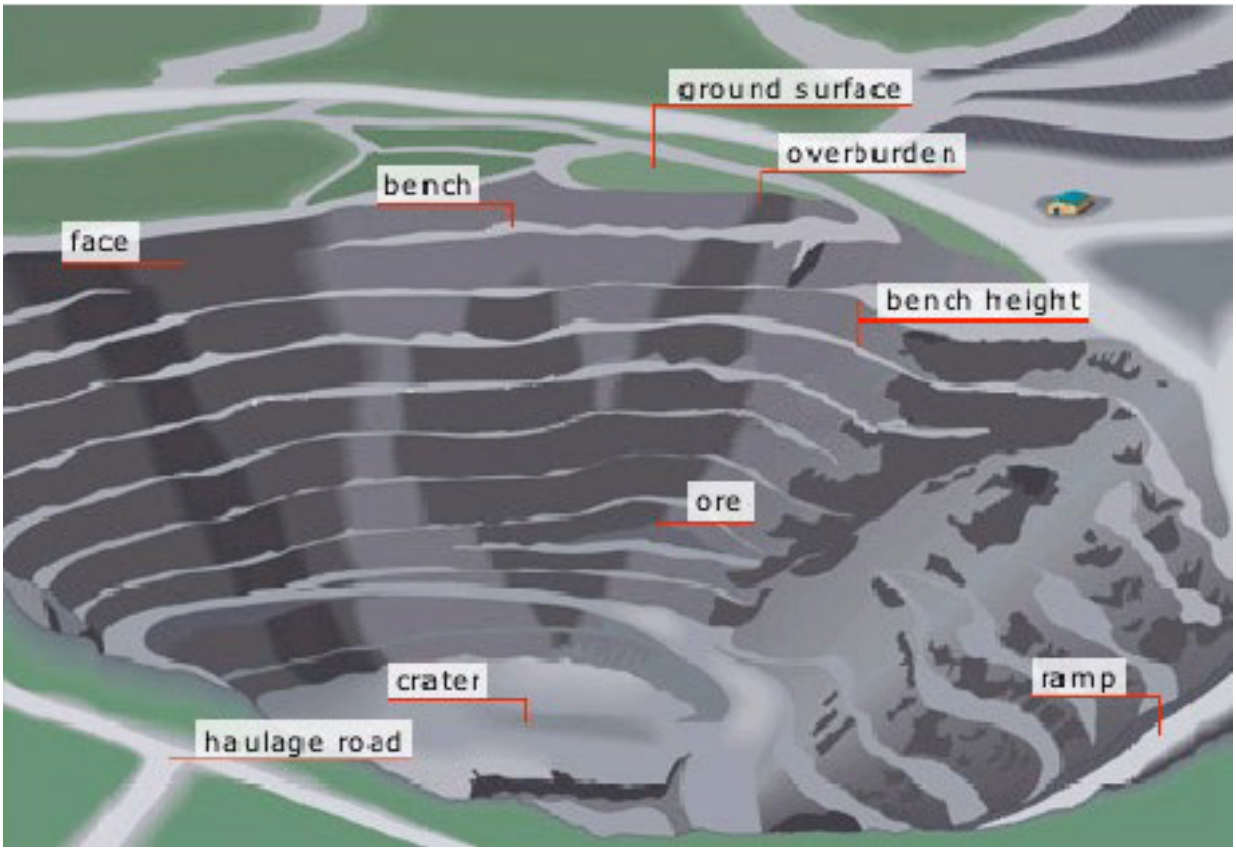

Figure 7. Typical Open Pit Mine (Disa 2025b).

3.1.2 Environmental Impacts

The effects of HPSA operations on AUM sites would include earthmoving on the areas from which the mine waste would be excavated and temporary effects (installation and operation of HPSA) on the areas used for operations and storage. The land needed for HPSA operations and material storage would range from about 6,000 square feet (0.14 acre) for tier 1 sites to more than 26,000 square feet (0.6 acre) for tier 5 sites (Disa 2025b). Disa would establish restricted areas during implementation of HPSA by installing temporary boundary fencing around locations for crushing and grinding, ablation, fines storage, and staging areas (Disa 2025b). The fencing would temporarily exclude the enclosed areas from grazing and temporarily exclude other land uses such as agriculture and outdoor recreation. These land use limitations would extend up to three years at tier 1, 2, and 3 sites and could last eight to almost 13 years at larger sites (tiers 4 and 5) (Disa 2025b). Because *abandoned* uranium mines are generally located in remote or rural areas with an abundance of land available for similar uses, these temporary limitations on land use would not likely be noticeable even on the largest sites. Further, HPSA operations may beneficially increase the flexibility of possible future uses of land by removing legacy site conditions left by past mining activities that pose limitations to some land uses.

Disa states that HPSA, followed by site regrading, would remove radiological and inorganic contamination hazards and eliminate limitations on future land uses (Disa 2025b). Disa claims that HPSA would transform unusable and unsafe land to land safely available for other beneficial land uses (Disa 2025b). The NRC staff recognizes that even where HPSA does not fully eliminate restrictions on future uses of the land, it would likely contribute to increased

flexibility in use of the land. Disa states that no permanent facilities would be left on the sites after the HPSA process is completed, no long-term onsite waste storage would take place on the sites, and that the remediated sites would be protective of human health and the environment (Disa 2025b). The NRC staff expects that portions of AUM sites, after undergoing successful mine waste treatment, could become suitable after appropriate preparation for some land uses, such as grazing, forestry, agriculture, or outdoor recreation. However, the NRC staff cannot determine in this EA the extent to which lands on treated sites would be made available by their owners for other land uses. Site suitability for unrestricted or other release will be evaluated on a site-specific basis as part of the demobilization process. Disa would provide post-remediation land use information in the PMN to inform site grading and stabilization (Disa 2025e)

The NRC staff expects that most HPSA sites would be in remote settings and have a low potential to conflict with surrounding land uses or with land use plans or policies. If a site were located near visually or audially sensitive land uses such as residences, schools, parks, recreational facilities, or urban areas, noise from traffic and equipment operations could temporarily interfere with those uses. Possible conflicts would likely extend over less than two to three years for tier 1, 2, and 3 sites but could last take eight to twelve years for tier 4 and 5 (Disa 2025b). The NRC staff expects that most conflicts occurring near sensitive land uses for less than three years would not be noticeable or could be effectively addressed through mitigation such as the use of best management practices, timing restrictions on operations, or visual or acoustic screening.

3.1.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts on land use from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. The site and adjacent (abutting) land is currently not used for any purpose other than agriculture, grazing, or forestry.
2. The site and adjacent (abutting) land is not subject to zoning; it is zoned for uses such as mining, industry, or agriculture; or it is situated on a Federal, non-Agreement State, or Tribal land and is not zoned for residential, commercial, institutional, or for conservation uses.
3. The site is not located within 1.0 mile of a national or state park or monument, national or state wilderness area, national or state seashore or lakeshore, national or state wildlife refuge, designated Federal or state scenic river, or other land specifically designated for conservation, historic preservation, or tourism.
4. HPSA operations would not occur within floodplains or within or adjacent to wetlands.
5. If any area or element of the site (e.g., mineral rights, water rights, or easements) is privately owned (i.e., not owned by the Federal Government or a state or Tribal government), use of HPSA has the approval of all affected property interest owners.
6. HPSA would not conflict with any applicable regional comprehensive planning document or land use plan, including but not limited to land use plans developed for Federal installations, military bases, American Indian reservations, campuses, laboratories, or other areas.

7. The site is not visible from designated scenic overlooks, highways specifically designated as scenic routes or parkways, park visitor centers, or tourism points subject to frequent use.
8. If HPSA operations are conducted on sites near visually or audially sensitive land uses such as residences, recreational facilities, or urban areas, appropriate mitigation would be implemented and the HPSA process would not take longer than three years.
9. HPSA operations would not result in the onsite disposition of any material that has not been demonstrated to meet NRC requirements for unrestricted release.
10. After HPSA operations conclude, no permanent facilities would be left onsite, and no long-term waste storage would take place onsite.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential land use impacts. Land use overlaps with a number of other environmental conditions, especially those related to noise, visual impacts, ecology, and cultural resources, as well as consultations under the NHPA and ESA. Additional assumptions that apply to these related environmental resources are outlined in subsequent sections of this EA.

3.2 Transportation

This section addresses impacts resulting from use of vehicles to access and perform work on sites to implement the HPSA technology.

3.2.1 Affected Environment

Most AUM sites are situated in remote areas not near major highways or arterial roads, and many are accessible only by dirt roads (Disa 2025b). Vehicles needed to implement the HPSA technology can be expected to make use of primary highways such as interstate, Federal, and state highways at considerable distances from the site in order to reach sites from Disa's headquarters in Casper, Wyoming or from satellite locations and to transport the fines concentrates generated by the HPSA process to uranium recovery facilities or disposal locations (Disa 2025b). While the NRC staff expects that most roads used for the HPSA process would be in rural areas, some primary highways used by the vehicles could be in urban or suburban areas situated away from the AUM sites themselves.

3.2.2 Environmental Impacts

Disa identified the types of vehicles expected to enter onto a site undergoing HPSA during the mobilization, operations, and demobilization phases of the process (Disa 2005b). These include semi-tractor/trailers, passenger trucks, and water trucks during mobilization and demobilization and semi-tractor/trailers, passenger trucks, water trucks, and fuel trucks during operations. During operations, Disa anticipates using two to four water trucks a day per HPSA unit, depending on the size of the unit (Disa 2025b). This would amount to a range of two (for a tier 1 site) to sixteen (for a large tier 5 site) water trucks per day. Based on Disa's estimates of weekly fines concentrates trailers, the NRC staff estimates three (tier 1) to thirteen (tier 5) of these trucks per day. The total distance traveled by vehicles for a specific site would depend on that site's distance from various locations related to the operations of Disa, its contractors, and disposal or uranium recovery sites that can accept the fines concentrates. Using a rough

assumption that each vehicle would be traveling 500 miles to each site and data from the U.S. Department of Transportation (DOT), Federal Motor Carrier Safety Administration, Disa estimates less than one total travel-related fatality even if the HPSA process were applied to all 15,000 known abandoned uranium mine sites (Disa 2025b). The NRC staff expects that it is unlikely that the process would be applied to all of the 15,000 sites. Thus, the NRC staff considers Disa's estimation process to be reasonable and conservative.

The NRC staff expects that Disa would make use of existing roads to the extent possible to move vehicles to and from each site. Disa expects to be able to gain access using existing gravel or dirt roads, although it may have to regrade and add gravel to some of these roads. Disa estimates that as much as 10 miles of existing road per site would have to be improved in this manner (Disa 2025d). Disa would have to comply with applicable Federal and state laws regarding erosion control, stormwater management, and work in wetlands and floodplains. The road improvements may also have to be addressed in consultations under Section 7 of the ESA and Section 106 of the NHPA (see sections 3.5 and 3.8). Based on information provided by Disa in the ER and RAI responses, the NRC staff expects that Disa would not need to build new roads.

Many abandoned uranium mine sites are situated in arid areas with easily combustible vegetation where improper use of vehicles, such as trucks, bulldozers, and other construction equipment as well as personal vehicles, can rapidly start wildfires (National Interagency Fire Center 2025). According to the National Interagency Fire Center, wildfires can be started by contact by dry vegetation with hot exhaust or hot metal; by friction with moving metal caused by flat tires or dragging metal objects; sparks from vehicular operation, especially improperly maintained vehicles; and other causes. Wildfires could rapidly spread to encompass broad areas, damaging property and natural habitats and potentially endangering lives. Fire suppression may be especially difficult in the remote areas where AUM sites are located. The California Department of Forestry and Fire Protection recommends several safety practices to reduce the risk of wildfire started by vehicles, such as securing chains used in towing, preventing dragging items, maintaining brakes and proper tire pressure, and carrying a fire extinguisher (Cal Fire 2025). Implementation of these measures could substantially reduce the risk of wildfires started by vehicular operation on the sites.

Disa would comply with applicable regulations established for transportation of hazardous materials by the U.S. Department of Transportation in Title 49 of the *Code of Federal Regulations* (49 CFR) parts 171 through 173 and for nuclear materials by the NRC in 10 CFR parts 20 and 40 (Disa 2025b). Section 4.2.4.1 of the ER presents an analysis of the radiological risks posed to the environment from spills from trucks carrying the radioactive fines concentrates from sites to uranium recovery or disposal facilities, including additional analyses of risks related to inhalation (section 4.2.4.2) and ingestion (section 4.2.4.3). The NRC staff evaluated the ER and incorporates these analyses by reference into this EA and concludes that they demonstrate a negligible risk of radiological impacts, as long as applicable regulations are followed consistent with the assumptions below.

3.2.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts related to transportation from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. The site is not located within 10 miles of an urban or suburban landscape characterized by the presence of residential and neighborhood roads and community features such as schools, parks, and commercial shopping areas.
2. Application of the HPSA process at the site would not require construction of new access roads, although it may require paving, repaving, widening, or other upgrades to no more than 10 miles of existing roads. For purposes of this criterion, an existing road could include a gravel road or a dirt road historically used by industrial trucks but not a trail, track, or other roadway used only by hikers, four-wheel drive vehicles, or farm machinery.
3. Implementation of any road upgrades would comply with applicable Federal, state, and local regulations, including the ESA and NHPA and regulations related to stormwater management and work in wetlands and floodplains.
4. Implementation of the HPSA process at a site would not involve the use of roadways passing through or directly adjoining a national or state park or monument, national or state wilderness area, national or state seashore or lakeshore, national or state wildlife refuge, designated Federal or state scenic river, or other land specifically designated for conservation, historic preservation, or tourism.
5. Application of the HPSA process at the site would not require the use of vehicles substantially different in character from those listed in ER table 3-2, “List of Transportation Vehicles” (Disa 2025b).
6. All transportation related to the proposed action at a site would be conducted in compliance with applicable regulations established for transportation of hazardous materials by the DOT in 49 CFR parts 171 through 173 and for nuclear materials by the NRC in 10 CFR part 40, as well as any other applicable regulations.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential transportation impacts.

3.3 Geology and Soils

This section addresses impacts on the geologic environment and soils from the proposed HPSA operations.

3.3.1 Affected Environment

Disa would operate the HPSA system at AUM sites, which are generally found in the Western US (Disa 2025b). ER section 3.5 and table 3-3 describe the soil types common in the Western US. As discussed in the ER, the diverse landscape of this area includes a wide range of soil types, but most soils are drier and prone to rapid erosion due to the mountainous geography. The Columbia Plateau and Pacific Border regions typically have gentler slopes and organic-rich soils, while the Basin and Range, Colorado Plateau, Great Plains, and Rocky Mountains are more arid with generally thin topsoil.

The NRC staff expects most AUM sites to have rock and soils that are impacted by past mining operations. The waste rock piles are likely not native, as the mining operations would have disposed of the waste rock away from the active mining operation. The soil at most sites is likely

negatively impacted by the mine waste rock that has been left at the site, often for decades. The waste rock may have leached heavy metals into the subsurface soils given the typically elevated concentration of uranium and heavy metals. Additionally, the piles may not be stabilized or vegetated at all sites, allowing for wind erosion or water infiltration.

As detailed in section 1.3 of a treatability study performed by Tetra Tech for the EPA, mineral hardness can be a good indicator of the effectiveness of the HPSA treatment for the waste rock (Tetra Tech 2023). HPSA treatment is particularly effective when the base mineral hardness is greater than the hardness of the targeted mineral. Disa expects to use quartz, a commonly found mineral in most areas of the US, as the grinding media to fracture the uranium-bearing minerals, which are typically lower on the Mohs hardness scale[5] than quartz.

The potential sites for HPSA operation would have a range of current road conditions, with some sites accessed by graveled roads while others are accessed by dirt roads. In either case, the NRC staff expects the road would be in some state of disrepair or otherwise in need of maintenance prior to Disa commencing operation due to the sites being abandoned mines with no active operations.

3.3.2 Environmental Impacts

Section 1.1.3 of the ER states that Disa does not expect to construct any new permanent buildings (Disa 2025b). There would be some short-term ground disturbing activities for processing the waste rock pile, for any roadways that need to be graveled prior to operation, or to erect fencing for site access control during operation. Section 4.3.4 of the ER states that Disa does not intend or expect to engage in any activities that would impact geologic units, as the focus of the proposed action is on surface soils and previously abandoned waste rock piles.

The HPSA process is less effective in silt and clay due to the smaller grain size of these soils (Tetra Tech 2023). Clay and silty soils require longer process times to liberate minerals from finer grains because of the larger particle count and increased number of collisions necessary for treatment. The NRC staff expects the HPSA system would more effectively reduce the contaminant concentration in coarse-grained soils.

The 2023 treatability study found that when the waste rock had a high clay or silt content, the coarse fraction after treatment was a significantly smaller portion of the overall volume and, conversely, the fines concentrates were a significantly larger portion of the overall volume (Tetra Tech 2023). The HPSA system was not as effective at removing uranium and radium in high clay or silt samples, although the concentration of uranium and radium in the coarse fraction was still reduced by over 70 percent compared to the initial waste rock with high clay/silt content. The uranium and radium concentrations in the coarse fraction were reduced by as much as 96 percent in more coarse-grained soils. Thus, the NRC staff expects that the HPSA system can be used to meaningfully reduce the radiological contamination in most abandoned uranium mine sites with either coarse-grained or fine-grained soils. Before leaving any site, Disa must show that the coarse material to remain at the site meets NRC regulatory requirements for unrestricted release in 10 CFR 20.1402.

[5] Mohs hardness is a relative measure of the scratch resistance of a mineral. Minerals higher on the Mohs scale can more easily scratch or break minerals lower on the scale. Quartz has a Mohs hardness of 7 while most uranium-bearing minerals have Mohs hardness ranging from 2 to 6 (USGS 1996).

Disa would establish berms and implement best management practices (BMPs) at each site to reduce water runoff and soil erosion (Disa 2025b). Based on the results of the treatability study (Tetra Tech 2023), Disa may need to implement dust mitigation measures while moving the waste rock to the HPSA system for processing, depending on the soil type at the site. The NRC staff expects there would be short-term impacts to the site soil while Disa processes the abandoned waste rock and, potentially, some of the native soils under the waste pile. However, these impacts would be short-term, as Disa would operate at most sites for less time than a typical industrial site. Collecting and removing the uranium and thorium would result in an overall positive impact on site soils.

Table 1-1 of the ER provides information about HPSA operations at five tiers based on the amount of material to be processed (Disa 2025b). Disa expects that the quantity processed would range from an upper limit of 100,000 tons for the smallest tier (tier 1) to an upper limit of 10 million tons for the largest tier (tier 5). Disa assumes that 20 percent of the mass would be in the fines concentrates after processing; thus, 80 percent is in the coarse fraction. Based on this assumption, the NRC staff expects that Disa could release up to 8 million tons of coarse material at a site that meets the upper limit of a tier 5 site, assuming all coarse material meets the NRC unrestricted release criteria. For a tier 1 site, the NRC staff expects that Disa would release up to 80,000 tons of coarse material at a site. At most sites, the coarse material left onsite would be a fraction of the tier 5 maximum of 8 million tons. Disa indicated that it would reintegrate the coarse material into the existing site topography and then seed the material (Disa 2025d), which would encourage vegetation and reduce the potential for erosion and windblown dust. Disa would not stabilize the site to promote general agriculture or cropland but would ensure the site grading is sufficient for animal grazing and is consistent with the surrounding conditions (Disa 2025e). If the site is near a mine pit, Disa may seek to fill the pit with the coarse fraction, if permitted by Federal, state, and/or local regulations. For this EA, the NRC staff has determined that the potential impacts of leaving 80,000 tons (tier 1) to 8 million tons (tier 5) of coarse material on a site would need to be assessed on a site-specific basis. The NRC staff expects Disa to provide detailed information on its plans for placing coarse material on a site after HPSA operations conclude.

The NRC staff expects impacts would be similar for each of the site tiers, except that such impacts would last for longer for larger sites (tier 5) where Disa could operate for almost 13 years. Because most sites are expected to be remote, Disa would likely need to gravel the dirt roads to the site, as well as use dust mitigation measures during drier seasons to prevent road erosion from heavy truck traffic.

Most soil impacts from the proposed action would be from the processing of the waste rock pile, which is not a native geologic feature. The NRC staff expects Disa would excavate and process the waste rock pile and contaminated native soil underneath the pile until they reach soil with contamination below NRC regulatory limits. Section 1.1.1 of the ER states that Disa would provide the NRC with characterization surveys of each site, to include an estimated depth of processing, in the PMN prior to Disa operating at a potential site (Disa 2025b). Disa would provide details on the final depth of mine waste processed in the post-remediation report for NRC staff review. For this EA, the NRC staff assumes that Disa would not need to process native soils to a depth that penetrates the upper confining layer of any aquifer at a site. Section 3.4 of the ER states that Disa does not expect to impact any subsurface geologic units (Disa 2025b). Therefore, for this EA the NRC staff assumes that underlying geologic units would not be affected by HPSA operations.

3.3.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts of the proposed action on the soil and geology of any AUM site at which Disa operates the HPSA system would be NOT SIGNIFICANT provided the assumptions outlined below are applicable to the site. The proposed action could have significant positive impacts on soils and geology, as contaminated material is separated and removed from the sites.

1. Disa may gravel or regrade existing dirt roads but would not need to create a new road.
2. Ground-disturbing activities would be limited to graveling pre-existing roads, establishing fencing, and processing soils directly under the waste rock piles.
3. Any ground disturbance to process native soils underneath the waste rock pile would not reach the site water table such that water pools in the excavation area and requires dewatering.
4. Any ground disturbance to process native soils underneath the waste rock pile would not break through the confining layer of an underlying aquifer and would not result in the creation of a new pathway for water recharge of that aquifer.
5. Any ground disturbance to process native soils underneath the waste rock pile would not impact previously undisturbed bedrock.
6. Coarse material is demonstrated to comply with all applicable regulatory requirements and can be left onsite consistent with the unrestricted release criteria in 10 CFR 20.1402, or any other applicable regulatory requirement.
7. The coarse fraction that is left on the site is graded into the existing site and seeded with a seed mixture that is appropriate for the site. Disa would take additional measures if needed to prevent a loss of material through wind erosion or water infiltration. Disa will obtain any needed authorizations or permits for the reintegration of coarse material onsite. Disa will submit the detailed plans for coarse material disposition to the NRC in the PMN for site-specific assessment.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential soils and geology impacts. As discussed in assumption 8, the staff would conduct site-specific reviews in all cases for coarse material disposition.

3.4 Water Resources

This section addresses impacts from water use and impacts on surface water bodies and groundwater that could result from the proposed HPSA operations.

3.4.1 Affected Environment

The potential sites where Disa could deploy the HPSA system are AUM sites with significant ground disturbance caused by past uranium mining operations (Disa 2025b). Disa characterizes most sites for potential implementation of the HPSA technology as abandoned conventional open pit and underground uranium mines (Disa 2025b). The NRC staff expects the groundwater at many of these sites could have elevated concentrations of heavy metals as a result of previous mining activities. Additionally, the NRC staff expects that most sites would not include

a river or other perennial stream as many of the potential mine sites are in generally arid environments (e.g., the Basin and Range province).

Major watersheds where HPSA operations could take place are the Pacific Northwest, California, Great Basin, Lower Colorado, Upper Colorado, Rio Grande, Texas Gulf, Arkansas Red White, and Missouri basins (EPA 2025e). Some sites may have perennial surface streams, but most surface streams are likely to be ephemeral streams that flow seasonally or after heavy precipitation events. Larger (tier 4 and 5) sites may have perennial streams, although they may not be within the HPSA footprint. The NRC staff expects that most small sites would not encompass floodplains, wetlands, or navigable waterways of the US as defined in the Clean Water Act, but that larger sites might encompass such features. Disa would provide site characterization information in the PMN prior to operation. The PMN would include a description of any surface water features, such as rivers, floodplains, or wetlands, and the NRC staff would review potential impacts to such features in its PMN review.

The past land disturbance from mining likely precludes the presence of potable groundwater even on the largest sites. The NRC staff expects that most sites would not include any water intake wells or withdrawals from surface streams for the purpose of potable water use. Water withdrawals may occur on some sites for agricultural purposes, and there may be use of surface waters downstream of AUM sites. The water quality of these downstream surface waters could be impacted by past mining activities.

3.4.2 Environmental Impacts

Section 3.6 of the ER states that the water used during operation would be brought onsite; therefore, there is no groundwater or surface water at any site that would be used for the HPSA process (Disa 2025b). Disa expects to need between two and eight 5,000-gallon water trucks daily per HPSA unit at a site, depending on the size of the site.

Most of the water would recycle through the system with some water loss in coarse material and fines concentrates after filter pressing. Disa estimates in section 3.6.2 of the ER that 15 percent of the water would be retained in the two outflows (coarse material and fines). However, the coarse material needs to contain some moisture for placement and compaction onsite after the material has been demonstrated to meet the requirement for unrestricted release. The ER states that the amount of water retained in the coarse fraction after HPSA operations and filter pressing would be sufficient for placement and compaction, and therefore there is no added need for water beyond the operational water for the HPSA system.

As stated in Section 2.5.1.2 of the ER, water may be recycled and brought onsite from previous operations at another AUM site (Disa 2025b). The NRC staff expects recycled water from previous operations to be sufficient water for the initial startup of the HPSA system at a new site; however, Disa would not have sufficient recycled water to operate the system for the entire length of operation at the site. Thus, the NRC staff expects a local water source would still be required for such sites.

The ER states that the water for the HPSA systems would be drawn from the local municipal water system and would be trucked to most sites (Disa 2025b). Disa would need to obtain an agreement or permit for the usage amount from the municipality prior to operation. If the expected water requirements of operations could strain the local municipal system, Disa either would find alternative sources of water or would not mobilize to the site until an alternative source is identified. Larger sites, such as tier 4 or tier 5 sites as identified in table 1-1 of the ER,

may require water from multiple sources, depending on the availability of water from local municipalities. The NRC staff assumes Disa would obtain agreements or permits from each municipality from where water is drawn. If Disa requires additional water from surface water or groundwater sources, Disa would need to engage the US Army Corps of Engineers (USACE) and other applicable federal, Tribal, and state agencies to obtain the necessary permits prior to mobilization to the site. For this EA, the NRC staff assumes that for most sites Disa would be able to obtain water from the local municipality's water system without causing noticeable impacts on the water supply system and would not utilize any site surface or groundwater. Further analysis would be required for any site that would require additional water or that could utilize the site surface water or groundwater. During the PMN review for each site, the NRC staff would review the projected water use and consider the source of water to verify that impacts on the water supply would not be significant.

Section 3.6.2 of the ER states that the HPSA technology requires 13 gallons per minute (gpm) of water in a 50-tph treatment system and 25 gpm for a 100-tph treatment system (Disa 2025 ER). Water consumption would be approximately 200,000 gallons per month and 384,000 gallons per month for the 50- and 100-tph HPSA treatment systems, respectively. For tier 3, tier 4, and tier 5 sites, Disa expects to operate more than one HPSA system concurrently. At the largest tier 5 site there would be 4 HPSA systems, which would consume between 800,000 and 1,536,000 gallons per month depending on the sizes of the HPSA systems deployed to the site. Most counties in the Western US have sufficiently large water supply systems to provide the necessary water without undue burden on the system. For example, Las Animas County in Colorado supplies approximately 4 million gallons per day, not including irrigation (USGS 2025). Disa could utilize up to 3.5 percent of the total water supply if using multiple HPSA systems at a tier 5 site within a smaller county, but water use would likely be closer to 1 percent or less at most tier 1-4 sites.

Section 3.6.2 of the ER states that no operations would occur during storm events to minimize potential impacts from stormwater runoff (Disa 2025b). Additionally, the HPSA system contains a tray to capture potential spilled liquids. If necessary, Disa would use booms to divert water around the restricted area so that site operations do not contaminate surface water. There would be no discharge of water from the normal operation of a HPSA unit. Any release of water from the system would be at most equal to a once-through volume (16,500 gallons for a 50-tph system and 26,000 gallons for a 100-tph system), assuming a leak of all water in the system. The spill would be contained using the system tray, berms, earthmoving equipment, and any other BMPs for the site based on site-specific layout. Disa would excavate and place contaminated soils into containers with fines concentrates or into separate containers that would be sent for recycling, storage, or disposal at a licensed facility (Disa 2025b). The trailers containing the fines concentrates would be covered for protection, to prevent precipitation inflow, and to prevent the migration of constituents to the soil below the trailers.

HPSA operations would not result in the effluent of water to surface waters at any site (Disa 2025 ER). However, the final volume of system charge (16,500 gallons or 26,000 gallons) and one system charge of rinse water may be disposed of onsite for a total of twice the system volume, once the water is shown to meet NRC regulations for water effluent release in 10 CFR part 20 appendix B. Disa committed to releasing process water using sprinkler type nozzles to spray water and irrigate seed at the same time while minimizing the potential to create divots or cause topsoil loss (Disa 2025e). The NRC staff assumes Disa would not engage in any activities that would meaningfully alter surface stream flow paths or drainage at any site.

Disa does not expect to use groundwater as a source of water for the project. Additionally, HPSA operation would not require any well placement for withdrawals, discharge, or monitoring. As discussed in section 3.3.2 of this EA, there would be minor ground disturbing activities. However, the NRC staff does not expect the operation of the HPSA system to impact the local geology, and therefore any ground disturbing activities would not significantly impact the groundwater. The NRC staff concludes the proposed operation of the HPSA system would have no impact on groundwater so long as Disa does not disturb any native soils below the site water table and does not breach a confining layer.

3.4.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts from water use or to site surface water or groundwater resources that would be associated with issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Water used during HPSA system operation would be brought to the site by Disa and would not be taken from the local surface water or groundwater.
2. Disa would obtain the appropriate permits or licenses from the municipality or any other state, Tribal, or local authority for the source of water.
3. Disa would implement a site-specific stormwater management plan, approved by applicable regulatory agencies, or a generic stormwater management plan approved by applicable regulatory agencies.
4. BMPs would be used for stormwater management.
5. Disa would not engage in any activity that would meaningfully alter the flow path or flowrate for any surface streams.
6. No water would be discharged at the site during operation. Disa could, at the cessation of operation, discharge up to twice the system volume on the site, provided the water is demonstrated to meet any applicable federal, state, and local regulations for disposal prior to discharge.
7. The water discharged onto the site at the end of operations would be discharged at a location(s) and rate approved by relevant state and/or federal agencies to avoid or minimize erosion and protect surface soils and vegetation.
8. Disa would not establish any new groundwater wells for extraction, discharge, or monitoring.
9. Disa would obtain a National Pollutant Discharge Elimination System permit from the EPA or state, if required.
10. Disa would obtain Clean Water Act (CWA) Section 404 approval from USACE, if required.
11. Disa would not excavate any native soils down to the water table, resulting in the need to dewater, and would not impact an aquifer’s confining layer.
12. No coarse material would contain metal contaminants above the Resource Conservation and Recovery Act (RCRA) limits, or the coarse material is separated such that any material containing metal contaminants above the RCRA limit would not be disposed of onsite.

13. No coarse material would contain radiological contaminants above the NRC limits, or the coarse material is separated such that any material containing radiological contaminants above the NRC limit would not be disposed of onsite.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential water use, surface water, and groundwater impacts.

3.5 Ecological Resources

This section addresses impacts on terrestrial and aquatic ecological resources, including impacts on threatened or endangered species and critical habitats Federally protected under the ESA.

3.5.1 Affected Environment

Disa characterizes ecological conditions at most abandoned uranium mine sites as variable but recognizes that ecological quality has been compromised by physical soil disturbance during past mining activity, and that waste piles at many sites comprise bare rock and dirt with little apparent flora or fauna (Disa 2025b). The NRC staff expects that most sites potentially suitable for HPSA presently comprise previously disturbed soils supporting ruderal (weedy) vegetation and sparse early successional grassland or scrub. An invasive grass species termed cheatgrass (*Bromus tectorum*) commonly invades physically disturbed soils in arid settings over much of the Western US and therefore may be dominant on many sites. Especially in arid settings, recovery of terrestrial vegetation through natural successional processes after mechanical soil disturbance can be slow, and natural reestablishment of climax desert vegetation can take many decades or centuries. A few abandoned uranium mines in mesic (relatively moist) settings, such as may occur close to rivers, or that have been abandoned longer, may however have recovered some vegetation typical of surrounding undisturbed land.

The NRC staff expects that most sites would not contain or adjoin wetlands or aquatic habitats but that some might contain ephemeral streams (commonly referred to as draws in the Western US) that carry runoff from infrequent but heavy precipitation events. Ephemeral streams typically do not contain communities of aquatic organisms. A few sites may, however, contain or adjoin permanent or intermittent streams or other bodies of waters containing aquatic communities comprising fish, benthic macroinvertebrates, plankton, and other aquatic biota.

The NRC staff expects that lands surrounding most sites likely support grassland, scrub-shrub, and forested habitats typical of desert settings in the Western US. While the physically disturbed soils on the abandoned mines themselves may not provide quality wildlife habitat, terrestrial mammals, birds, reptiles, and other wildlife typical of the surroundings are likely to inhabit adjacent lands and be transiently present on the sites. Because most sites are expected to occur in remote or rural areas, wildlife on the sites or adjoining lands is likely not to be adapted to human disturbances such as noise and light.

Section 3.7.2 of Disa's ER presents information on "important" species, as defined by the NRC for purposes of environmental review in Regulatory Guide 4.2 (NRC 2018a), for five states where Disa expects to implement the HPSA process: Arizona, Colorado, New Mexico, Utah, and Wyoming. Disa presents information from the Information for Planning and Consultation (IPaC) database maintained by the U.S. Fish & Wildlife Service (FWS) to identify resources

(threatened or endangered species and critical habitats) protected under the Federal ESA potentially present in 43 counties in the five states (Disa 2025b). Disa searched websites and lists from each of the states and other agencies to identify state-listed and other special status species potentially present (Disa 2025b). Appendix B of the ER is a table of species with Federal or state designations in each of the five states noted above. Appendix C of the ER is a list of game species managed by each of the five states.

Disa recognizes that it cannot characterize baseline ecological conditions or the possible presence of "important" species until it identifies specific sites for implementing the HPSA process, and it plans to consult with the appropriate offices of the FWS and other relevant agencies possessing specialized expertise before mobilizing at any specific site (2025b). Once Disa identifies a specific site, it can use the IPaC database to obtain not only information on the possible presence of Federally-protected species, but information regarding the possible presence of eagles protected under the Bald and Golden Eagle Protection Act, migratory birds protected under the Migratory Bird Treaty Act, and mapped locations of wetlands from National Wetland Inventory maps. Information on species protected by states and other rare species is available from state agencies responsible for conservation and management of fish and wildlife.

3.5.2 Environmental Impacts

The NRC staff expects that implementation of the HPSA process would require physical disturbance of existing vegetation over treated areas. For small sites (including most tier 1, 2, and 3 sites) disturbance may affect only a few acres of vegetation, although for larger sites (including many tier 4 and 5 sites) disturbance might extend over tens or hundreds of acres of vegetation. However, most of the affected vegetation would likely be ruderal or sparse vegetation whose wildlife habitat value has already been reduced by past mining activity. For most sites, regardless of size, an abundance of high-quality natural vegetation that provides higher quality wildlife habitat would remain in the surrounding landscape. The effects on regional wildlife populations would therefore not likely be noticeable for most sites.

Because most AUM sites occur in arid landscapes with few wetlands or aquatic habitats, impacts to those habitats are unlikely. Physical disturbance of ephemeral streams (draws) may be necessary, especially for larger sites, but the disturbance is unlikely to noticeably affect regional hydrological or ecological properties in the surrounding landscape, as long as best management practices are implemented for soil erosion and sediment control and stormwater management. Disa is considering implementation of standard sediment and erosion control measures such as berms, dikes, sediment ponds, and stabilized construction entrances (Disa 2025b). Most states and other jurisdictions have developed technical guidance on best management practices for these purposes that are effective under local conditions.

Terrestrial wildlife would temporarily experience noise generated by equipment operated as part of the HPSA process. Disa expects that noise levels would be below 85 dBA throughout operations, but that noise would be 40 dBA less at distances of more than 100 feet from the equipment (Disa 2025b). A comprehensive literature review of wildlife responses to anthropogenic noise indicates that some species adversely respond to noise levels as low as 40 dBA, but most evidence is that responses only occur at levels above 50 dBA (Shannon *et al.* 2016). NRC staff expects that some terrestrial wildlife might avoid areas close to operating equipment. Some birds nesting within a few hundred feet of work activities might abandon their nests, especially during or shortly after site mobilization. However, the effects on wildlife abundance and patterns of wildlife movement and migration in the surrounding landscape would likely be negligible, even for the largest sites. Some wildlife, especially small or less mobile

terrestrial wildlife, could be killed or otherwise adversely affected by operation of trucks and other vehicles (Disa 2025b). Some terrestrial wildlife could also be injured or killed by collisions with trucks and other vehicles traversing roads to access sites. However, traffic mortality rates rarely limit wildlife population size (Forman and Alexander 1998), and the NRC staff expects that effects would not be noticeable.

As noted in section 4.5.4 of the ER, successful implementation of the HPSA process would have long-term beneficial effects on terrestrial wildlife. The process would leave the land surface as a clean coarse soil-like material that would no longer constitute a radiological or toxicological hazard to terrestrial wildlife (Disa 2025b). The ground surface would be suitable for grading to produce topography typical of a natural setting. The NRC staff expects that vegetation may re-establish only slowly through natural successional processes in arid settings, especially in the artificially coarse soil-like materials left onsite by the HPSA process and other soils subjected to grading and compaction. Like sand, the coarse soil-like material may drain precipitation even more quickly than natural soils, further slowing vegetation establishment. It may also be of lower fertility than natural soils, further inhibiting vegetation. Until suitably dense vegetation can be established, the surface materials would be subject to erosion during precipitation events, and runoff could carry surface materials as sediment into adjoining natural habitats and into drainage swales or draws leading to aquatic habitats. Disa would implement standard sediment and erosion control measures such as berms, dikes, sediment ponds, and stabilized construction entrances (Disa 2025b). Effective stabilization of the land surface may however require planting efforts with extended watering efforts and other maintenance and monitoring efforts until the vegetation can become successfully established.

Disa proposes to provide as part of its PMN for each site a “desktop assessment” of habitats that could potentially contain Federally-listed or state-listed species or habitats listed in appendices B or C of the ER (Disa 2025b). This assessment would include site-specific and up-to-date searches of the IPaC database as well as communications about specific sites with Federal and state conservation staff. Information from the assessment would be used to complete consultations required under the Endangered Species Act (ESA). The consultation process would ensure that any incidental take of protected species or habitat would not jeopardize species listed as endangered or threatened.

3.5.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts to ecology from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Ground disturbance would be limited to areas of soil previously disturbed by mining or mining-related activities.
2. Ground disturbance would avoid climax or old-growth vegetation or other vegetation typical of undisturbed natural lands in the surrounding landscape.
3. Ground disturbance would not disturb any wetlands or perennial streams and no more than 300 feet of ephemeral or intermittent streams.
4. Disa would provide in its PMN for each site a wetland delineation using the three-parameter process outlined in the Army Corps of Engineers Wetlands Delineation Manual and relevant Regional Supplement or a desktop assessment for the possible presence of wetlands using FWS National Wetland Inventory maps, aerial photography, or Natural Resource Conservation Service soil survey maps.

5. Disa would comply with any Federal, state, or local permitting requirements for impacts to streams, wetlands, or floodplains.
6. Disa would implement best management practices for soil erosion and sediment control and stormwater management and comply with related state and local requirements.
7. Once work on a site is completed, Disa would grade the coarse material into a topography typical of natural conditions that blends naturally into the site surroundings and permanently stabilize the land surface.
8. Noise levels from trucks and earthmoving equipment would be less than 40 dBA at a distance of 500 feet from the site boundary.
9. As noted above in Section 3.5.2, Disa would provide as part of its PMN for each site a "desktop assessment" of habitats that could potentially contain Federally-listed or state-listed species or critical habitats protected under the ESA.
10. For purposes of consultation under Section 7 of the ESA, NRC staff would be able to conclude, without using information from additional field surveys, No Effect or Not Likely to Adversely Affect (with concurrence from the FWS) for any Federally-listed threatened or endangered species or critical habitats in an action area defined for a site.
11. No further field surveys would be needed to support consultation under Section 7 of the Endangered Species; formal consultation, leading to a Biological Opinion and Incidental Take Statement, would not be required.
12. Disa would implement any mitigation required by the FWS as terms or conditions in an incidental take statement or recommended as part of any communication conducted as part of informal or formal Section 7 consultation. Examples of common mitigation measures might include onsite or offsite habitat improvement or timing onsite work with a specific distance of nesting locations to avoid nesting seasons.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential ecological impacts. The NRC staff may also need to engage in formal consultation under Section 7 of the ESA, which may require field surveys and specific mitigation measures established as part of an Incidental Take Statement.

3.6 Meteorology and Air Quality

This section addresses the potential impacts on air quality from the proposed HPSA operations.

3.6.1 Affected Environment

3.6.1.1 Climate and Meteorological Conditions

The approximately 15,000 AUM sites identified by the EPA in the Western US occupy 14 states. As shown on figure 1, the bulk of the sites are in Arizona, New Mexico, and Utah in the Desert Southwest, and Wyoming and Colorado in the Mountain West. The climate of the Desert Southwest is characterized by extremely hot summers, with temperatures often exceeding 100°F (38°C), and mild winters. The air is generally dry and the region generally receives very little rainfall, leading to arid conditions and sparse vegetation. The Mountain West experiences a more varied climate due to its diverse topography. This region includes the Rocky Mountains

and other high-altitude areas, where temperatures can be significantly cooler. Summers are generally mild to warm, while winters can be harsh, with heavy snowfall and freezing temperatures. Precipitation varies widely, with some areas receiving substantial snowfall that contributes to the region's rivers and lakes.

In the Desert Southwest (Arizona, New Mexico, Utah), the North American Monsoon can bring significant rainfall during the summer months, leading to flash floods and other weather-related challenges. Similarly, in the Mountain West (Wyoming, Colorado), heavy rains can occur due to various weather systems, including monsoonal moisture and frontal systems (NOAA 2021). These heavy rain events can lead to flash flooding, especially in areas with dry, compacted soils that do not absorb water well.

3.6.1.2 Air Quality

Under the Clean Air Act, the EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: nitrogen dioxide, sulfur dioxide, carbon monoxide, lead, ozone, and particulate matter (PM) as PM_{10} and $PM_{2.5}$. PM_{10} refers to particles which are 10 micrometers (3.9×10^{-4} in) in diameter or smaller, and $PM_{2.5}$ refers to particles which are 2.5 micrometers (9.8×10^{-5} in) in diameter or smaller. The EPA designates areas of attainment and nonattainment with respect to meeting the NAAQS. Areas for which there are insufficient data to determine attainment or nonattainment are designated as unclassifiable. Areas that were once in nonattainment, but are now in attainment, are called maintenance areas; these areas are under a 10-year monitoring plan to maintain their attainment designation status. Locations of EPA-designated nonattainment areas for each criteria pollutant are available at https://www3.epa.gov/airquality/greenbook/ancl.html (EPA 2025c).

States have primary responsibility for ensuring attainment and maintenance of the NAAQSs, and states may have their own ambient air quality standards that must be at least as stringent as the NAAQS. For the purpose of planning and maintaining ambient air quality with respect to the NAAQSs, the EPA has developed air quality control regions (AQCRs), which are intrastate or interstate areas that share a common airshed. The 14 states in which prospective HPSA sites are located are encompassed by numerous AQCRs, a list of which is available at https://aqs.epa.gov/aqsweb/documents/codetables/aqcrs.html (EPA 2025d).

If a proposed project is in a nonattainment or maintenance area, the General Conformity Rule (40 CFR Part 93) ensures that Federal actions comply with the NAAQS. If a proposed project is in a nonattainment or maintenance area, the General Conformity Rule (40 CFR Part 93) ensures that Federal actions (such as the proposed licensing action) comply with the NAAQS. In accordance with Section 176(c) of the Clean Air Act (42 U.S.C. § 7506) and the General Conformity Rule, if a project is in a nonattainment or maintenance area, the NRC must demonstrate that the air emissions associated with activities within its authority would conform to the appropriate state implementation plans (SIPs), which are developed to improve or maintain air quality in designated nonattainment and maintenance areas. The EPA has established *de minimis* levels for each criteria pollutant (EPA 2025f) (see tables 2 and 3). If a project is located in a nonattainment or maintenance area and the project's emissions are estimated to exceed the *de minimis* levels for any criteria pollutant as demonstrated in an applicability analysis, a conformity determination must be performed. When the total direct and indirect emissions from the proposed action are below the *de minimis* levels, the action would not be subject to a conformity determination (EPA 2020). The first step in determining whether an action conforms is to perform an applicability analysis to determine whether the action is exempt or has total net direct and indirect emissions below *de minimis* levels.

3.6.1.3 Greenhouse Gases and Climate Change

Gases found in Earth's atmosphere that trap heat and play a role in the climate are collectively termed greenhouse gases (GHGs). These GHGs include carbon dioxide (CO_2), methane, nitrous oxide, water vapor, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Climate change research indicates that the cause of Earth's warming over the last 50 years is the buildup of GHGs in the atmosphere, resulting from human activities (GCRP 2023). Earth's climate responds to changes in concentrations of GHGs in the atmosphere because these gases affect the amount of energy absorbed and heat trapped by the atmosphere. Atmospheric concentrations of CO_2, methane, and nitrous oxide have significantly increased since 1850. For instance, since 1850, CO_2 concentrations have increased by almost 50 percent (GCRP 2023). The EPA has determined that GHGs "may reasonably be anticipated both to endanger public health and to endanger public welfare" (74 FR 66496).

In 2009, the Commission provided guidance to the NRC staff on addressing GHG issues in environmental reviews. That guidance directed the NRC staff to "include consideration of carbon dioxide and other greenhouse gas emissions in its environmental reviews for major licensing actions under the National Environmental Policy Act" (NRC 2009).

In 2023 the U.S. Global Change Research Program (GCRP) published the Fifth National Climate Assessment, its most recent report regarding the state of climate change in the nation (GCRP 2023). The AUM sites are located in the Northwest, Northern Great Plains, Southwest, and Southern Great Plains regions, which comprise over half of the continental US. The impacts of climate change throughout these areas are varied but generally include an increase in the intensity and frequency of heat waves, wildfires, drought, flooding, and severe storms, as well as rising air and water temperatures. These precipitation patterns influence snowpack, water availability, and aquatic habitats such as lakes, rivers, springs, and streams, which can affect the availability of food and water for wildlife and conditions for native vegetation to thrive.

3.6.2 Environmental Impacts

3.6.2.1 Potential Impacts on Air Quality

The primary non-radiological air emissions from the proposed action are from combustion emissions from the HPSA units (diesel generators) and from vehicles. Diesel generators would be used to power the HPSA units and ancillary equipment. Vehicles would include earthmoving vehicles; semi-tractors and trailers for mobilization, demobilization, and transportation of fines concentrates; and water and fuel trucks used during operations for water supply and refueling. Fugitive dust could be generated by earthmoving activities, trucks on unpaved roads, wind blowing over disturbed areas, and stockpiles. Disa would implement dust control mitigation measures, such as wetting surfaces, applying gravel to pre-existing dirt roads, and covering areas or containers of mine waste, coarse material, and fines concentrates (Disa 2025b). In addition, when reintegrating coarse material back onto an AUM site after HPSA treatment, Disa would grade and seed the coarse material area to encourage the growth of vegetation and further reduce the potential for airborne dust (Disa 2025d).

Based on Disa's estimates of non-radiological air emissions from vehicles, generators, and earthmoving activities, the NRC staff concludes that total non-radiological air emissions for all tiers of HPSA operations would not be significant because they would not exceed *de minimis* levels. The NRC staff expects that Disa would provide the NRC with information about expected air emissions at a particular site. Disa would also need to determine whether permitting at a site

is required under EPA, state, or Tribal regulations. If yearly HPSA emissions at a particular site that is located in a maintenance or nonattainment area could exceed *de minimis* levels, the NRC would conduct additional analysis of the site-specific emissions impacts, including a conformity determination.

Radiological Emissions

AUM mine waste, consisting of uranium, thorium, and their decay products, presents a potential hazard from direct radiation and inhalation of dust and radon gas to individuals in close proximity (i.e., workers involved in excavation and transfer activities) to mine waste during proposed activities. Section 3.11 of this EA addresses the potential impacts from radiological emissions and exposures. Because radon gas disperses quickly in air, the potential emissions are not expected to present a significant health hazard. Proposed activities that could generate mine waste dust include excavation, post-excavation stockpiling, loading of haul trucks, unloading, and stockpiling. The potential hazards to the public from airborne emissions at downwind locations would be reduced by dispersion but would be evaluated by Disa's monitoring program at each site (see section 3.11.2.2). Disa would monitor particulates (dust), direct radiation, and radon gas in or around working areas and at downwind areas to demonstrate compliance with applicable worker and public safety standards. As discussed in section 3.11, the NRC staff concludes that the maximum radiological exposure to workers and the public from HPSA operations at a Tier 5 site would be 11.82 mSv/yr (1182 mrem/yr) and 0.88 mSv/yr (88 mrem/yr), respectively. These are highly conservative dose estimates, and the NRC staff expects the actual dose at most sites would be lower.

3.6.2.2 Potential Impacts from Greenhouse Gas Emissions

Climate change effects are considered the result of overall GHG emissions from numerous sources rather than an individual source. In addition, there is not a strong cause and effect relationship between where the GHGs are emitted and where the impacts occur. The impact magnitude resulting from a single source or a combination of GHG emission sources over a larger region must be placed in geographic context for the following reasons: the environmental impact is global rather than local or regional; the effect is not particularly sensitive to the location of the release point; the magnitude of individual GHG sources related to human activity, no matter how large compared to other sources, is small when compared to the total mass of GHG resident in the atmosphere; and the total number and variety of GHG emission sources is extremely large, and the sources are ubiquitous.

Greenhouse gas information for Disa's proposed operations was not readily available for the NRC staff's review. If Disa cannot confirm that assumption 4 below would be met at a specific site, the NRC staff would conduct a site-specific review of greenhouse gas emissions.

Table 2. EPA-Established De Minimis Levels of Criteria Pollutants in Nonattainment Areas

Pollutant	Tons per Year
Ozone (VOCs or NOx):	
Serious NAAs	50
Severe NAAs	25
Extreme NAAs	10
Other ozone NAAs outside an ozone transport region	100
Other ozone NAAs inside an ozone transport region:	
VOC	50
NOx	100
Carbon monoxide: all maintenance areas	100
SO_2 or NO_2: all NAAs	100
PM_{10}:	
Moderate NAAs	100
Severe NAAs	70
$PM_{2.5}$ (direct emissions, SO_2, NOx, VOC, and ammonia):	
Moderate NAAs	100
Serious NAAs	70
PB: all NAAs	25

Source: https://www.epa.gov/general-conformity/de-minimis-tables, accessed July 8, 2025
Note: VOCs = volatile organic compounds, NOx = nitrogen oxides, CO = carbon monoxide, PM = particulate matter, SO_2 = sulfur dioxide, Pb = lead, NAA = nonattainment area

Table 3. EPA-Established De Minimis Levels of Criteria Pollutants in Maintenance Areas

Pollutant	Tons per Year
Ozone (NOx), SO_2 or NO_2: all maintenance areas	100
Ozone (VOCs):	
Maintenance areas inside an ozone transport region	50
Maintenance areas outside an ozone transport region	100
Carbon monoxide: all maintenance areas	100
PM_{10}: all maintenance areas	100
$PM_{2.5}$ (direct emissions, SO_2, NOx, VOC, and ammonia): all maintenance areas	100
Pb: all maintenance areas	25

Source: https://www.epa.gov/general-conformity/de-minimis-tables, accessed July 8, 2025
Note: VOCs = volatile organic compounds, NOx = nitrogen oxides, CO = carbon monoxide, PM = particulate matter, SO_2 = sulfur dioxide, Pb = lead

Table 4. Estimates of Air Emissions from Generators and Earthmoving Activities

Tiers	Generator Air Emissions Total Project Mass (US tons)				Project Particulate Matter (PM10) Air Emissions Total Mass (US tons)		
	NOx	HC	CO	PM	Scraping	Load/Unload	Scraper Transit
Tier 1	1.36	0.00224	0.0402	0.00446	0.0296	3.00	0.273
Tier 2	7.22	0.0131	0.394	0.0394	0.148	15.0	0.610
Tier 3	20.1	0.0331	0.595	0.0661	0.296	30.0	0.863
Tier 4	154	1.31	24.0	2.61	1.48	150	1.93
Tier 5	232	10.3	35.2	3.34	2.96	300	2.73

Source: modified from Disa 2025b.
Note: NOx = nitrogen oxides, HC = hydrocarbons, CO = carbon monoxide, PM = particulate matter

Table 5. Estimates of Air Emissions from Vehicles

Tiers	No. of 50 TPH HPSA Units	Mob/Demob Trucks	No. of Vehicle Miles*	Mobilization Truck Emissions (US tons)						Demobilization Truck Emission (US tons)						Truck Emissions During Operations (US tons)								
				VOC	THC incl. Methane	CO	NOx	PM2.5	PM10	VOC	THC incl. Methane	CO	NOx	PM2.5	PM10	No. of Weeks	Total No. of Trucks	Total No. of Miles	VOC	THC incl. Methane	CO	NOx	PM2.5	PM10
Tier 1	1	12	3,300.00	0.002	0.002	0.008	0.031	0.001	0.001	0.002	0.002	0.008	0.031	0.001	0.001	37	999	178,071.75	0.088	0.090	0.453	1.687	0.040	0.043
Tier 2	1	12	3,300.00	0.002	0.002	0.008	0.031	0.001	0.001	0.002	0.002	0.008	0.031	0.001	0.001	185.19	5000	891,250.00	0.438	0.449	2.266	8.444	0.198	0.215
Tier 3	2	24	6,600.00	0.003	0.003	0.017	0.063	0.001	0.002	0.003	0.003	0.017	0.063	0.001	0.002	185	9805	1,747,741.25	0.859	0.881	4.443	16.559	0.388	0.421
Tier 4	3	36	9,900.00	0.005	0.005	0.025	0.094	0.002	0.002	0.005	0.005	0.025	0.094	0.002	0.002	617	49360	8,798,420.00	4.326	4.436	22.366	83.359	1.955	2.120
Tier 5	4	48	13,200.00	0.006	0.007	0.034	0.125	0.003	0.003	0.006	0.007	0.034	0.125	0.003	0.003	926	98156	17,496,307.00	8.603	8.820	44.477	165.765	3.888	4.215
*Assumes 275 (57% of Trucks) miles for mobilization/demobilization and fines concentrates recycling. Assumes 50 miles for fuel and water trucks, each (43% of Trucks).																								

Source: modified from Disa 2025d.
Note: VOC = volatile organic compounds, THC = total hydrocarbons, CO = carbon monoxide, NOx = nitrogen oxides, $PM_{2.5}$ = particulate matter (2.5 microns), PM_{10} = particulate matter (10 microns)

Table 6. Estimates of Total Air Emissions in US Tons

Tiers	No. of Operating Weeks	VOC	THC, incl. methane	CO	NOx	$PM_{2.5}$	PM_{10}
Tier 1	37	0.091	0.095	0.510	3.107	0.041	3.318
Tier 2	185	0.441	0.466	2.675	15.713	0.200	15.856
Tier 3	185	0.866	0.921	5.070	36.781	0.391	31.338
Tier 4	617	4.336	5.749	46.372	237.709	1.959	156.611
Tier 5	926	8.616	19.100	79.708	397.529	3.894	310.196

Source: modified from Disa 2025d.
Notes: Particulates from heavy equipment and generators are added to PM_{10}.
VOC = volatile organic compounds, THC = total hydrocarbons, CO = carbon monoxide, NOx = nitrogen oxides, $PM_{2.5}$ = particulate matter (2.5 microns), PM_{10} = particulate matter (10 microns)

3.6.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts on air quality from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Emissions of criteria pollutants during construction, operation, and demobilization would not exceed *de minimis* levels established by the EPA under the General Conformity Rule (Title 40 of the *Code of Federal Regulations* (40 CFR) part 93).
2. Exposures of radiological emissions to workers and the public would be limited to NRC regulations for the protection of workers and the public, as identified in the assumptions in section 3.11.3 of this EA.
3. The potential for fugitive dust from emissions sources would be minimized by implementing dust control mitigation measures, such as wetting surfaces, applying gravel to dirt roads, and covering areas or containers of mine waste, coarse material, and fines concentrates.
4. GHGs emitted by equipment and vehicles during construction, operation, and demobilization would be less than the quantity of CO_2 equivalents determined to be significant by the state or the EPA, whichever applies in the state of proposed HPSA operations.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at a site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct a more in-depth site-specific evaluation of the potential impacts from air emissions.

3.7 Noise

This section addresses the potential impacts from noise that would be generated by the proposed HPSA operations.

3.7.1 Affected Environment

Sound pressure levels are typically measured by using the logarithmic decibel (dB) scale. To assess potential noise impacts on humans, a special weighting scale was developed to account for human sensitivity to certain frequencies and duration of sounds. Generally, sound level changes of 3 dBA are barely perceptible, while a change of 5 dBA is readily noticeable by most people. A 10 dBA increase is usually perceived as a doubling of loudness. The U.S. Department of Housing and Urban Development regulations for exterior noise standards (24 CFR 51.101(a)(8)) states noise levels are acceptable if the day-night average sound level outside a residence is less than 65 dBA. Threshold noise levels from industrial sites are subject to threshold values from the National Institute for Occupational Safety and Health under the Occupational Safety and Health Act of 1970 (OSHA). OSHA's occupational noise standard in 29 CFR 1910.95 requires employers to establish a hearing conservation program when employees are exposed to noise at or above 85 dBA averaged over 8 hours. Noise abatement issues are also handled by state and local governments because there is no overarching Federal noise abatement program. The Navajo Nation uses the U.S. Department of Labor OSHA noise limits for all construction on Navajo lands (NRC 2023).

Aspects that influence the degree to which noise would affect any human or wildlife populations include the volume and duration of the noise, the distance to receptors (where dwellings or other sites of frequent human use exist), and landscape characteristics such as topography and foliage. AUM sites are predominantly located in remote areas of the 14 states Disa has identified and as shown on figure 1. Figure 2 shows two examples of AUM sites. Likely features on AUM sites include excavations, waste rock piles, and varying slopes. These features affect the distance that noise from HPSA operations would travel. While most sites are likely not within hearing range of nearby residences, there may be some AUM sites with residences nearby, such as Tribal communities. As discussed in section 3.5 of this EA, terrestrial mammals, birds, reptiles, and other wildlife typical of the surroundings are likely to inhabit adjacent lands and be transiently present on the sites. Because most sites are likely in remote or rural areas, wildlife on the sites or adjoining lands is likely not to be adapted to human disturbances such as noise. Assuming that most AUM sites are in areas of sparse population and lack of development, the NRC staff estimates that the background noise level is similar to that of a quiet rural area, around 30 dBA.

3.7.2 Environmental Impacts

The primary sources of noise from the proposed action would be noise from the HPSA units during operation, from the diesel generators, and from vehicles such as tractor trailers, water and fuel trucks, personnel trucks, and earthmoving vehicles. Disa anticipates that noise levels from HPSA operations would be below 85 dBA at the location of operations. Using the inverse square law calculation for estimating noises propagation, Disa estimated that noise levels 100 feet from the HPSA equipment would be about 40 dBA less than the noise levels 1 foot from the HPSA equipment (Disa 2025b). ER table 1-2 indicates that noise levels from HPSA units at 100 feet away from the units would range from about 59 dBA (tier 1) to 70 dBA (tier 5) (Disa 2025b). Noise from trucks and earth moving equipment would likely exceed the OSHA standard of 85 dBA, ranging from 80 to over 100 dBA. Hearing protection would be standard for all employees and visitors during HPSA operations. Noise levels decrease by approximately 6 dBA for each doubling of distance from the source, and further reduction occurs when the sound energy has traveled far enough to have been appreciably reduced by absorption into the atmosphere (NRC 2023).

The NRC staff expects that noise impacts from the proposed action would be noticeable to any residents or to wildlife within close proximity to HPSA operations or access roads. For this EA, the NRC staff assumes there would be no nearby residences and no sensitive wildlife populations. If Disa chooses to operate at an AUM site with nearby residences or sensitive wildlife populations, the NRC staff would conduct a site-specific review of potential noise impacts on these receptors.

3.7.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential noise impacts associated with issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Nearest receptors (e.g., residences) are at least 1000 feet from the site of proposed HPSA operations.
2. Noise levels from trucks and earthmoving equipment at the nearest sensitive receptor will be less than 40 dBA.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential noise-related impacts.

3.8 Historic and Cultural Resources

Historic and cultural resources are the remains of past human activities and include precontact (i.e., prehistoric) and historic era archaeological sites, districts, buildings, structures, and objects. Historic and cultural resources also include elements of the cultural environment such as landscapes, sacred sites, and other resources that are of religious and cultural importance to American Indian tribes, such as traditional cultural properties (TCPs) important to a living community of people for maintaining its culture. A historic or a cultural resource is deemed to be historically significant, and thus a "historic property" within the scope of the NHPA, if it has been determined to be eligible for listing or is listed on the National Register of Historic Places (NRHP). The NRHP is maintained by the U.S. National Park Service in accordance with its regulations in 36 CFR part 60. The NRHP criteria to evaluate the eligibility of a property are set forth in 36 CFR 60.4.

3.8.1 Affected Environment

Section 106 of the NHPA requires the NRC staff to consider the effects of the proposed licensing action on historic properties. The proposed action is to license the HPSA technology. As discussed in section 1.4 of this EA, when Disa identifies AUM sites for operating the HPSA process, Disa would notify the NRC and provide site-specific information for NRC staff review.

Disa is exploring using the HPSA process, if approved, in 14 western states. Broad and general information regarding the affected environment and the potential impacts on historic and cultural resources from the ER (pp. 52–53 and pp. 64–65) is incorporated by reference (Disa 2025b). This information was independently considered by the NRC staff.

Once Disa identifies specific AUM locations for HPSA operations, the NRC staff would review the site-specific information and initiate consultation to assess the potential impacts on cultural and historic resources. For a specific site, the NRC would establish the undertaking, identify consulting parties, and determine the scope of potential effects by defining the area of potential effect (APE). The APE is the area that may be directly (e.g., physical) or indirectly (e.g., visual and auditory) affected by activities during construction or operations. The NRC staff would rely on preliminary recommendations made by qualified professionals, who meet the Secretary of Interior's standards at 36 CFR part 61, in determining whether NHPA historic properties at a specific AUM site would be or would not be adversely affected. If a historic or cultural resource (such as a TCP) does not meet the criteria to be designated as a historic property under the NHPA, the NRC would assess the potential impacts on that resource in an appropriate site-specific evaluation.

The Quapaw Nation submitted correspondence to the NRC staff on June 17, 2025 (Quapaw Nation 2025), which included a map of the Tribe's area of interest. With the exception of Texas, the Quapaw's area of interest does not include the states Disa has identified for possible HPSA operation. The NRC staff responded via email to address the Tribe's correspondence and provide additional information on the current licensing project and the subsequent site-specific reviews (NRC 2025d).

3.8.2 Environmental Impacts

The NRC's undertaking under Section 106 is the proposed licensing of the HPSA technology (or process), and there is no APE associated with this proposed licensing action. Thus, the NRC's staff's NHPA Section 106 responsibilities are complete for the licensing undertaking according to 36 CFR 800.3(a)(1), which states: "If the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, the agency official has no further obligations under section 106 or this part." As discussed below, the NRC's consultation and assessment of the potential effects of HPSA operations on cultural and historic properties would occur when specific sites are identified.

Although the land disturbing activities associated with HPSA operations would occur in areas that have already been heavily disturbed, the potential for impacts to historic and cultural resources is unknown. Therefore, site-specific reviews must be conducted to determine whether historic and cultural resources would be affected by HPSA operations. To ensure appropriate and timely NHPA Section 106 reviews of site-specific undertakings, the license would require that Disa submit historic and cultural resources information in the PMN (see appendix A). The staff would also impose license conditions regarding surveys, ground-disturbing activities, and inadvertent discoveries.

If historic and cultural resource investigations at a specific AUM site do not identify historic properties within the APE for that site, the NRC would make a finding of *no historic properties affected* in accordance with 36 CFR 800.4(d)(1). The NRC would provide documentation of these findings for review and concurrence to the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), American Indian tribes, and interested members of the public in accordance with documentation standards set forth in 36 CFR 800.11(d). If historic properties are identified but would not be impacted by the proposed HPSA activities, or if the impacts can be minimized or avoided, the NRC staff would apply the criteria for *no adverse effect* on historic properties outlined in 36 CFR 800.5(b). The NRC would provide documentation of these findings for review and concurrence to the SHPO or THPO, American Indian Tribes, and interested members of the public in accordance with documentation standards set forth in 36 CFR 800.11(e).

If historic properties are identified within the APE for a specific AUM site and cannot be avoided by the proposed activities, the NRC staff would apply the criteria of *adverse effect* to historic properties outlined in 36 CFR 800.5(a). Adverse effects result when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion on the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. These include physical destruction or alteration of a property's characteristics that contribute to its historic significance. Examples of adverse effects are described in 36 CFR 800.5(a)(2). The NRC staff would provide documentation of this finding to the Advisory Council on Historic Preservation, the SHPO or THPO, American Indian Tribes, and interested members of the public for review and concurrence in accordance with documentation standards set forth in 36 CFR 800.11(e). The NRC would consult with the same parties regarding the resolution of adverse effects and develop measures to avoid, minimize, or mitigate the adverse effects. Such measures to address adverse effects are typically documented in a memorandum of agreement or a programmatic agreement.

Impacts on historic and cultural resources and historic properties can be avoided or minimized through the development of site-specific historic and cultural resource protection procedures (in

addition to the generic license conditions discussed above). These procedures would be developed as needed for each site in accordance with applicable state and Tribal requirements and would outline stop work and notification protocols in the event that archaeological materials or human remains are inadvertently discovered during construction, operation, or demobilization activities. The procedures should follow State burial laws if the site is on non-Federal land or the Native American Graves Protection and Repatriation Act (25 U.S.C. §§ 3001 et seq.) if the site is on Federal land. Measures to avoid, minimize, and mitigate adverse effects on historic properties (i.e., stop work and notification procedures) must be developed in consultation with the SHPO or THPO and Tribes.

3.8.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts to historic and cultural resources from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. The NHPA Section 106 process for the site, which includes consultation with the relevant SHPO or THPO and with potentially affected Tribes, is successfully concluded.
2. Disa complies with its license conditions and any applicable Federal, Tribal, state, and/or local historic and cultural resources regulations.
3. In accordance with the results of consultation under Section 106, Disa implements avoidance, minimization, and/or mitigation measures to address potential effects on historic and cultural resources.

The NRC staff would review site-specific information supplied by Disa in the PMN before initiating consultation to determine whether the planned HPSA operations and conditions at the site could affect cultural and historic resources. The staff would document the results of consultation and resource identification efforts in a site-specific supplement (see section 1.4 of this EA).

3.9 Visual and Scenic Resources

The following section addresses potential impacts to the visual and scenic properties of sites where the HPSA technology would be implemented.

3.9.1 Affected Environment

Background conditions influencing visual impacts include land cover and topography on the site and surrounding landscape, weather patterns and conditions, the height of existing structures and vegetation, and proximity to land uses such as parks and residences that could be sensitive to nearby visual changes. Proximity can be expressed in terms of whether a site lies in the viewshed of, i.e., is visible from, a sensitive land use. Disa notes that most prospective AUM sites have the typical appearance of old mine sites with waste piles and an unnatural appearance (Disa 2025b). The NRC staff expects that old roadways and sometimes abandoned structures may be present, contributing further to the unnatural appearance. Vegetation on the sites may be sparser and visually contrast with natural vegetation occurring in the surrounding landscape. Many AUM sites are, however, located in remote areas with little or no other nearby development, especially urban development, and smaller sites may blend in visually with the surrounding natural or rural landscape. Any degradation of the visual properties of the surrounding landscape would be influenced by the size and properties of the abandoned mine, such as the presence of pits and structures, and the extent of other past land disturbances. The

contrast of an AUM site with the surrounding landscape would not only be influenced by the site's physical properties noted above but also by the length of time passed since abandonment, and by regional attributes such as precipitation and other climate factors and soil properties that contribute to the ability of natural vegetation to become restored to previously disturbed land through natural succession (see section 3.5.1).

3.9.2 Environmental Impacts

In the short-term, implementation of HPSA would return an active industrial appearance to an AUM site. Preparation and mobilization would involve clearing and grubbing vegetation, grading and compaction of soil, building temporary staging and parking areas, and placement of temporary structures. Sites undergoing HPSA operations would have the general appearance of active industrial construction sites, with movement and staging of trucks and other large vehicles, the presence of workers, and piles of soil. Sites would appear more industrial than when they were still abandoned and would likely contrast more with surrounding rural and natural landscapes. For sites situated in remote landscapes, these visual changes would be experienced only by a few people and have a low chance of affecting the use and enjoyment of visually sensitive features such as parks and residences. Sites close to highways would appear similar to surface mining or land development projects.

Implementation of HPSA at certain sites could appear visually objectionable if the sites are visible from (in the viewshed of) visually sensitive locations such as residential areas; National, state, or local parks; historical sites; conservation lands; or specially designated features such as Wild and Scenic Rivers or American Heritage Rivers. Especially in the remote settings for many AUM sites, nighttime lighting necessary for HPSA implementation could intrude on otherwise dark landscapes (light pollution). Most people do not like the appearance of land disturbance or man-made light sources from their residences, and people visiting parks and other specially designated features expect a natural appearance not intruded upon by cleared vegetation, exposed soils, heavy equipment, or human and vehicular activity.

The effects noted above are, however, temporary. As state in ER section 4.9.2, the outcome of the HPSA process would be to render treated sites suitable for reclamation to a more natural appearance. Once work is finished, Disa would remove the structures and vehicles from the site, and soils could be graded to produce a natural appearing topography compatible with the surrounding landscape. Revegetation and natural vegetation successional processes would over time return a more natural vegetated appearance to the site. The remediated sites can be expected over time to blend in visually with natural surroundings.

3.9.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential impacts to visual and scenic resources from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Upon completion of work at a site, Disa would remove all structures, vehicles, gravel, and other physical items from the site. Disa may or may not leave any gravel applied to roads.
2. As stated in the ER, Disa would implement best management practices for soil erosion and sediment control and stormwater management and comply with related state and local requirements.

3. Once work on a site is completed, Disa would grade the coarse material into a topography typical of natural conditions that blends naturally into the site surroundings. Disa would seed and permanently stabilize the land surface.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential visual and scenic impacts.

3.10 Socioeconomics

This section describes the general demographic characteristics of AUM areas and the potential socioeconomic impacts from the proposed action.

3.10.1 Affected Environment

AUM sites in the Western US are generally located at significant distances from communities or may be near small and/or impoverished communities, including American Indian communities. For example, most AUM sites from defense mining are located on the Navajo Nation, and the remainder of these former defense mines are on lands of the Pueblo of Laguna, the Pueblo of Zuni, the Hualapai Tribe, the Tohono O'odham Nation, the Spokane Tribe of Indians, and the Ute Indian Tribe (DOE 2021).

Most areas around AUM sites likely face significant challenges in terms of social services. Educational facilities in these regions may be limited and hospitals and healthcare services are typically sparse, with residents sometimes needing to travel long distances to access medical care. Other essential services, such as public transportation, community centers, and recreational facilities, may also be scarce or not sufficient for the needs of rural communities. Many communities near AUM sites also struggle with the long-term health and socioeconomic effects of the mines that resulted in the loss of livelihoods and practices involving the land, such as agricultural and grazing activities and practices of cultural significance.

In table 3-10 of the ER, Disa presented socioeconomic information for seven communities, stating that these communities were chosen based on their locations generally near large concentrations of AUM sites. These communities are Glade Park in western Colorado, Monticello in southeastern Utah, Casper in central-eastern Wyoming, Gallup in northwestern New Mexico, Wickenburg in central-western Arizona, Yerington in western Nevada, and Dubois in eastern Idaho. As of 2022, the populations in these communities ranged from 511 (Dubois) to about 60,000 (Casper). The number of households ranged from 255 (Dubois) to 24,850 (Casper) and the median income ranged from about $34,000 (Dubois) to about $75,000 (Glade Park). The poverty level ranged from 1 percent (Dubois) to over 33 percent (Gallup) (Disa 2025b).

3.10.2 Environmental Impacts

Disa estimates that the number of full-time employees needed for HPSA operations would range from five employees at tier 1 sites to 17 employees at tier 5 sites, as shown in table 7. The sizes of nearby communities would determine how readily the communities could accommodate 17 full-time workers. Disa expects that larger towns within 1.5 hours of HPSA sites will be large enough to accommodate 17 employees, that all Disa employees would be housed within 1.5 hours of a HPSA treatment site, and that no local residents would be

displaced (Disa 2025d). The NRC staff concludes these are reasonable assumptions. HPSA operations could provide jobs for people who already live in communities in areas where several prospective sites are located (AUM clusters). For example, if Disa operates at two tier 5 sites near these communities, HPSA operations could provide more than 30 jobs for several years. Operating at tier 1 or tier 2 sites, in contrast, could provide five jobs for less than one year to about three years.

HPSA operations would result in increased commercial activity for fuel, food, hardware, and hotel use, and the degree of increase would depend on the tier of HPSA operations and the number of sites Disa operates within a particular region. HPSA operation at AUM clusters would increase commercial activity and tax receipts for nearby communities and counties. Disa estimated tax benefits for the five HPSA operating tiers using Montrose County, Colorado, as an example. These estimates are presented in table 7 and are based on estimates of expenditures using the Government Services Administration per diem rates and an estimate of $1,000/month for supplies (Disa 2025b).

The socioeconomic impacts of HPSA operations on local communities would depend on the scale and duration of HPSA operations in an area and on the size of the nearby communities. The NRC staff concludes that HPSA operations at the tier 1 to tier 2 level would have small but not noticeable socioeconomic effects on nearby communities, while operation at one or more tier 5 sites in a clustered area could have noticeable commercial effects on very small adjacent communities.

HPSA operations could result in making previously contaminated AUM land available for recreational, agricultural, or grazing uses, or traditional cultural uses. These would be long-term beneficial impacts of the proposed action and would likely be noticeable to nearby communities.

3.10.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential socioeconomic impacts resulting from issuing Disa a license for the HPSA process would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Clustered HPSA operations at two or more tier 5 sites could be accommodated by a nearby community (within a 1.5-hour drive) that can easily accommodate 30 or more employees for several years. Very small nearby communities would not experience noticeable negative socioeconomic impacts from HPSA operations.
2. No local residents would be displaced by any HPSA operation.
3. The increase in local traffic as a result of HPSA operations would not require changes to traffic patterns, and nearby residents would not experience noticeable increases in traffic.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate evaluation of potential socioeconomic impacts.

Table 7. Disa's Estimates for Each Operating Tier: Number of Employees and Tax Revenues (using Montrose, CO as example)

Tier	HPSA Operators	Radiation Safety	Supervisor	Heavy Equipment Operator	Total Persons	Person Days	Person Weeks	Person Months	Lodging ($1600/mo.)	Meals ($74/day)	Supplies	Income Tax (4.4%)	Sales Tax Meals (8.53%)	Sales Tax Supplies (8.53%)	Fuel Taxes ($0.205/gal)	Total Taxes
Tier 1	2	1	1	1	5	925	185	46.25	$74,000.00	$ 68,450.00	$46,250.00	$3,256.00	$5,838.79	$3,945.13	$1,537.50	$14,577.41
Tier 2	2	1	1	1	5	4630	926	231.5	$370,400.00	$342,620.00	$231,500.00	$16,297.60	$29,225.49	$19,746.95	$1,537.50	$66,807.54
Tier 3	4	1	1	2	8	7408	1481.6	370.4	$592,640.00	$548,192.00	$370,400.00	$26,076.16	$46,760.78	$31,595.12	$1,537.50	$105,969.56
Tier 4	6	2	2	3	13	40118	8023.6	2005.9	$3,209,440.00	$2,968,732.00	$2,005,900.00	$141,215.36	$253,232.84	$171,103.27	$3,075.00	$568,626.47
Tier 5	8	3	2	4	17	78710	15742	3935.5	$6,296,800.00	$5,824,540.00	$3,935,500.00	$277,059.20	$496,833.26	$335,698.15	$3,075.00	$1,112,665.61

Sources: Disa 2025b, 2025d.

3.11 Public and Occupational Health

This section addresses the potential radiological and non-radiological impacts on workers and the public from the proposed action.

3.11.1 Affected Environment

Disa proposes to operate their HPSA technology at AUM sites to clean up the residual radioactivity in the waste rock piles. There are an estimated 15,000 such sites in the Western US across 14 states (Disa 2025b). While the specific conditions at each site vary, all of the sites contain elevated levels of radionuclides that pose a potential health risk to local communities and ecology.

Table 3-4 in the ER shows concentrations of the eight RCRA metals in waste rock from a test sample in Colorado (Disa 2025b). While none of the metals were observed in concentrations near the RCRA waste limit for hazardous waste, the nearest concentration observed was for arsenic at 0.3 mg/L, about 6 percent of the RCRA limit of 5 mg/L. Most of the RCRA metals concentrations were below the detection limit (Disa 2022). Therefore, the NRC staff concludes that the mine waste rock from the test sample is a radiological concern but not a hazardous waste concern.

The NRC staff expects the chemical composition of the potential HPSA sites would vary significantly depending on the site geology and history. Disa would perform confirmatory testing before mobilization to each site to establish the site characteristics and confirm that the HPSA process can sufficiently treat the site to achieve unrestricted release. The PMN provided to the NRC would include an assessment of the heavy metal concentration in the waste rock pile. The NRC staff assumes the heavy metal concentrations at AUM sites would be below the RCRA limits for the majority of sites and, therefore, the waste rock piles would be a potential radiological hazard but not a chemical hazard.

Prior to mobilization, Disa would perform characterization surveys at a potential site, including background surveys, assessments of the volume and chemical composition of mine waste to be treated, estimates of the mass of source material, and calculated current dose rates. Disa would submit the PMN to the NRC before mobilizing to a site.

Background surveys would be performed in 5-meter by 5-meter sample plots within 0.25 mile upgradient and upwind of the uranium mine waste pile (Disa 2025d). Background surveys would be performed with walkover GPS-gamma scans and nine shallow surface samples in a square within the 5x5 sample grid. The nine samples would be blended and tested as a composite sample for uranium, thorium-230, and radium-266. The total effective dose equivalent (TEDE) from background at each site would be calculated from the uranium, thorium, and radium concentrations along with an averaged gamma count from the sample plot.

Disa would not mobilize to a site if laboratory testing demonstrates that the mine waste at that site is not amendable to HPSA treatment and that Disa could not effectively reduce the source material present onsite to allow for unrestricted release of the site after treatment (Disa 2025c).

3.11.2 Environmental Impacts

The non-radiological hazards for workers would be typical for an outdoor industrial activity of this size. There would be temporary use of heavy machinery to gravel dirt roads for sites that do

not already have sufficient road conditions and to bring equipment to the site. Once operating at the site, Disa would need earthmoving machinery to move the waste rock piles to the HPSA units and would have daily deliveries of water and of trailers for fines storage.

Most sites would have no major chemical occupational hazards since most sites would be below RCRA limits for heavy metal contamination and the HPSA system mechanically separates material without the use of chemical processing. For this EA, the NRC staff assumes the mine waste to be processed through HPSA would not contain non-radiological hazardous contaminants above RCRA limits and would not result in fines concentrates classifiable as RCRA hazardous waste or mixed waste as defined in 40 CFR part 266.

Tetra Tech conducted a bench scale treatability study utilizing Disa's HPSA unit and soil from three AUM sites in New Mexico and Arizona. Exhibits 3, 4, and 5 in the treatability study report show that the HPSA process operating for 30 minutes or less successfully removed between 71.2 and 94.3 percent of the radium and uranium at two sites (Tetra Tech 2023). At the third site, the system removed 61 and 51.2 percent of uranium and radium, respectively, after 30 minutes of treatment. The treatability study demonstrated that the HPSA technology can meaningfully reduce radiological contamination at most AUM sites, but it is more effective in soils with lower clay content and higher coarse particle size (Tetra Tech 2023).

3.11.2.1 Occupational Dose

Disa calculated the maximum occupational dose from the operation of a HPSA unit at a site as 98.08 mSv/yr (9808 mrem/yr) (table 8). While above the regulatory limit of 0.05 Sv/yr (5 rem/yr), this exposure assumes that site workers would behave in unrealistic ways (e.g., standing adjacent to the source term for the entire workday every day). The occupational average dose was calculated to be 8.7 mSv/yr (870 mrem/yr) and is a more realistic upper limit given the site geometry and expected level of worker effort. Disa would institute standard operating procedures (SOPs) to ensure worker safety and reduce exposure during operations by following an established radiation protection plan and the ALARA program (Disa 2025b).

The occupational dose in Section 7 of the application was calculated assuming worker occupancy as 8 hours a day, 7 days a week, 9 months a year. For larger sites where Disa is operating for longer than 2 years, no mobilization or demobilization activities would occur within some years and the worker occupancy times would likely be longer than the timeframes in table 7-3 of the application. However, the average calculated dose would remain below regulatory limits if the occupancy time was increased to a maximum of 8 hours/day, 7 days a week, for 12 months for a total of 2920 hours. A full year occupancy for workers would result in an average dose of 11.76 mSv/yr (1176 mrem/yr), about 23 percent of the 0.5 Sv/yr (5 rem/yr) limit in 10 CFR 20.1201(a)(i). Add to this dose the internal dose for occupational receptors in table 7-9 of the application, and the total dose for workers would be 11.82 mSv/yr (1182 mrem/yr). This is a highly conservative dose because it is unlikely any worker would work 8 hours a day every day of the year. Additionally, the internal dose of 0.056 mSv/yr (5.6 mrem/yr) in table 7-9 requires unrealistic work conditions (e.g., workers would need to stand between the HPSA and feed pile for the full workday). Disa would provide personal protective equipment and establish SOPs to reduce dose and would follow an established ALARA program.

Table 8. Modeled External Dose Rates and Annual Doses – Workers and the Public

Case	Type	Dose Rate (mrem/hr)	Annual Dose (mrem)	Dose Limit (mrem)	Percent of Limit
Maximum	Occupational	4.54	9808	5,000	196%
	Public	0.05	22	100	22%
Average	Occupational	0.40	870	5,000	17%
	Public	0.02	6.7	100	6.7%
Median	Occupational	0.11	246	5,000	5%
	Public	0.01	4.4	100	4.4%

Source: Disa 2025e, table 14-2

The calculated dose in table 8 is for a site with one HPSA unit (tier 1 and tier 2 sites). The largest tier 5 sites identified in Table 1-1 of the ER would utilize up to 4 HPSA units at one site. The occupational dose would increase for such sites because of the additional HPSA units and required fines concentrates storage trailers. If a worker were to be exposed to the average dose rate from all 4 HPSA units concurrently for the entire workday, the resulting dose would be four times the average of one HPSA unit, 47.93 mSv/yr (4,793 mrem/yr). This is an unrealistic dose because the site geometry would likely preclude any location from receiving the same dose from all 4 HPSA units concurrently, and even if there were such a location at the site, no site workers would remain in that area for their entire workday. The occupational dose at a tier 5 site would likely be significantly lower than modeled. Routine exposure rate measurements and air monitoring would be used to ensure doses remain below regulatory limits and ALARA. Disa stated that personnel who are likely to receive in one year an occupational dose from external sources in excess of 10 percent of the applicable regulatory limits in 10 CFR 20.1201 would be monitored by personnel dosimetry (Disa 2025b).

Personnel monitoring at sites may include track-etch radon detectors, optically stimulated luminescence samples for gamma exposure, or lapel samplers to measure airborne effluents when needed, as determined by the radiation safety officer (Disa 2025b). Air sampling would also be done within any restricted areas to ensure compliance with occupational dose in 10 CFR part 20 subpart C.

The fines concentrates would be stored in roll-off containers or dump trailers until they are transported offsite either as low-level radioactive waste or as feed for a uranium recovery facility. All fines concentrates trailers would be maintained in one area designated as a restricted area unless exposure rates warrant designation as a radiation area.

3.11.2.2 Public Dose

Because there are AUM sites near small communities that would have recreational areas, grazing or agricultural areas, or outdoor activities nearby, the NRC staff used the conservative bounding public occupancy factor of 1/20 (i.e., present for 1/20 of the year, or 438 hours a year) to calculate the public dose during operation. The occupancy factor of 1/20 is described in table I-2 of NUREG-1556, Volume 18, Revision 1 to include outdoor areas with seating and recreational areas (NRC 2017). This bounding condition results in a maximum public dose estimate of 0.22 mSv/yr (22 mrem/yr) (table 8).

Disa evaluated the potential dose increase that would result from several HPSA units operating at the same site. Table 9 shows the expected increase for public dose at the site boundary from

4 HPSA units (as compared to 1), and the added fines storage trailers. The average public dose from a tier 5 site with four HPSA units was modeled to be 0.103 mSv/yr (10.3 mrem/yr), which is larger than the estimated average dose of 0.067 mSv/yr (6.7 mrem/yr) at a site with only one HPSA unit as described in table 8. The modeled average public dose is not four times larger for a tier 5 site with 4 HPSA units than a tier 1 with 1 HPSA unit because of the geometry of the units and the size of the site. No publicly available area would be situated near all HPSA units simultaneously at larger sites, and additional HPSA units farther away from the boundary would have diminished effects on the dose rate due to the increased distance. The NRC staff previously estimated that the maximum public dose for a site with one HPSA unit (e.g., a tier 1 site) would be 0.22 mSv/yr (22 mrem/yr) based on the occupancy time of 1/20 in table I-2 in appendix I of NUREG 1556 Volume 18. No boundary location would receive the maximum dose from all four HPSA units simultaneously, and even if there were a publicly accessible area that could receive the maximum dose from all four HPSA units, the resulting dose would be 0.88 mSv/yr (88 mrem/yr), which is below the 1 mSv/yr (100 mrem/yr) regulatory limit.

Table 9. Estimated Public Dose Rates and Total Annual Dose from Four HPSA Units and Extended Fines Storage Area

Source Term	Boundary Dose Rate[1] (mrem/hr)	Total Dose[2] (mrem)
HPSA units (tier 5, four units)	0.02	10.3
Extended fines storage area (tier 5, 64 storage trailers/bins)	0.02	6.4

Source: Disa 2025e, table 14-3.
[1] 50-foot boundary distance assumed
[2] Total external dose rate is a product of the calculated dose rate and occupancy scenarios described in Table 7-3 of the application

Disa calculated internal dose for members of the public at a 50-foot boundary during operations to be 0.005 mSv (0.5 mrem) or less at all receptor locations (Disa 2025e). The maximum dose of 0.005 mSv (0.5 mrem) added to the maximum external dose of 0.103 mSv (10.3 mrem) results in a maximum public dose during operation of 0.108 mSv (10.8 mrem), about 11 percent of the 100 mrem limit in 10 CFR 20.1301.

Disa would establish restricted areas during implementation of HPSA by installing temporary boundary fencing around locations for crushing and grinding, ablation, fines (source material) storage, and staging areas. Disa stated that the restricted area boundary would be adjusted as necessary to ensure that members of the public would not receive doses greater than 1 mSV/yr (100 mrem/yr) (Disa 2025b, 2025d).

Each HPSA site would have one perimeter air monitoring station upwind and two perimeter stations downwind of the operational area that would be equipped with gamma dosimeters and either track-etch detectors or continuous radon monitoring (Disa 2025d). Radon and gamma measurements from the site perimeter measurements would be used to confirm compliance with dose limits for individual members of the public as specified in 10 CFR 20.1302. Disa would operate air monitoring for air particulates, radon, and gross gamma for 12 months of operations across multiple sites to determine if the operations of HPSA units create significant airborne radiological dose pathways. If the collected data shows the operations of HPSA units does not create a significant airborne radiological dose pathway, Disa would propose the elimination or reduction of air monitoring to Disa's Safety and Environmental Review Panel. For larger sites where Disa expects to operate for longer than 12 months, the review and subsequent proposal to reduce or eliminate the air monitoring program would be based on data from that site (Disa 2025e).

3.11.2.3 Demobilization Activities and Surveys

Disa stated that no site would include a cap or soil cover over redeposited coarse material. Disa would provide the NRC with laboratory results in the post-remediation report demonstrating the coarse material at the site meets the NRC and EPA regulatory limits for radiological and chemical contaminants of concern and can safely be used as fill material at the site. After demonstrating the coarse material meets unrestricted release criteria in 10 CFR 20.1402, Disa would regrade the material into the site topography and add seed as appropriate to stabilize and reduce wind erosion (Disa 2025d).

Disa would perform laboratory testing of site soils prior to mobilization to ensure the site is amenable to HPSA treatment. If the laboratory testing does not indicate that mine waste contamination can be effectively reduced, Disa would not mobilize to the site. If the coarse material does not satisfy the regulatory requirements for unrestricted release in 10 CFR 20.1402 after treatment, Disa would retreat the material until release criteria are met (Disa 2025c).

After HPSA operation at a site, Disa could release up to twice the system charge of water at the site using sprinkler nozzles. As discussed in Section 3.4 of this EA, the NRC staff expects this one-time discharge would not significantly impact the local environment if the bounding assumptions in section 3.4.3 are met.

Disa would establish in the PMN the dose model scenario for demonstrating compliance with regulatory limits for unrestricted release of a site based on the expected land use after remediation. Disa provided key criteria that would be used to determine the appropriate dose model. These criteria represent exposure scenarios that range from a resident farmer (most conservative) to a recreational use (least conservative) scenario (Disa 2025e). If more than one scenario could represent a reasonably possible future use of the site, Disa would utilize the more conservative model. The site-specific dose modeling would be reviewed by the NRC staff prior to mobilization to ensure the proposed remediation strategy is sufficient to protect the public and the environment. More information about the site-specific dose assessment will be available in the NRC staff's SER.

Disa would provide the NRC with a post-remediation report that would include the total amount of waste rock treated and the end-result for the source material collected. The report would also include survey data and methodology used to determine the site meets regulatory requirements for unrestricted release of 0.25 mSv/yr (25 mrem/yr) above the background as established in the PMN.

3.11.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential public and occupational health impacts associated with Disa's proposed HPSA operations would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Before mobilization to a site, Disa would confirm through laboratory testing that the waste rock does not contain sufficient concentrations of RCRA metals to be classified as RCRA hazardous waste.
2. Premobilization background radiation levels would be established by Disa and approved by NRC staff prior to Disa commencing HPSA operation.

3. Disa would demonstrate through monitoring that the average occupational dose in tables 8 and 9 would be the maximum exposure at a site, or the cumulative dose for any employee who works at more than one site in a year.
4. Occupational dose at each site would be demonstrated to remain below regulatory limits in 10 CFR 20 subpart C.
5. Public dose at each site would be demonstrated to remain below regulatory limits in 10 CFR 20.1301.
6. Disa would establish a restricted area around any operational machinery or radiological storage areas of at least 50 feet to prevent public access to the site and minimize dose to the public.
7. Disa would not deploy HPSA units to a site that does not fit the description provided in NUREG-1556, Volume 18, appendix I, table I-2 for occupancy factors of 1/20 or 1/40 (e.g., outdoor areas with seating, recreational areas, storage areas, or outdoor areas with only transient pedestrian or vehicular traffic).
8. HPSA operations would not result in the onsite disposition of any material that has not been demonstrated to meet NRC requirements for unrestricted release in 10 CFR 20.1402 or for effluent concentration limits in 10 CFR part 20 appendix B.
9. Disa would abide by the unrestricted release criterion in 10 CFR 20.1402, which is a TEDE of 0.25 mSv/yr (25 mrem/yr), excluding background. Disa would also ensure that the coarse material remaining onsite does not contain uranium in excess of 500 mg/kg, as specified in 10 CFR 40.13(a).
10. Disa would confirm through laboratory testing that the fines concentrates do not contain sufficient concentrations of RCRA metals to be classified as RCRA hazardous waste prior to shipping offsite to a radioactive waste disposal facility or other properly licensed facility, such as a uranium mill.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of public and occupational health impacts.

3.12 Waste Management

This section describes wastes and effluents that would be generated during the proposed HPSA operations, the potential receiving waste management facilities, and the potential impacts from waste generation and disposal.

3.12.1 Affected Environment

The environment potentially affected by HPSA-generated wastes would be the AUM sites as well as any potential facility licensed to receive effluent or waste material. As described in sections 1.2 and 3.1.1 of this EA, there are about 15,000 AUM sites in 14 states, and the NRC staff expects that most AUM sites are characterized by physically disturbed soils that may support grassland, desert, forest or shrubland, cropland, or bare areas. Disa would provide site characterization information to the NRC in the PMN report for each site.
Disa could potentially ship the fines concentrates and water treatment solids to a uranium recovery site such as an in-situ uranium recovery facility or another type of processing facility,

such as the White Mesa Uranium Mill in Blanding, Utah. Disa would need approval from a receiving uranium recovery facility, and the receiving facilities themselves would need to ensure that they possess the authorization needed to accept the fines concentrates.

Alternatively, the fines concentrates and water treatment solids could be sent to a licensed storage facility pending disposal or recycling. Disa could also ship this material directly to a low-level radioactive waste (LLRW) disposal facility along with any coarse material, process water, and other materials (e.g., rags) that do not meet NRC standards for unrestricted release. Disa would likely transport these LLRWs to the EnergySolutions facility in Clive, Utah (UDEQ 2025) or to the Waste Control Specialists (WCS) facility in Andrews, Texas (WCS 2022). Nonhazardous municipal waste (general trash) would be disposed of at local solid waste facilities.

3.12.2 Environmental Impacts

3.12.2.1 Radioactive Wastes

The NRC has adopted a waste classification system for LLRW based on its potential hazards, and has specified disposal and waste form requirements for each of the general classes of waste: classes A, B, and C. The classifications are based on the key radionuclides present in the waste and their half-lives. In general, Class A wastes have the least stringent requirements for waste form, stability, and disposal methods, and Class C wastes have the most stringent requirements. Any radioactive waste resulting from HPSA operations would be class A waste.

The proposed action would generate fines concentrates as one of the primary byproducts of the HPSA process. The fines concentrates would contain uranium and/or thorium along with other metals. Disa would store this material in a trailer onsite and would implement security measures as needed depending on the site-specific conditions. Security measures could include the use of locking and leak-proof storage containers, temporary fences, GPS trackers on storage containers, video cameras with cell tower connectivity, portable security systems, portable site lighting, and/or guards if necessary (Disa 2025b). The fines concentrates could be feed material for a uranium recovery facility (not considered waste) or LLRW. Disa would need to provide detailed information about the composition of the material to any receiving facility, including a storage facility, and would need approval from the receiving facility and from regulatory authorities, such as the state, as appropriate.

In addition, HPSA operations would generate water treatment solids, rags, process water, and coarse material. Disa expects that the coarse material would meet NRC release requirements and could be deposited onsite after HPSA operations conclude. Disa expects that the process water either would be reused at another site or could be discharged onsite if it meets NRC release requirements (see section 3.4 of this EA) (Disa 2025b, 2025d). If the coarse material or process water do not meet NRC requirements, these materials could be disposed of at a licensed LLRW disposal facility. For this EA, the NRC staff assumes that all coarse material and all process water would meet the NRC release requirements and would not need to be disposed of as LLRW. The NRC staff further assumes that the coarse material would be deposited onsite, graded into the existing topography, and seeded. The NRC staff assumes that the process water either would be reused at another site or would be discharged onsite in compliance with NRC requirements and with state or EPA requirements for all nonradioactive constituents. Table 10 lists the types and quantities of byproducts and wastes that would be generated as a result of the proposed HPSA operations. For this EA, the NRC staff assumes the only LLRW that would be sent on a routine basis to a LLRW disposal facility would be incidental LLRW,

such as any rags or other materials that are not found to be releasable. Such quantities of LLRW would not significantly affect the capacity of any receiving LLRW facility. The material would not be stored onsite after HPSA operations have concluded.

3.12.2.2 Nonradioactive Wastes

The proposed action would generate nonradioactive municipal solid waste consisting of typical household trash (e.g., food waste, cans, paper products) and items such as rags that are not LLRW. Disa does not expect to generate any construction or demolition wastes, because the assembly and dismantling of the HPSA units would not involve construction materials (Disa 2025d). As discussed above, process water and coarse material that meets NRC release standards would be deposited onsite in accordance with applicable requirements. Hazardous wastes that could be generated include incidental wastes created by maintenance activities, such as rags with waste solvents or oils. Any minor quantities of hazardous or other regulated wastes would be stored in labeled containers and disposed of in accordance with EPA, state, and local requirements.

Table 10 provides a summary of the nonradioactive wastes that would be generated as a result of the proposed action. The quantities of routine nonradioactive wastes would be small and would not noticeably affect the capacity of local receiving facilities.

Table 10. HPSA Byproduct and Waste Generation

Material	Onsite Management	Disposition	Estimated Quantities
Potentially Radioactive			
Fines concentrates	Store temporarily in roll-off containers or dump trailers within restricted area.	Ship offsite for use as feed material at a uranium recovery facility, for storage at a designated storage facility, or for disposal at a licensed LLRW facility.	*Total*: 20,000 (tier 1 sites) to 2 million (tier 5 sites) tons[1] *Weekly*: 240 (tier 1) to 960 (tier 5) tons
Coarse material	Deposit onsite, grade, and seed (after verifying material is releasable).	If NRC release criteria cannot be met for onsite disposition, ship to storage facility or LLRW facility.	*Total:* 80,000 tons (tier 1) to 8 million tons (tier 5). *Weekly:* 960 (tier 1) to 3,840 (tier 5) tons
Process water	Treat water to meet NRC standards in 10 CFR part 20 appendix B. Store in plastic water tanks until onsite discharge or shipment offsite.	If release criteria cannot be me for onsite disposition, ship to another AUM site for reuse or to LLRW facility.	32,000 to 54,000 gallons per HPSA unit for a 50 ton/hour unit and a 100 ton/hour unit, respectively. *Total range*: 32,000 gallons (tier 1) to 128,000 gallons (tier 5).[2]
Water treatment solids	Store in fines concentrates containers or trailers.	Feed material for a uranium recovery facility or LLRW for disposal at a licensed facility.	30 cubic ft per HPSA unit
Incidental operational wastes (e.g., rags)	Store in plastic drums.	Scan for release, ship for disposal to municipal solid waste facility. If not	Unknown (generated occasionally)

Material	Onsite Management	Disposition	Estimated Quantities
		releasable, ship to LLRW facility.	
Nonradioactive			
Soil contaminated with spilled fuel oil	Onsite bioremediation (land farming) in accordance with federal and state requirements. Alternatively, store in container before shipping to disposal facility.	Ship to licensed disposal facility if not land farmed.	Unknown (result of accidental spill)
Rags (etc.) contaminated with fuel or solvents	Store in areas and containers designated for hazardous waste.	Ship to hazardous waste management facility.	Considerably less than 100 kg (220 lbs) per month.[3]

Sources: Disa 2025b, 2025d

[1] Disa assumes 20 percent of mass (table 1-1 of the ER; Disa 2025b) would be fines concentrates; therefore, 80 percent would be coarse material.

[2] based on assumption in ER table 1-1 of one 50 ton/hr unit for tier 1 and four 50 ton/hr units for tier 5.

[3] 100 kg or 220 lbs per month is the threshold for a very small quantity generator of hazardous waste as defined in 40 CFR 260.10.

3.12.3 Conclusions and Bounding Assumptions

Based on the analysis presented above, the NRC staff concludes that the potential waste management impacts associated with Disa's proposed HPSA operations would be NOT SIGNIFICANT at any AUM site that meets the following assumptions:

1. Disa would adhere to applicable local, state, and Federal requirements regarding radioactive and nonradioactive waste generation, handling, and disposal.
2. The only LLRW generated would be class A waste.
3. The routine quantities of nonradioactive, nonhazardous and hazardous waste would be small and would not noticeably affect the capacities of receiving facilities. The fines concentrates would not be subject to RCRA hazardous waste regulations (per assumption 10 in section 3.11.3).
4. No permanent facilities would be left onsite after HPSA operations. No materials would be stored beyond the duration of HPSA operations at any AUM site.
5. Disa would not send coarse material or process water to a LLRW facility. If coarse material or process water would be sent to a LLRW facility, the NRC would conduct a site-specific review before the material is shipped. Disa stated in the ER that if laboratory tests indicate that the release criteria would not be achieved at a site, then Disa would not pursue HPSA operations at that site.
6. Additional assumptions regarding the disposition of coarse material and process water are provided in sections 3.3.3 and 3.4.3, respectively.

The NRC staff would review site-specific information supplied by Disa in the PMN to determine whether the planned HPSA operations and conditions at the site meet the assumptions presented above. If the NRC staff determines that any of these assumptions would not be met, the staff would conduct an appropriate site-specific evaluation of potential waste management impacts.

4.0 Mitigation Measures

The evaluations of environmental impacts presented for each resource area in section 3 of this EA identify specific mitigation measures that could eliminate or reduce the severity of impacts. Additionally, many of the assumptions underlying the FONSI for this generic EA presume that Disa would implement specific mitigation measures, as described in the ER (Disa 2025b). Mitigation measures have traditionally been categorized as measures that avoid environmental impacts (avoidance); reduce the degree or magnitude of impacts (minimization); repair, rehabilitate, or restore adversely affected resources (rectification); reduce or eliminate impacts over time through preservation and maintenance (reduction); and compensate for impacts by replacing or providing substitute resources (compensation). For example, with respect to mitigation for wetland impacts, rectification, reduction, and compensation are sometimes collectively referred to as compensatory mitigation in a three-step approach to mitigation that includes avoidance, minimization, and compensatory mitigation.

Avoidance is a part of many of the assumptions underlying the FONSI that are listed for each resource in section 3. Many of the assumptions involve avoiding land disturbance at sensitive environmental resources such as cultural sites, wetlands, floodplains, and residential areas. The NRC staff expects that Disa would choose to implement HPSA whenever possible to avoid locations of sensitive environmental resources. If needed, these avoidance efforts would include investigative activities, such as archaeological surveys, wetland delineations, or species surveys, to identify the presence of sensitive resources. Avoidance of impacts to sensitive resources and locations is widely recognized as preferrable to attempting to reduce, repair, offset, or compensate for adverse impacts after they occur. As noted above, impacts or potential impacts to such resources will require appropriate environmental site-specific review.

Minimization is another approach to preventing adverse environmental impacts, although it is generally preferred only when avoiding impacts is not practicable. Section 3 outlines multiple best management practices capable of minimizing environmental impacts resulting from soil erosion and sediment control, stormwater runoff, and fugitive dust. Examples of some specific best management practices include temporary and permanent soil stabilization, placement of silt fences between exposed soils and sensitive areas, use of sediment traps and ponds, and periodic wetting of exposed soils to reduce the release of fugitive dust. Disa states in section 5.4 of the ER that it would implement these types of standard best management practices (Disa 2025b).

Implementation of measures to keep radiation levels that are ALARA is another key approach to minimizing environmental impacts. Specific ALARA measures would include training personnel for radiation safety, implementing standard operating procedures, using appropriate control measures, good housekeeping practices, administrative control limits, and using radiation protection equipment, as needed. Other mitigation measures that could effectively reduce adverse environmental impacts at certain sites might include reducing objectionable noise by not operating certain equipment at night, reducing light intensity, or establishing vegetation or physical screens surrounding work areas near sensitive auditory or visual receptors such as residences and parks.

Several compensatory mitigation measures may be appropriate for certain sites. Some may be required by permits under the CWA or recommended or required by the FWS to protect Federally-protected threatened or endangered species or critical habitats. If work at a site requires a permit for impacts to wetlands or streams, the permit may call for permittee-

responsible mitigation projects to protect, restore, enhance, or create compensatory habitats; or purchasing credits in offsite mitigation banks that accomplish the same purposes. Mitigation banks are preferred over permittee-responsible wetland mitigation, but mitigation banks may not likely be available in many of the remote or rural areas where most AUM sites are situated. The FWS may require or recommend actions to limit work near nesting or breeding sites at specific times of the year or to preserve or enhance offsite habitat for affected species.

The NRC staff would review specific mitigation measures proposed by Disa in the PMNs for specific sites. The PMNs would identify and describe specific mitigation measures and how they would prevent or offset adverse environmental impacts. The PMNs would also discuss substantial risks inherent in successful implementation of the mitigation measures and outline any specific monitoring procedures needed to assess progress of the mitigation measures. The NRC staff would consider the proposed mitigation and monitoring when determining whether the action can proceed under a FONSI.

5.0 Agencies and Persons Consulted

[The NRC staff published a draft of this EA for public comment. In addition, the staff sent the draft generic EA electronically to Federally-listed American Indian Tribes and to the 14 states in which the 15,000 identified AUM sites are located.

Final EA will describe comments on draft generic EA and their resolution.]

6.0 Preliminary Conclusion and Finding of No Significant Impact

The NRC has prepared this draft generic EA to document the NRC staff's environmental review of Disa's request to operate its HPSA technology at AUM sites in the Western US. Based on its review, in accordance with the requirements of 10 CFR part 51, the NRC has determined that the issuance of a license to Disa under 10 CFR part 40 to operate its HPSA process at AUM sites would not significantly affect the quality of the human environment at a specific AUM site if either of the following conditions are met: 1) all of the bounding assumptions in section 3 of this EA are met for HPSA operation at a specific site, or 2) if all of the assumptions are not met, and the NRC has conducted further site-specific review and determined, as a result of that review, that the impacts at a specific site would not be significant. In all cases, the NRC staff would conduct site-specific reviews to identify the potential environmental impacts of leaving coarse material onsite and would complete site-specific consultations under Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act.

As a result of its review of the application and the RAI responses, the NRC staff concluded that construction, operation, and demobilization of the HPSA system could have a beneficial impact on AUM site soils by reducing the radioactivity contained in the soils. The NRC staff assumes all bounding assumptions in section 3 of this EA would be met or that the NRC staff would confirm as a result of site-specific reviews that HPSA operations would not have significant impacts related to land use, visual and scenic resources, the geologic environment, site soils, ecological resources, water resources, air quality, noise, socioeconomic conditions, public and occupational health, transportation, and waste generation and management. Subject to confirmation of site-specific conditions and upon the successful conclusion of consultation under Section 106 of the NHPA, the NRC staff concludes that the proposed HPSA operations would not have significant impacts on historic and cultural resources at AUM sites. Subject to confirmation of site-specific conditions and upon the successful conclusion of consultation under Section 7 of the ESA, the NRC staff also concludes that the proposed HPSA operations would have no effect or would not be likely to adversely affect any Federally-listed threatened or endangered species. The NRC staff would follow the process described in section 1.4 to assess the degree to which HPSA operation at specific AUM sites would meet the assumptions in this EA.

Based on this assessment, in accordance with 10 CFR 51.31, the NRC preliminarily concludes that the proposed action, issuing a license to Disa under 10 CFR part 40 for the HPSA process, does not warrant the preparation of an environmental impact statement, and, pursuant to 10 CFR 51.32, a finding of no significant impact is appropriate. If, upon reviewing site-specific conditions, the NRC concludes that HPSA operation could result in significant impacts at a site, the NRC would conduct a supplemental environmental impact statement for that site.

7.0 List of Preparers

This EA was prepared by the following NRC staff:

Contributor	Education, Years of Experience
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Appendix A

Environmental Information Requirements for HPSA Premobilization Notification

The premobilization notification (PMN) for each site should include the information identified in the applicable license conditions, as well as the information identified in this appendix.

1.0 Site Information

Provide the following basic information for the site:

- Operating tier applicable to the site.
- Indication of whether site will be part of a cluster of sites operating concurrently.
- Wind rose information for the site.
- Overview map depicting site location as a point within state boundaries.
- Site acreage (nearest acre) and coordinates for centroid of the site.
- Scaled map depicting the site boundaries overlaid over 7.5-minute United States Geological Survey topographic map.
- Aerial photography (as recent and detailed as available) overlaid with site boundaries.
- Ground photographs, if available, keyed to points on the scaled map and/or aerial photography.
- Use either scaled map or aerial photography to identify each land use within 1 mile of the site boundary.
- Site ownership details with any relevant information on water rights, mineral rights, and encumbrances.
- Site zoning, if any.
- Site boundaries overlaid over FWS National Wetland Inventory (NWI) map coverage if available, and 1) area (to nearest tenth of an acre) of each wetland NWI type onsite, and 2) linear length (to nearest foot) of each stream onsite.
- Identification and a map of other surface water features, such as ephemeral or permanent streams.
- Site boundaries overlaid over Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) coverage, if available, and area (to nearest acre) of each flood zone onsite.
- Site boundaries overlaid on Natural Resources Conservation Service county soil survey coverage, and area (to the nearest acre) of each soil mapping unit on the site.
- Official letter autogenerated by the FWS IPaC database and generated background information, using an action area consisting of the site and areas within one mile of the boundary.
- Site map showing existing roads that would need to be improved and a description of the plans for improvement.

- Identification and a map of any water intake wells or water withdrawals occurring within 1 mile of the site.

2.0 HPSA Operations Information

Provide the following information on the application of HPSA at the site:

- On the scaled map, overlay the estimated boundaries of potential ground disturbance and provide the estimated area, depth, and volume of ground disturbance. This applies to any ground disturbance needed to assemble the HPSA equipment in addition to the excavation of mine waste piles and underlying soils.
- Detailed plans for disposition of coarse material onsite, including a scaled map of the area on which coarse material would be placed, graded, and seeded, indicating the anticipated depth of coarse material.
- Overlay the estimated boundaries of potential ground disturbance over the NWI map and estimate encroachment into each wetland feature type (to the nearest tenth of an acre) and each stream feature type (to the nearest linear foot).
- Overlay the estimated boundaries of potential ground disturbance over the FIRM data map and estimated encroachment into each floodplain zone to the nearest acre.
- Overlay the estimated boundaries of potential ground disturbance over the soil survey map and estimated encroachment into each soil mapping unit to the nearest acre.
- Provide runs of any IPaC keys available for species that the official letter indicates may be present on the site.
- Provide estimates of emissions of State- or EPA-established criteria pollutants from HPSA operations and vehicles. Provide estimates of greenhouse gas emissions from HPSA operations and vehicles.
- Identify each required Federal, state, Tribal, or local permit, license, or approval; indicate the status; and describe plans for obtaining issuance.
- For each project location, provide a description/identification of the APE, record of surveys, consultations, and other communications undertaken to support the NRC staff's NHPA Section 106 regulatory requirements. Provide a description of historic and cultural resources that may be present on the site, and the potential impacts of HPSA operations on these resources. Describe proposed measures Disa will take to avoid, minimize, or mitigate impacts to identified resources. Provide sensitive cultural resource information with appropriate labeling to ensure protection of the information. Provide a description of communications and informal consultations with any tribes that have interest in the site, including, if appropriate and with the tribes' consent, a description of the tribes' spiritual, cultural, and other practices that could occur on the site after HPSA operations conclude.
- For each project location, provide a description of communications and consultations undertaken in accordance with Section 7 of the ESA. Describe special status species and habitats and assess the potential impacts of HPSA operations on these species and habitats. Describe mitigations Disa will take to avoid or minimize impacts on these species and habitats. Provide this information for NRC staff review along with any biological assessments prepared for eventual submittal to the FWS (after NRC review). Upon receiving the PMN, the NRC will notify the relevant office of the FWS that the Agency is

designating Disa as the non-Federal representative for consultation under Section 7 of the ESA. If formal consultation is necessary, Disa must work with NRC staff as necessary to complete the formal consultation and comply with any incidental take permits received.

3.0 EA Assumptions

For each assumption in the generic EA, determine whether the assumption would be met by HPSA operations at the site. Provide a basis for each determination. Complete the following table:

EA Assumption Number	Description (from section 3 of EA)	Met? (Yes/No)	Rationale
Land Use			
LU-1	The site and adjacent (abutting) land is currently not used for any purpose other than agriculture, grazing, or forestry.		
LU-2	The site and adjacent (abutting) land is not subject to zoning; it is zoned for uses such as mining, industry, or agriculture; or it is situated on a Federal, non-Agreement State, or Tribal land and is not zoned for residential, commercial, institutional, or for conservation uses.		
LU-3	The site is not located within 1.0 mile of a national or state park or monument, national or state wilderness area, national or state seashore or lakeshore, national or state wildlife refuge, designated Federal or state scenic river, or other land specifically designated for conservation, historic preservation, or tourism.		
LU-4	HPSA operations would not occur within floodplains or within or adjacent to wetlands.		
LU-5	If any area or element of the site (e.g., mineral rights, water rights, or easements) is privately owned (i.e., not owned by the Federal Government or a state or Tribal government), use of HPSA has the approval of all affected property interest owners.		
LU-6	HPSA would not conflict with any applicable regional comprehensive planning document or land use plan, including but not limited to land use plans developed for Federal installations, military bases, American Indian reservations, campuses, laboratories, or other areas.		
LU-7	The site is not visible from designated scenic overlooks, highways specifically designated as scenic routes or parkways, park visitor centers, or tourism points subject to frequent use.		

EA Assumption Number	Description (from section 3 of EA)	Met? (Yes/No)	Rationale
LU-8	If HPSA operations are conducted on sites near visually or audially sensitive land uses such as residences, recreational facilities, or urban areas, appropriate mitigation would be implemented and the HPSA process would not take longer than three years.		
LU-9	HPSA operations would not result in the onsite disposition of any material that has not been demonstrated to meet NRC requirements for unrestricted release.		
LU-10	After HPSA operations conclude, no permanent facilities would be left onsite, and no long-term waste storage would take place onsite.		
	Transportation		
TRN-1	The site is not located within 10 miles of an urban or suburban landscape characterized by the presence of residential and neighborhood roads and community features such as schools, parks, and commercial shopping areas.		
TRN-2	Application of the HPSA process at the site would not require construction of new access roads, although it may require paving, repaving, widening, or other upgrades to no more than 10 miles of existing roads. For purposes of this criterion, an existing road could include a gravel road or a dirt road historically used by industrial trucks but not a trail, track, or other roadway used only by hikers, four-wheel drive vehicles, or farm machinery.		
TRN-3	Implementation of any road upgrades would comply with applicable Federal, state, and local regulations, including the ESA and NHPA and regulations related to stormwater management and work in wetlands and floodplains.		
TRN-4	Implementation of the HPSA process at a site would not involve the use of roadways passing through or directly adjoining a national or state park or monument, national or state wilderness area, national or state seashore or lakeshore, national or state wildlife refuge, designated Federal or state scenic river, or other land specifically designated for conservation, historic preservation, or tourism.		
TRN-5	Application of the HPSA process at the site would not require the use of vehicles substantially different in character from those		

EA Assumption Number	Description (from section 3 of EA)	Met? (Yes/No)	Rationale
	listed in ER table 3-2, “List of Transportation Vehicles” (Disa 2025b).		
TRN-6	All transportation related to the proposed action at a site would be conducted in compliance with applicable regulations established for transportation of hazardous materials by the DOT in 49 CFR parts 171 through 173 and for nuclear materials by the NRC in 10 CFR part 40, as well as any other applicable regulations.		
Geology and Soils			
GS-1	Disa may gravel or regrade existing dirt roads but would not need to create a new road.		
GS-2	Ground-disturbing activities would be limited to graveling pre-existing roads, establishing fencing, and processing soils directly under the waste rock piles.		
GS-3	Any ground disturbance to process native soils underneath the waste rock pile would not reach the site water table such that water pools in the excavation area and requires dewatering.		
GS-4	Any ground disturbance to process native soils underneath the waste rock pile would not break through the confining layer of an underlying aquifer and would not result in the creation of a new pathway for water recharge of that aquifer.		
GS-5	Any ground disturbance to process native soils underneath the waste rock pile would not impact previously undisturbed bedrock.		
GS-6	Coarse material is demonstrated to comply with all applicable regulatory requirements and can be left onsite consistent with the unrestricted release criteria in 10 CFR 20.1402, or any other applicable regulatory requirement.		
GS-7	The coarse fraction that is left on the site is graded into the existing site and seeded with a seed mixture that is appropriate for the site. Disa would take additional measures if needed to prevent a loss of material through wind erosion or water infiltration. Disa will obtain any needed authorizations or permits for the reintegration of coarse material onsite. Disa will submit the detailed plans for coarse material disposition to the NRC in the PMN for site-specific assessment.		
Water Resources			
WAT-1	Water used during HPSA system operation would be brought to the site by Disa and		

EA Assumption Number	Description (from section 3 of EA)	Met? (Yes/No)	Rationale
	would not be taken from the local surface water or groundwater.		
WAT-2	Disa would obtain the appropriate permits or licenses from the municipality or any other state, Tribal, or local authority for the source of water.		
WAT-3	Disa would implement a site-specific stormwater management plan, approved by applicable regulatory agencies, or a generic stormwater management plan approved by applicable regulatory agencies.		
WAT-4	BMPs would be used for stormwater management.		
WAT-5	Disa would not engage in any activity that would meaningfully alter the flow path or flowrate for any surface streams.		
WAT-6	No water would be discharged at the site during operation. Disa could, at the cessation of operation, discharge up to twice the system volume on the site, provided the water is demonstrated to meet any applicable federal, state, and local regulations for disposal prior to discharge.		
WAT-7	The water discharged onto the site at the end of operations would be discharged at a location(s) and rate approved by relevant state and/or federal agencies to avoid or minimize erosion and protect surface soils and vegetation.		
WAT-8	Disa would not establish any new groundwater wells for extraction, discharge, or monitoring.		
WAT-9	Disa would obtain a National Pollutant Discharge Elimination System permit from the EPA or state, if required.		
WAT-10	Disa would obtain Clean Water Act (CWA) Section 404 approval from USACE, if required.		
WAT-11	Disa would not excavate any native soils down to the water table, resulting in the need to dewater, and would not impact an aquifer's confining layer.		
WAT-12	No coarse material would contain metal contaminants above the Resource Conservation and Recovery Act (RCRA) limits, or the coarse material is separated such that any material containing metal contaminants above the RCRA limit would not be disposed of onsite.		
WAT-13	No coarse material would contain radiological contaminants above the NRC limits, or the coarse material is separated such that any		

EA Assumption Number	Description (from section 3 of EA)	Met? (Yes/No)	Rationale
	material containing radiological contaminants above the NRC limit would not be disposed of onsite.		
Ecological Resources			
ECO-1	Ground disturbance would be limited to areas of soil previously disturbed by mining or mining-related activities.		
ECO-2	Ground disturbance would avoid climax or old-growth vegetation or other vegetation typical of undisturbed natural lands in the surrounding landscape.		
ECO-3	Ground disturbance would not disturb any wetlands or perennial streams and no more than 300 feet of ephemeral or intermittent streams.		
ECO-4	Disa would provide in its PMN for each site a wetland delineation using the three-parameter process outlined in the Army Corps of Engineers Wetlands Delineation Manual and relevant Regional Supplement or a desktop assessment for the possible presence of wetlands using FWS National Wetland Inventory maps, aerial photography, or Natural Resource Conservation Service soil survey maps.		
ECO-5	Disa would comply with any Federal, state, or local permitting requirements for impacts to streams, wetlands, or floodplains.		
ECO-6	Disa would implement best management practices for soil erosion and sediment control and stormwater management and comply with related state and local requirements.		
ECO-7	Once work on a site is completed, Disa would grade the coarse material into a topography typical of natural conditions that blends naturally into the site surroundings and permanently stabilize the land surface.		
ECO-8	Noise levels from trucks and earthmoving equipment would be less than 40 dBA at a distance of 500 feet from the site boundary.		
ECO-9	Disa would provide as part of its PMN for each site a “desktop assessment” of habitats that could potentially contain Federally-listed or state-listed species or critical habitats protected under the ESA.		
ECO-10	For purposes of consultation under Section 7 of the ESA, NRC staff would be able to conclude, without using information from additional field surveys, No Effect or Not Likely to Adversely Affect (with concurrence from the FWS) for any Federally-listed		

EA Assumption Number	Description (from section 3 of EA)	Met? (Yes/No)	Rationale
	threatened or endangered species or critical habitats in an action area defined for a site.		
ECO-11	No further field surveys would be needed to support consultation under Section 7 of the Endangered Species; formal consultation, leading to a Biological Opinion and Incidental Take Statement, would not be required.		
ECO-12	Disa would implement any mitigation required by the FWS as terms or conditions in an incidental take statement or recommended as part of any communication conducted as part of informal or formal Section 7 consultation. Examples of common mitigation measures might include onsite or offsite habitat improvement or timing onsite work with a specific distance of nesting locations to avoid nesting seasons.		
Meteorology and Air Quality			
AIR-1	Emissions of criteria pollutants during construction, operation, and demobilization would not exceed *de minimis* levels established by the EPA under the General Conformity Rule (Title 40 of the *Code of Federal Regulations* (40 CFR) part 93).		
AIR-2	Exposures of radiological emissions to workers and the public would be limited to NRC regulations for the protection of workers and the public, as identified in the assumptions in section 3.11.3 of the EA.		
AIR-3	The potential for fugitive dust from emissions sources would be minimized by implementing dust control mitigation measures, such as wetting surfaces, applying gravel to dirt roads, and covering areas or containers of mine waste, coarse material, and fines concentrates.		
AIR-4	GHGs emitted by equipment and vehicles during construction, operation, and demobilization would be less than the quantity of CO_2 equivalents determined to be significant by the state or the EPA, whichever applies in the state of proposed HPSA operations.		
Noise			
NOI-1	Nearest receptors (e.g., residences) are at least 1000 feet from the site of proposed HPSA operations.		
NOI-2	Noise levels from trucks and earthmoving equipment at the nearest sensitive receptor will be less than 40 dBA.		

Historic and Cultural Resources			
HC-1	The NHPA Section 106 process for the site, which includes consultation with the relevant SHPO or THPO and with potentially affected Tribes, is successfully concluded.		
HC-2	Disa complies with its license conditions and any applicable Federal, Tribal, state, and/or local historic and cultural resources regulations.		
HC-3	In accordance with the results of consultation under Section 106, Disa implements avoidance, minimization, and/or mitigation measures to address potential effects on historic and cultural resources.		
Visual and Scenic Resources			
VIS-1	Upon completion of work at a site, Disa would remove all structures, vehicles, gravel, and other physical items from the site. Disa may or may not leave any gravel applied to roads.		
VIS-2	Disa would implement best management practices for soil erosion and sediment control and stormwater management and comply with related state and local requirements.		
VIS-3	Once work on a site is completed, Disa would grade the coarse material into a topography typical of natural conditions that blends naturally into the site surroundings. Disa would seed and permanently stabilize the land surface.		
Socioeconomics			
SOC-1	Clustered HPSA operations at two or more tier 5 sites could be accommodated by a nearby community (within a 1.5-hour drive) that can easily accommodate 30 or more employees for several years. Very small nearby communities would not experience noticeable negative socioeconomic impacts from HPSA operations.		
SOC-2	No local residents would be displaced by any HPSA operation.		
SOC-3	The increase in local traffic as a result of HPSA operations would not require changes to traffic patterns, and nearby residents would not experience noticeable increases in traffic.		
Public and Occupational Health			
POH-1	Before mobilization to a site, Disa would confirm through laboratory testing that the waste rock does not contain sufficient concentrations of RCRA metals to be classified as RCRA hazardous waste.		
POH-2	Premobilization background radiation levels would be established by Disa and approved by NRC staff prior to Disa commencing HPSA operation.		

POH-3	Disa would demonstrate through monitoring that the average occupational dose in tables 8 and 9 of the EA would be the maximum exposure at a site, or the cumulative dose for any employee who works at more than one site in a year.		
POH-4	Occupational dose at each site would be demonstrated to remain below regulatory limits in 10 CFR 20 subpart C.		
POH-5	Public dose at each site would be demonstrated to remain below regulatory limits in 10 CFR 20.1301.		
POH-6	Disa would establish a restricted area around any operational machinery or radiological storage areas of at least 50 feet to prevent public access to the site and minimize dose to the public.		
POH-7	Disa would not deploy HPSA units to a site that does not fit the description provided in NUREG-1556, Volume 18, appendix I, table I-2 for occupancy factors of 1/20 or 1/40 (e.g., outdoor areas with seating, recreational areas, storage areas, or outdoor areas with only transient pedestrian or vehicular traffic).		
POH-8	HPSA operations would not result in the onsite disposition of any material that has not been demonstrated to meet NRC requirements for unrestricted release in 10 CFR 20.1402 or for effluent concentration limits in 10 CFR part 20 appendix B.		
POH-9	Disa would abide by the unrestricted release criterion in 10 CFR 20.1402, which is a TEDE of 0.25 mSv/yr (25 mrem/yr), excluding background. Disa would also ensure that the coarse material remaining onsite does not contain uranium in excess of 500 mg/kg, as specified in 10 CFR 40.13(a).		
POH-10	Disa would confirm through laboratory testing that the fines concentrates do not contain sufficient concentrations of RCRA metals to be classified as RCRA hazardous waste prior to shipping offsite to a radioactive waste disposal facility or other properly licensed facility, such as a uranium mill.		
Waste Management			
WM-1	Disa would adhere to applicable local, state, and Federal requirements regarding radioactive and nonradioactive waste generation, handling, and disposal.		
WM-2	The only LLRW generated would be class A waste.		
WM-3	The routine quantities of nonradioactive, nonhazardous and hazardous waste would be small and would not noticeably affect the capacities of receiving facilities. The fines		

	concentrates would not be subject to RCRA hazardous waste regulations (per assumption 10 in section 3.11.3).		
WM-4	No permanent facilities would be left onsite after HPSA operations. No materials would be stored beyond the duration of HPSA operations at any AUM site.		
WM-5	Disa would not send coarse material or process water to a LLRW facility. If coarse material or process water would be sent to a LLRW facility, the NRC would conduct a site-specific review before the material is shipped. Disa stated in the ER that if laboratory tests indicate that the release criteria would not be achieved at a site, then Disa would not pursue HPSA operations at that site.		
WM-6	Additional assumptions regarding the disposition of coarse material and process water are provided in sections 3.3.3 and 3.4.3, respectively.		