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Environmental Assessment for the Homestake Mining Company of California Large Tailings Pile Evapotranspiration Cover Design License Amendment Request

Environmental Assessment

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Environmental Center of Expertise
Division of Rulemaking, Environmental, and Financial Support
Office of Nuclear Material Safety and Safeguards

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ABBREVIATIONS AND ACRONYMS

ac	acre
ACHP	Advisory Council on Historic Preservation
ADAMS	Agencywide Documents Access and Management System
AMSL	above mean sea level
APE	area of potential effects
BMP	best management practices
CAP	Corrective Action Program
CFR	Code of Federal Regulations
cm	centimeter
COC	constituent of concern
dBa	decible
DOE	U.S. Department of Energy
DP	discharge plan
EA	environmental assessment
EMNRD	Energy, Minerals, and Natural Resources Department
EPA	U.S. Environmental Protection Agency
ER	environmental report
ESA	Endangered Species Act
ET	evapotranspiration
ft	foot
FWS	U.S. Fish and Wildlife Service
GCAP	Groundwater Corrective Action Program
GHG	greenhouse gas
GRP	Grants Reclamation Project
ha	hectare
HMC	Homestake Mining Company of California
in	inch
IPaC	Information for Planning and Conservation
km	kilometer
LAR	license amendment request
LC	license condition
LTP	large tailings pile
m	meter
MBTA	Migratory Bird Treaty Act
mi	mile
mrem	millirem
mSv	millisievert
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMERT	New Mexico Environmental Review Tool
NMSHPO	New Mexico State Historic Preservation Officer
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
RAI	request for additional information
RO	reverse osmosis
STP	small tailings pile
USACE	U.S. Army Corps of Engineers
TDS	total dissolved solids

1 INTRODUCTION

By letter dated June 3, 2025 (HMC, 2025a), Homestake Mining Company of California (HMC or the licensee) submitted to the U.S. Nuclear Regulatory Commission (NRC) a revised license amendment request (LAR) for review and approval. The revised LAR proposes a change to the currently approved cover design on the top of the large tailings pile (LTP) located at the Grants Reclamation Project (GRP) in Cibola County, New Mexico. The LAR, including the 2023 environmental report (ER) and the 2025 revised design report (HMC, 2023, 2025a), is to modify the existing interim LTP cover to an evapotranspiration (ET) cover design. The LAR also proposes corresponding clerical changes to license condition (LC) 36A(3), LC 36B(1) and LC 37A of NRC Materials License SUA-1471 (NRC, 2025a).

For background information purposes, by letter dated March 21, 2022 (HMC, 2022a), HMC submitted to the NRC a LAR that proposed changing the currently approved cover design on the top of the LTP to an ET cover. In correspondence dated April 21, 2022 (NRC, 2022a), the NRC staff advised HMC that the LAR did not include the required ER. By letter dated May 17, 2022 (HMC, 2022b), HMC submitted an ER to support the LAR. The NRC performed an acceptance review and provided a letter of nonacceptance to HMC with requests for supplemental information on September 28, 2022 (NRC, 2022b). On July 28, 2023 (HMC, 2023), HMC submitted a revised LAR, which included an updated design report, ER, and responses to the NRC staff's comments on the LAR. The NRC staff accepted the LAR submission for detailed technical review by letter dated October 18, 2023 (NRC, 2023). HMC provided responses to NRC requests for additional information (RAIs) in 2024 (HMC, 2024a,b,c) and 2025 (HMC, 2025a) and submitted a revised design report on June 3, 2025 (HMC, 2025a).

In this environmental assessment (EA), the NRC staff evaluates the potential environmental impacts associated with HMC's proposed LTP ET cover design in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and applicable guidance found in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with Office of Nuclear Material Safety and Safeguards Programs," issued August 2003 (NRC, 2003a). The NRC staff is also conducting a detailed safety analysis of HMC's proposed LTP ET cover design and will document the results in a separate safety evaluation report. The NRC staff will base its decision regarding whether to approve the HMC's LAR on the results of the reviews documented in this EA and the safety evaluation report.

Grants Reclamation Project Site Overview

HMC operated the GRP site uranium milling operation from 1958 through 1990 under NRC License SUA-1471. The site is located approximately 9 kilometers (km) (5.5 miles [mi]) north of the City of Grants, New Mexico, and approximately 4 km (2.5 mi) north-northeast of the Village of Milan, New Mexico. The NRC-licensed boundary of the site encloses about 439 hectares (ha) (1,085 acres [ac]) (HMC, 2023). The GRP site processed ore from several local mines. Following uranium processing, the tailings were discharged to two unlined tailings impoundments, the LTP and the small tailings pile (STP) (figure 1-1) (HMC, 2023). HMC closed the mill in 1990 (HMC, 2023). In January 1991, HMC submitted a proposed tailings reclamation and mill decommissioning plan to the NRC (AK Geoconsult et al., 1991). The NRC staff added the reclamation plan to License SUA-1471 as LC 29 in August 1993. The majority of structures at the GRP site were decommissioned between 1993 and 1995, with some structures left in place to support the groundwater restoration activities that HMC initiated in 1977 (HMC, 2025b;

NRC, 1993). The current structures at the GRP site are related to the operation and maintenance of the continuing groundwater restoration activities at the LTP and the STP (HMC, 2025b).



Figure 1-1 Proposed Action – ET Cover Project (Source: Modified from HMC, 2025a)

Summary of Groundwater Restoration Activities

Seepage and leaching of heavy metals and radioactive contaminants into the soil and groundwater beneath the unlined LTP and STP are sources of chemical and radiological contamination to underlying groundwater. HMC currently manages the Groundwater Corrective Action Program (GCAP), as defined by NRC License SUA-1471 and New Mexico Environment Department (NMED) Discharge Plan (DP), DP-200 (HMC, 2025b). The U.S. Environmental Protection Agency (EPA) Region 6 Superfund Program also oversees the current groundwater restoration program. The GCAP is designed to reduce the concentrations of targeted contaminants from the groundwater by extracting contaminated groundwater from the alluvial and Chinle aquifers and treating the water. The treated water is obtained from HMC's reverse osmosis (RO) plant located south of the LTP (figure 1-1) (NRC, 2019). This plant worked in conjunction with HMC's decommissioned zeolite water treatment system on the southeast corner of the LTP, which operated between 2015 and 2022 and also produced treated water for aquifer flushing. Currently, a series of collection wells are used to collect the contaminated water, which is pumped back to the RO plant for treatment. Under the GCAP, HMC continues to reduce concentrations of constituents of concern (COCs) with the goal of achieving levels that meet the accepted groundwater site standards for each COC in each aquifer, as required by the NRC license and the NMED DP (HMC, 2025b). The site COCs are uranium, selenium, molybdenum, sulfate, chloride, total dissolved solids, nitrate, vanadium, thorium-230, radium-226, and radium-228. Details about the GCAP and history of groundwater restoration at

the GRP site are provided in the most recent annual monitoring report (HMC, 2025b,c). In accordance with the last NRC site inspection in September 2024, HMC ceased using the San Andres-Glorieta (SAG) regional aquifer water for injection purposes (NRC, 2024a).

Summary of Large Tailings Pile Reclamation Activities

Following the closure of the Homestake mill in 1990, HMC began reclamation of the LTP, including evaporation of the remaining tailings ponds that were once located on the LTP and spraying water on the LTP surface to control wind erosion (HMC, 2023). In 1993 and 1994, HMC constructed an approximately 0.3 meter (m) (1 foot [ft]) thick interim cover of soil that did not include a radon barrier on top of the LTP (HMC, 2023). HMC extensively regraded the LTP surface to fill in the tailings ponds and flattened the LTP side slopes to improve stability. HMC installed radon barrier material on the northern, western, and southern slopes to an average depth of 1.1 m (3.8 ft), and on the eastern slopes to an average depth of 0.6 m (2 ft).

In 1995, the NRC staff approved an LTP cover design that included a radon barrier and vegetated gravel-amended soil layer to support ET (NRC, 1995). However, the approved design (figure 1-2) was not installed because additional settlement of the LTP surface was expected to continue. HMC determined it would be beneficial to construct the radon barrier after 90 percent of the expected settlement had occurred (HMC, 2023). Since 1995, HMC states that soil cover material has been added (1) on the LTP filling depressions caused by settling to improve drainage, and (2) to specific areas to create a sufficient protective cover to maintain radon flux measurements within NRC regulatory requirements (HMC, 2023).

In 2020, HMC assessed and concluded that settlement of the LTP had reached 90 percent of expected settlement (HMC, 2023). Therefore, HMC proposed a revised ET cover design (figure 1-3) to meet the NRC's requirements (ERG, 1995), to mitigate erosion, to provide an environment conducive to vegetation growth, and to reduce precipitation percolation through the cover. HMC's 2025 revised design report (HMC, 2025a) includes details about the revised cover design.

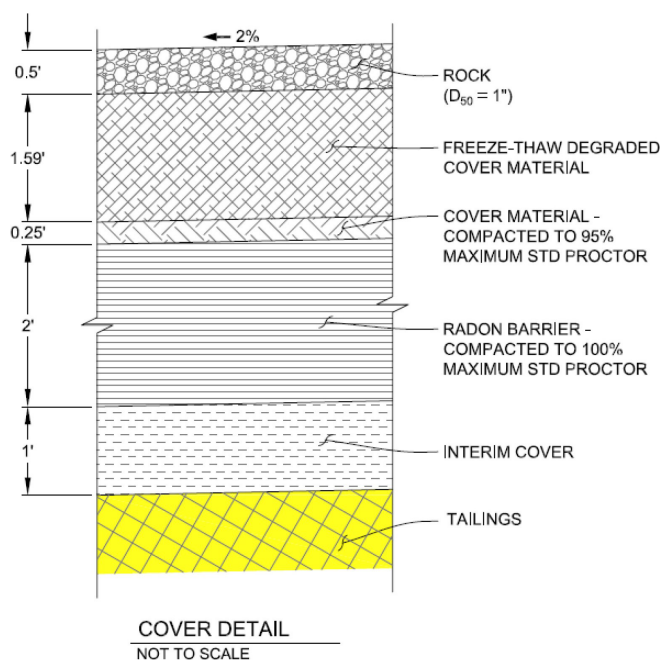


Figure 1-2 GRP Approved 1995 Cover Design Profile (Source: HMC, 2023)

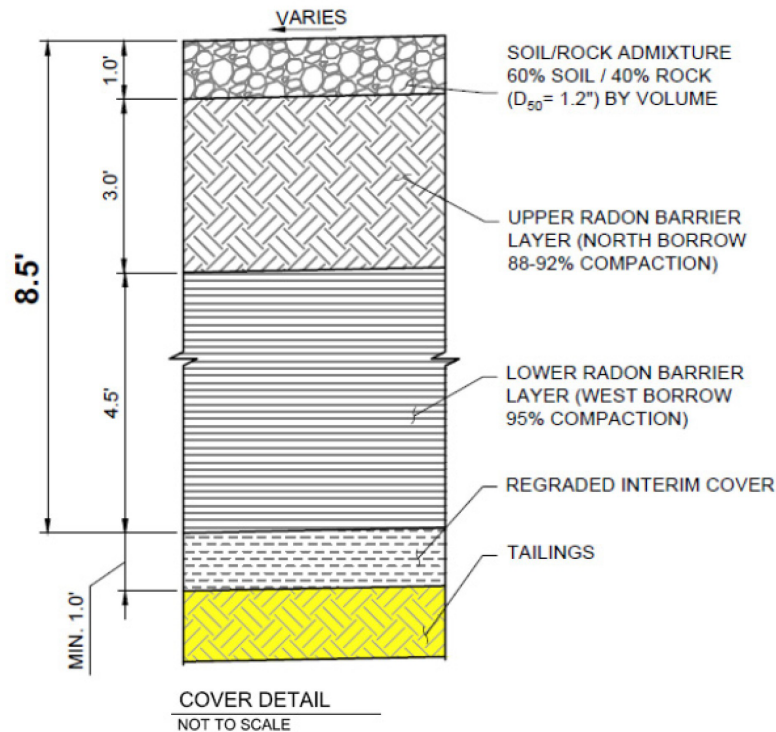


Figure 1-3 GRP Proposed ET Cover Design Profile (Source: HMC, 2025a)

1.1 Proposed Federal Action

NRC's proposed federal action is to approve HMC's license amendment request to modify the final cover design for the LTP to an ET cover. Implementing the proposed ET cover design involves obtaining soil and rock from the west and north borrow areas and from rock stockpiles located west of the LTP (figure 1-1). The north and west borrow areas and the rock stockpile are located on HMC-owned land.

1.2 Purpose of and Need for the Proposed Action

The purpose of and need for the agency action are to approve an LTP ET cover design that protects human health and the environment from actual or potential releases of radiological material. The proposed action, as described in the revised LAR and in responses to the NRC staff's RAIs (HMC, 2023; 2024a,b,c; 2025a,b), is HMC's preferred LTP ET cover design to complete decommissioning and reclamation of the GRP site.

1.3 Scope of the Environmental Analysis

The NRC staff performed this review in accordance with the requirements of 10 CFR Part 51 and applicable staff guidance in NUREG-1748. The NRC evaluated the radiological and nonradiological environmental impacts associated with approval of the LAR including the proposed action and the no-action alternative and documented the results in this EA. The NRC

staff reviewed the environmental documents submitted by the licensee in support of the LAR (HMC, 2023) and the HMC responses to the NRC staff's RAIs (HMC, 2024a,b,c, 2025a), as well as the EAs prepared by the NRC staff (1) for the Grants mill decommissioning and reclaiming of the tailings ponds on the GRP site (NRC, 1993), (2) to support the approval of the construction of evaporation pond number 3 (NRC, 2007), and (3) for the zeolite water treatment system (NRC, 2019).

2 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

HMC proposes modifying the 1995 NRC-approved LTP cover design to an ET cover system (ERG, 1995; NRC, 1995). Changes to the ET cover design include (1) increasing the radon barrier from 0.6 m (2 ft) to 2.3 m (7.5 ft) in total thickness, split between a 0.9 m (3 ft) upper barrier and a 1.4 m (4.5 ft) lower barrier, (2) regrading 0.3 m (1 ft) of existing interim cover material, and (3) replacing the top 0.15 m (6 in) of rock with a vegetated 0.3 m (1 ft) thick gravel-amended soil and rock admixture layer with a rock apron at the edge of the LTP's top slopes (HMC, 2025a). HMC states that this design will provide erosion protection, improved radon emanation suppression, and will also reduce stormwater infiltration through the cover water storage capacity and ET. The final cover system has already been constructed on the side slopes of the LTP and will remain unchanged. HMC anticipates that the proposed action would be completed within 6 months (HMC 2023). Figure 1-3 shows the proposed ET cover design profile for the top of the cover slopes of the LTP.

The LTP presently covers approximately 68.8 ha (170 ac) and is approximately 30.5 m (100 ft) high (HMC, 2025b). Soil and rock for the proposed LTP ET cover would be obtained from the north and west borrow areas and rock stockpile, which are outside of the NRC-licensed boundary and on HMC-owned land (figure 1-1). Excavation of the west borrow area would not exceed a depth of 2.7 m (9 ft) below ground surface, and excavation of the north borrow would not exceed a depth of 1.5 m (5 ft) below ground surface. HMC would sort excavated soil and rock and stockpile sorted material adjacent to each borrow area. These areas contain native vegetation, which would be cleared of brush, grass, woody stumps, and other debris before excavation. HMC would strip the topsoil in the borrow areas for later use in reclamation of the borrow areas (HMC, 2023). The revised design report that HMC submitted as an update to its LAR provides properties of the rock and soil in the borrow areas as well as construction drawings and specifications (HMC, 2025a).

HMC estimates that 1,090,331.7 cubic meters (m^3) (1,426,100 cubic yards [yd^3]) of soil and rock is needed for the proposed ET cover design and that approximately 2,953,643.7 m^3 (3,863,220 yd^3) of soil and rock is available in the north and west borrow areas. An additional 344,101 m^3 (450,067 yd^3) of rock with median diameters between 3 centimeters (cm) (1.2 inches [in]) and 12 cm (4.7 in) is available in the rock stockpile. Functioning groundwater monitoring wells and survey points installed to monitor settlement rates will remain on the surface of the LTP and extend up through the ET cover. The zeolite water treatment system components on the LTP were decommissioned in the second half of 2022 (HMC, 2025b). The remaining zeolite media, liners, and earthwork berms would be used in the soil cover grading. Regrading of the existing LTP interim cover is part of the proposed ET design specifications in the LAR and would take place before placement of the proposed growth media and erosion protection layers.

HMC would temporarily use unpaved haul roads between the north and west borrow areas and the rock stockpile (figure 1-1). HMC proposes to use 35-ton articulated haul trucks to move soil and rock between the borrow areas, the rock stockpile, and the LTP. Temporary haul roads connecting the north and west borrow areas and County Road 63/Road 334 are planned. HMC estimates 38 round trips each day during daylight hours for 3 months between the borrow areas and the LTP.

The estimated area of land disturbance under the proposed action includes the surface of the 68.8 ha (170 ac) LTP, the proposed north and west borrow areas (180 ha [445 ac]), two rock stockpiles located west of the LTP (11 ha [27 ac]), and temporary haul roads from the borrow areas to the LTP (3.3 ha [8.3 ac]) (figure 1-1). One existing rock stockpile located west of the LTP (4 ha [10 ac]) will serve as a laydown area for rock that is removed from the top of the LTP. A second existing rock stockpile (7 ha [17 ac]) will provide larger rocks needed for the ET cover. Once the borrow areas and haul roads are no longer needed to move soil and rock to the LTP, disturbed areas would be revegetated similarly to the revegetation plan and monitoring protocol for the ET cover. The LTP will be regraded, amended with compost 7.6 cm (3 in) deep, and reseeded with an approved seed mixture identified in the revegetation plan. The seeding season would be either March 1 to April 30 or October 1 to November 30 (HMC, 2025a).

A revegetation plan and monitoring protocol for the ET cover is included in the 2025 revised design report as part of HMC's updated proposed LAR. HMC states that the revegetation framework follows the DOE recommendations provided in the Uranium Mill Tailings Radiation Control Act guidance and includes organic matter such as mulch, a recommended monitoring schedule, and a process for tracking revegetation success (DOE, 2002; Waugh, 2004, 2009). The NRC's licensing regulations in 10 CFR 40.28 and 10 CFR Part 40, Appendix A, describe the custody and long-term care requirements that HMC must meet before the Homestake site may be considered for transfer to a long-term custodian such as the DOE. HMC must conduct the remaining site reclamation activities and, when appropriate, can request termination of its NRC license.

2.2 Alternatives

As an alternative to the proposed action, the NRC staff considered the "no-action alternative." Under the no-action alternative, the NRC would not approve the current LAR to modify the LTP cover design and install an ET cover, but instead HMC would continue with the approved 1995 rip-rap cover design (ERG, 1995). Because impacts from the no-action alternative ultimately would be similar to the impacts of the proposed action described in the EA, the NRC staff did not evaluate it in detail.

The NRC staff also considered offsite relocation of the LTP as an alternative to the proposed action. This section summarizes the alternatives previously evaluated and their outcomes.

In 1982, HMC submitted its State of New Mexico Environmental Improvement Division Uranium Mill License Renewal Application Environmental Report (HMC, 1982), which completed an analysis of multiple alternatives for the LTP, including onsite burial and reclamation activities versus relocation options of the LTP to other sites.

HMC concluded that the benefits of relocating the tailings were low compared to the large cost associated with relocating the tailings (HMC, 1982). The NRC considered this analysis when completing the 1993 EA and site alternatives for the LTP (NRC, 1993). Through the NRC's 1993 review, the staff agreed that the benefits of tailings relocation were small compared to the large cost of relocating the tailings (NRC, 1993).

In 2010, for the EPA, the U.S. Army Corps of Engineers (USACE) conducted a supplementary evaluation of remediation activities occurring at Homestake (USACE, 2010). The USACE found that remediation efforts were having a positive impact on the Homestake site. As a part of this evaluation, the USACE also reviewed alternatives that could help with site remediation efforts, including relocating the LTP. The USACE identified several risks and impacts of relocating the

LTP and ultimately recommended that HMC continue to manage the LTP on site, as the high cost of relocating the LTP components to an offsite location outweighed the environmental effects at the current site (USACE, 2010).

In 2012, Tetra Tech conducted a screening-level evaluation that compared the costs associated with continuing to operate the GRP site, including groundwater restoration and eventual site closure, to the costs associated with relocating the LTP off site while still continuing to operate the GRP site, including groundwater restoration and site closure in accordance with License SUA-1471, and concluded that the costs greatly outweighed the benefits (Tetra Tech, 2012). According to these evaluations, relocating the LTP, particularly transport of the tailings by truck, rail, or pipe, would create significant potential risks to human health due to the increased chance of accidents. Air quality would be negatively impacted with increased wind dispersion of particulates and radon due to disturbance of soil, tailings, and the LTP during excavation as well as transport and emplacement of these items off site (USACE, 2010; Tetra Tech, 2012). Offsite relocation of the LTP would involve greater use of consumable materials, fuel, and natural resources based on the use of heavy equipment, trucks, rail, or pipe for excavation and transport. The development of an offsite location would incur additional impacts to the natural environment and habitat (HMC, 1982; USACE, 2010; Tetra Tech, 2012). All three evaluations determined that, considering the increase in risks to workers and public health and the high cost, managing the LTP at the GRP site would outweigh the environmental benefits of relocating the LTP components to an offsite location (HMC, 2023). Upon consideration of the analysis included in these studies, the NRC staff concludes that relocating the LTP is not a reasonable alternative.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This section describes the current environmental conditions at the GRP site to provide a framework, or baseline, for evaluating potential environmental impacts. It also describes the environmental impacts on those resources that may be affected by the proposed action.

3.1 Land Use

3.1.1 Land Use Including Site Description and Vicinity

The GRP site is located in a semicircular valley ringed by a series of mesas that are approximately 2,134 to 2,438 m (7,000 to 8,000 ft) above mean sea level (AMSL), with the GRP site at an approximate elevation of 2,012 m (6,600 ft) AMSL. Within the valley, the topography is generally flat with some low, rolling hills and shallow arroyos (i.e., dry creek beds) (HMC, 2023).

HMC owns approximately 5,666 ha (14,000 ac) of land, which includes the GRP site and surrounding areas. Approximately 87 percent of the land within 8 km (5 mi) of the GRP site is undeveloped and consists of Inter-Mountain Basins Semi-Desert Grassland, the Colorado Plateau Pinyon-Juniper Shrubland, and the Inter-Mountain Basins Mat Saltbush Shrubland vegetative communities (HMC, 2023). Developed land comprises approximately 6 percent of the land use within 8 km (5 mi) of the GRP site, and undeveloped evergreen forest comprises the remaining 7 percent of land use (HMC, 2023).

The GRP site contains evaporation ponds, an RO plant, tailings piles, and an office/shop compound, all of which are excluded from livestock grazing and other land uses except those related to the ongoing groundwater restoration activities (HMC, 2023). In addition, HMC holds the title to several lots of land beyond the NRC-licensed boundary. HMC leases a large portion of surrounding land for livestock grazing. These lots are not actively used except for groundwater injection and collection that occur as part of the ongoing groundwater restoration program (HMC, 2023).

Several residential subdivisions were constructed in the 1960s and 1970s to the south and west of the GRP site primarily for families working at the Homestake mill or in other mines (HMC, 2023). Currently, there are five residential subdivisions: Felice Acres, Broadview Acres, Murray Acres, Pleasant Valley Estates, and Valle Verde. The closest resident is located within 0.8 km (0.5 mi) of the LTP and across a road from the NRC-licensed boundary (HMC, 2023) (figure 1-1). HMC states that approximately 269 people live in the five subdivisions (HMC, 2024a).

HMC conducted a lot-by-lot reconnaissance and land use assessment in November 2024 within the five residential subdivisions adjacent to the GRP site. This work identified single family, modular, and mobile homes; several vacant lots; and permanently abandoned dwellings, in addition to horse barns, corrals, and equipment storage (HMC, 2023, 2025b). The land use assessment also determined that water services are supplied and metered by the Village of Milan water supply system to occupied residences in or immediately adjacent to all five subdivisions (HMC, 2025b).

3.1.2 Potential Land Use Impacts

The potential impacts due to the removal of soil and rock from the borrow areas and construction of haul roads were assessed. HMC owns the borrow areas and the land where the haul roads would be located. The current land use on this property outside of the controlled area is livestock grazing. The haul roads proposed for moving the material from the borrow areas to the LTP are expected to be temporary. Once the modification of the LTP final cover design is complete, select sections of the borrow areas and haul roads disturbed by the proposed action would be revegetated. HMC expects the land disturbed by the proposed project and associated work, when the project is over, would again be available for livestock grazing (HMC, 2023). The NRC staff concludes that the proposed action will have short-term and minimal impacts on land use.

3.2 Geology and Soils

This section describes the region's geologic features and its seismic history and the potential impacts of the proposed action on its geology and soils.

3.2.1 Regional Geology

The GRP site is on the south flank of the San Juan Basin in the southeastern portion of the Colorado Plateau physiographic province (HMC, 2023). Regional folding associated with the Zuni Uplift, which is characterized by a northwest-trending anticline composed of Precambrian crystalline basement rocks overlain by Permian to Jurassic sedimentary rocks, formed the Zuni Mountains (HDR, 2016). The Zuni Mountains are southwest of Grants, New Mexico, and consist of a northwest-trending monoclinical fold approximately 120 km (75 mi) long and 48 km (30 mi) wide, with the GRP site located on the eastern flank of the fold (Kelley, 1967; HMC, 2023).

3.2.2 Site-Specific Geology and Soils

Four sedimentary geologic units are present beneath the GRP site. From youngest in age (at the surface) to oldest in age (below the surface), these units are alluvium, the Chinle Formation, the San Andres Limestone, and the Glorieta Sandstone. These geologic units dip to the east-northeast.

Alluvium

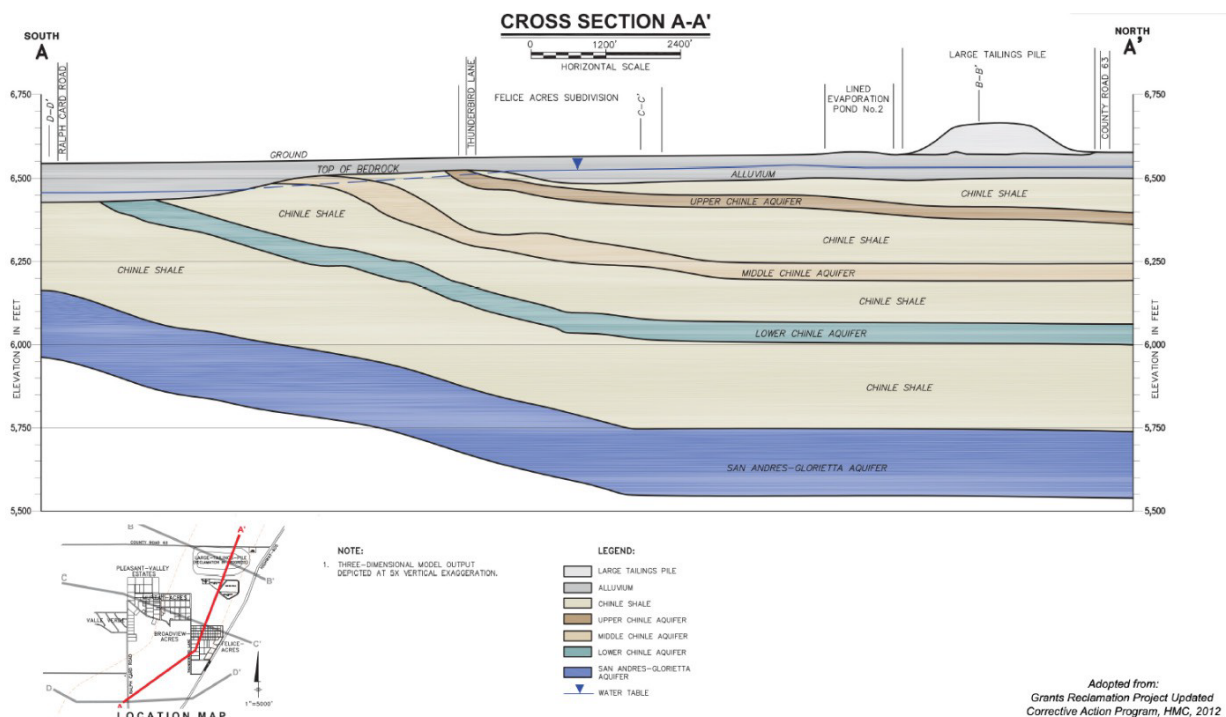
Quaternary alluvium underlies the entire GRP site and is generally 15 to 30 m (50 to 100 ft) thick. Geophysical and lithologic well log data show that the deepest portion of the alluvium is below the western portion of the LTP. The land surface elevation in this area is approximately 2,006 m (6,580 ft) AMSL, so the alluvium, at its thickest point, extends 37 m (120 ft) below the ground surface (HMC, 2023). The generally lower permeability of the alluvial material and variable subsurface thickness combine to decrease the rate of water flow through the alluvium (HMC, 2023). Widespread and interbedded with the alluvial deposits are Quaternary andesite and basalt volcanic flows associated with the Mount Taylor volcanic field. These localized volcanic flows were encountered during drilling investigations to the west of the LTP but are limited to the area west of the Pleasant Valley Estates neighborhood (HMC, 2023). The thickness of the basalt encountered during drilling had a maximum thickness of 33 m (109 ft), with an average of 15 m (49 ft) (HMC, 2023).

Chinle Formation

The Chinle Formation is a massive, dark reddish shale up to 274 m (900 ft) thick, dominated by low-permeability shale units beneath the GRP site. However, the Chinle Formation also contains three water-bearing sandstone units of relatively higher permeability. These water-bearing units (i.e., aquifers) are the Upper Chinle Sandstone, Middle Chinle Sandstone, and Lower Chinle Mudstone (HMC, 2023). The Quaternary alluvium directly overlies the Chinle Formation (and San Andres Limestone) above an angular unconformity. As a result, sandstone units within the underlying Chinle Formation are abruptly truncated at the base of the alluvium. The Chinle Formation sandstone units are laterally continuous and separated by thick sections of low permeability shale (HMC, 2023). Figures 3-1 and 3-2 depict these geologic and hydrogeologic relationships.

San Andres Limestone and Glorieta Sandstone

The lower units at the GRP site are the San Andres Limestone and Glorieta Sandstone, which together are 61 to 67m (200 to 225 ft) thick. The San Andres Limestone and Glorieta Sandstone are overlain by an unconformity (i.e., an erosional surface) and underlain by the lower permeability Yeso and Abo Formations (HMC, 2023).



**Figure 3-1 Hydrogeologic Cross Section Through GRP Site
(Source: HMC, 2023)**

would not disturb or impact the bedrock, which ensures no impacts to water flow along the bedrock and below. The disturbed areas would be revegetated similarly to the revegetation plan and monitoring protocol for the ET cover (HMC, 2025a).

To reduce potential soil loss, HMC would implement soil mitigation controls, including best management practices (BMPs) such as developing a sediment control plan, diverting surface water runoff, revegetating disturbed areas, and repairing or replacing drainage paths affected by proposed project activities (HMC, 2023, 2025a).

Because the proposed action would take place over a finite amount of time and most of the proposed action area has already been disturbed, the NRC staff finds the excavation and extraction of soil and rock material from the borrow areas and the environmental impacts of the construction of the haul roads on geology and soils would be temporary and result in only minor additional disturbance. While the soil and rock material removed from the borrow areas would be an irreversible commitment of the soil and geologic resources, the borrow areas have additional capacity and the site area has abundant soil and rock resources on undeveloped land. Therefore, the NRC staff concludes that impacts on geology and soils would be temporary, minimal, and not significant.

To reduce soil erosion, the NMED Energy, Minerals, and Natural Resource Department (EMNRD) recommends placing mulch on disturbed areas after seeding at a rate of 3.7–4.9 tons per ha (1.5–2 tons per ac) and conducting monthly vegetation monitoring for the first year after construction is complete (NMED, 2025a). NMED also recommends testing any material used on the site to ensure it does not exceed any toxic pollutants or other environmental protection standards before use. As previously described in this section, HMC would implement soil mitigation control BMPs. Implementing NMED recommendations would effectively limit potential soil erosion and soil contaminants. However, assuming HMC does not apply NMED recommendations to apply mulch or test material as recommended, potential impacts to soil would continue to be minimal.

3.3 Water Resources

This section describes the surface water features at and near the site, groundwater characteristics, and the potential impacts of the proposed action on surface water and groundwater.

3.3.1 Surface Water

3.3.1.1 *Affected Environment*

The San Mateo Creek watershed (figure 3-3) covers approximately 197 km² (76 mi²) of land (HMC, 2023). The headwaters of San Mateo Creek are on the north flank of Mt. Taylor located approximately 24 km (15 mi) east of the GRP site. Outside of the GRP site, perennial surface water flow (i.e., flowing water year-round) occurs at San Mateo Springs, an unnamed tributary of San Mateo Creek, and an unnamed tributary of Lobo Creek (HMC, 2023). Surface water is limited and ephemeral in the vicinity of the GRP site due to the very little precipitation and high evaporation rates (HMC, 2023). Surface water flows that do occur in the San Mateo Creek, Lobo Creek, and Rio San Jose tend to be temporary and in response to extreme snowmelt or summer thunderstorm events (figure 3-3) (Brown and Caldwell, 2018). San Mateo Creek and Lobo Creek both drain onto the GRP site (figure 3-4). San Mateo Creek has no distinct channel near the GRP site (NRC, 2008). Surface water discharges from the Lobo Canyon portion of the

San Mateo watershed (figure 3-4) following a drainage that cuts across the northeast corner of the former mill site. Two Lobo Creek drainages enter the east side of the GRP site (HMC, 2023). The alluvial aquifer at the GRP site is recharged from surface streamflow infiltration and precipitation that collect in low-lying areas (HMC, 2023).

To prevent surface water from flowing across the GRP site during flood events, HMC constructed a diversion levee north of the former Homestake mill area to divert surface water flows from the northern branch of Lobo Creek to the north diversion channel along the north edge of the LTP (HMC, 2023). The levee was constructed using uncontaminated soil generally consisting of clayey sands and sandy clays, and the slopes of the levee are protected against erosion using the same cover material currently used by the LTP (HMC, 2013). San Mateo Creek drainage enters the GRP site from the north and is also diverted by the north diversion channel to the west around the LTP (HMC, 2023).

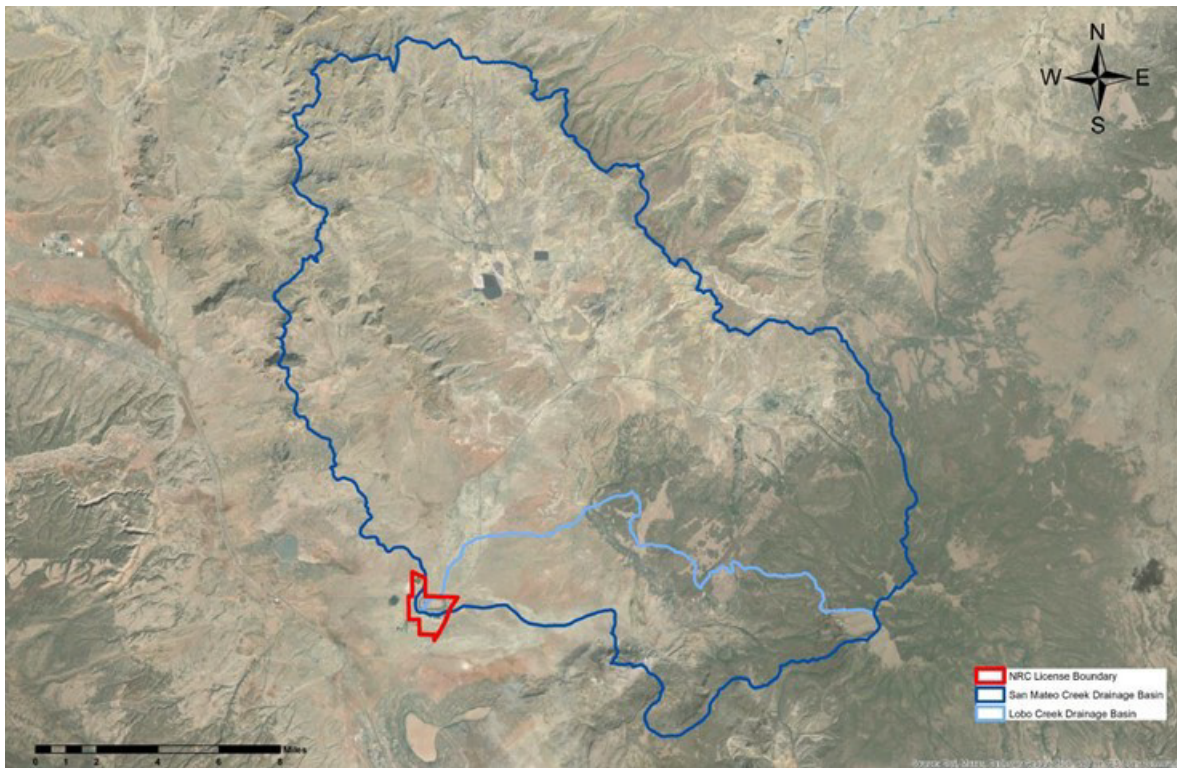


Figure 3-3 San Mateo and Lobo Creek Drainage Basins (Source: HMC, 2023)

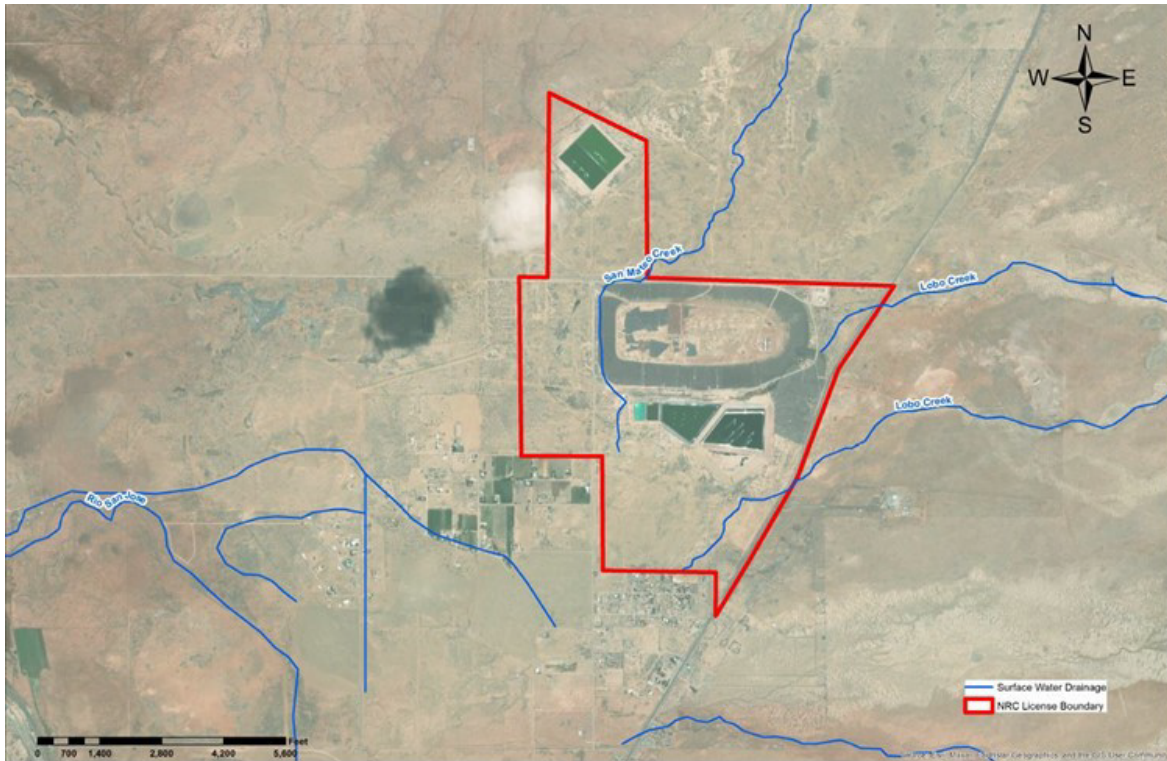


Figure 3-4 Surface Drainages in the Vicinity of the GRP (Source: HMC, 2023)

3.3.1.2 *Potential Surface Water Impacts*

Perennial surface water is not present at the GRP site, although intermittent surface water flows in channels after storm events. Because the San Mateo Creek drainage bisects the north borrow area, HMC commits to implementing a storm water pollution prevention plan with BMPs, including diversion ditches, terraces, cofferdams, and berms to limit erosion and lessen the impact to surface water during excavation and construction activities (HMC, 2023, 2025a). HMC committed to employing cross drainage capabilities such as ditches, structures, and culverts to minimize erosion when constructing haul roads in drainageways (HMC, 2023, 2025a). HMC would direct concentrated water discharges into stable channels or pipes to stable outfall locations. Surface water drainages are not present in the west borrow area. To prevent ground surface and surface water contamination from the increased vehicle traffic and excavation equipment, HMC commits to adequately maintaining all vehicles and equipment to minimize leaks of petroleum hydrocarbons. Factors the NRC staff considered in evaluating surface water are (1) the lack of or limited surface water at the GRP, (2) the short duration of the proposed action, (3) HMC's implementation of BMPs to limit erosion and impacts to surface water, and (4) vehicle and equipment maintenance to prevent leaks and spills. The NRC staff finds that the impact to surface water from the proposed action would be minimal.

As stated in section 3.2.3, NMED recommends mulching after seeding to limit erosion and testing materials before use. Implementing NMED recommendations would effectively limit potential soil erosion, surface water runoff, and possible pollutants from impacting surface water. However, if HMC decides to not apply NMED recommendations, potential impacts to surface water would continue to be minimal.

3.3.2 Groundwater

3.3.2.1 *Affected Environment*

Since 1977, HMC has maintained groundwater restoration activities to mitigate groundwater contamination of seepage from the GRP tailings piles (HMC, 2023). Such seepage has resulted in the contamination of groundwater in the alluvium and the Upper, Middle, and Lower Chinle aquifers and has contaminated local domestic wells (figures 3-1 and 3-2) (HMC, 2023). HMC is paying for potable domestic water to local residential subdivisions near the GRP site due to groundwater contamination (HMC, 2023). HMC conducted a lot-by-lot survey in each subdivision in November 2024 and compared the occupied residences with 2024 Village of Milan water usage records. The survey results indicate that occupied residential sites in or immediately adjacent to five residential neighborhoods west of and south of the GRP site are on metered water service with the Village of Milan (HMC, 2025b).

HMC states that it provides fresh water for livestock that grazes on HMC-owned leased land (HMC, 2024a). The fresh water from unimpacted groundwater wells at the GRP site are monitored for contaminants. Grazing is not allowed in areas where groundwater has been affected.

Alluvial Aquifer

Significant groundwater pumping and injection occur in the alluvium associated with remediation at the GRP, as a part of site groundwater restoration activities (HMC, 2023).

Chinle Aquifers (Upper, Middle, Lower)

East of the East Fault and in the vicinity north of the LTP, the overlaying alluvial aquifer discharges to the Upper Chinle; thus, the water quality of the Upper Chinle is heavily influenced by alluvium. The direction of groundwater flow is influenced by groundwater restoration activities at the GRP site involving the injection of fresh water into the Upper Chinle and withdrawal from a series of extraction wells (HMC, 2023).

As described in section 3.2 with regard to geology and soils, the offset of subsurface units as the result of faulting prevents continuous groundwater flow through units that should not be hydrologically connected. Such is the case for groundwater flow in the Middle Chinle. The hydraulic head in the areas outside of the two faults is significantly different from the head between the two faults, demonstrating that the groundwater is not readily connected across fault boundaries (HMC, 2023). The West Fault represents a significant barrier to groundwater flow within the Middle Chinle, with up to 34 m (110 ft) of hydraulic head difference across the fault in the area west of the LTP (HMC, 2023).

Historical groundwater flows west of the West Fault to the southwest and discharges into the alluvial aquifer, preventing the alluvial aquifer from affecting the water quality of the Middle Chinle on the west side of the West Fault. Pumping of Middle Chinle groundwater wells near the south end of the Felice Acres residential subdivision developed a depression in the Middle Chinle potentiometric surface that extends nearly 152 m (500 ft) to the northeast and southwest (HMC, 2023). In other areas of the Middle Chinle, injection of fresh water into wells has created groundwater mounds in their respective areas. These mounds cause the groundwater to flow both north and south from the injection points. Based on water quality monitoring reports,

groundwater of the Middle Chinle is hydraulically connected to the alluvial aquifer and recharged south of the Felice Acres subdivision (HMC, 2023).

Groundwater flow west of the West Fault in the Lower Chinle is mainly to the northeast. Flow between the two faults is to the northeast around the GRP site tailings piles. The flow of the southern portion of the Lower Chinle between the faults is to the northwest (HMC, 2023). Flow direction in this area indicates that the Lower Chinle water moves across the West Fault in the area west of the Broadview Acres subdivision. The Lower Chinle aquifer is generally used less for water supply due to poor natural water quality. However, the aquifer can be used as a water resource near locations that connect with the alluvial aquifer, where adequate secondary permeability has likely resulted from weathering and faulting (HMC, 2012).

San Andres-Glorieta Aquifer

The primary groundwater aquifer in the region surrounding the GRP is the SAG aquifer. It consists of the San Andres Limestone and Glorieta Sandstone formations and has historically been subject to significant pumping for irrigation, municipal, mining, and industrial water supplies (HMC, 2023). Localized drawdown and changes in groundwater flow conditions are the result of the long-term pumping from the aquifer (Baldwin and Anderholm, 1992). However, since 1980, irrigation pumping has declined to near zero (Frenzel, 1992). HMC uses water from a production well completed in the SAG aquifer for operational and nondrinking water sanitary uses (HMC, 2023). As noted during the last NRC inspection in September 2024 (NRC, 2024a), HMC ceased using SAG regional aquifer water for injection purposes.

3.3.2.2 Potential Groundwater Impacts

Under the proposed action, the infiltration of precipitation into the proposed ET cover is modeled at or less than 0.03 cm (0.01 in) per year (HMC, 2023, 2025a). Thus, HMC states that the proposed action would reduce precipitation infiltration and water percolation through the LTP compared to the 1995 approved design, which is estimated to be 0.1 cm (0.04 in) per year (Hydro Engineering, 1996; HMC 2023). Additionally, groundwater is greater than 9 m (30 ft) below ground surface around the north and west borrow areas, and excavation in the borrow areas would be less than 2.7 m (9 ft) in depth. Groundwater at the GRP site would continue to be monitored as part of the current NRC license. HMC would use water for dust control and revegetation efforts during the proposed action either from an offsite water source transported to the site, or from HMC's production well in the SAG aquifer. In 2024, fresh water from the SAG aquifer was pumped at an average rate of 18.9 liters (5 gallons) per minute to support GRP groundwater restoration activities (HMC, 2025b). The NRC staff estimates the quantity of water required for the proposed action is trivial compared to the quantity of groundwater pumped for use at the GRP site for groundwater restoration activities. Therefore, because of the reduced potential for infiltration into the groundwater beneath the LTP because of the new ET cover, the short duration of the proposed action when water is needed for dust control and revegetation, the distance between planned excavation activities and groundwater at the borrow areas, and the trivial amount of additional water needed, the NRC staff expects that the impacts to groundwater from the proposed action would not be significant.

3.4 Climate, Weather, and Air Quality

This section describes the regional climate, weather, air quality, and climate change patterns, as well as the proposed action's potential impacts on air quality and from greenhouse gas (GHG) emissions.

3.4.1 Affected Climate, Weather, and Air Quality Environment

Climate and Weather

The GRP site is located in a generally mild, arid to semiarid climate characterized by low precipitation, low relative humidity, plenty of sunshine, and a large annual and diurnal temperature range (HMC, 2023). Annual temperatures range from about -10 degrees Celsius (°C) (14 degrees Fahrenheit [°F]) in January to a high of 31.7°C (89°F) in July. The rainy season generally extends through the summer, with the most rain in July and August. Average annual precipitation is approximately 26.2 cm (10.3 in) per year, with most of the rain in late summer to early fall (WRCC, 2024a).

HMC maintains a meteorological station at the GRP site to measure several atmospheric conditions, including horizontal wind speed and direction, temperature, and relative humidity (HMC, 2023). In 2022, the temperature at the GRP site ranged from -20.5°C (-4.9°F) to 33.9°C (93°F) (HMC, 2023, table 3-9). The annual precipitation at the GRP site in 2022 was 26.8 cm (10.56 in). The average pan evaporation is not reported for the GRP site; however, the average pan evaporation at Laguna, New Mexico, located approximately 48.3 km (30 mi) southeast of the GRP site, was approximately 160 cm (63 in) per year during the period between 1914 and 2005 (WRCC, 2024b).

Winds are generally strongest from the west and northwest and are associated with frontal systems moving toward the GRP site from the Pacific Ocean. Wind speeds are generally highest in the spring and can create periods of dusty conditions for several days, increasing windblown loss of loose soil. Summer winds are typically moderate and from the southeast from summer storms moving in from the Gulf of Mexico. Night winds are comparatively calm relative to daytime winds.

Air Quality

Under the Clean Air Act, the EPA has established National Ambient Air Quality Standards (NAAQs) for six criteria pollutants: (1) nitrogen dioxide, (2) sulfur dioxide, (3) carbon monoxide, (4) lead, (5) ozone, and (6) particulate matter. The EPA has designated Cibola County, New Mexico, as “unclassifiable/attainment” for meeting the NAAQs (40 CFR 81.332; NRC, 2018).

The closest active EPA monitoring stations are located in Albuquerque, New Mexico, roughly 128.8 km (80 mi) east of the GRP site (HMC, 2023; EPA, 2024a). Local suspended particulates are generated at the GRP site by windblown dust, vehicle traffic on unpaved roads, and windblown water particles from the aeration systems at the evaporation ponds. The brines in the evaporation ponds emit a discernable odor, indicative of organic aerosols from the ponds.

3.4.2 Potential Impacts on Air Quality

The proposed LTP ET cover is designed to limit radon gas emissions below the regulatory limits in 10 CFR Part 40, Appendix A. HMC proposes increasing the radon barrier from 0.6 m (2 ft) to 2.3 m (7.5 ft) in total thickness as part of an updated cover for the LTP, along with other changes, to improve vegetation and reduce water infiltration. HMC proposes to use clean soil from the north and west borrow areas for the proposed radon barrier. Evaluations conducted to support the ET cover design of the two borrow areas show that background levels of radon would not significantly contribute to radon emissions from the site (ERG, 1995; HMC, 2025a).

The proposed action involves ground-disturbing activities, including excavating material in the borrow areas and installing temporary unpaved haul roads to move material from the borrow areas and rock stockpile to the LTP, installing the ET cover, and regrading and revegetating disturbed areas. The proposed action would result in short-term impacts to air quality due to fugitive dust from ground-disturbing activities (e.g., excavating material from borrow areas and installing temporary haul roads) and vehicle traffic on unpaved roads. HMC would monitor suspended particulates in the air at the site boundary with the air particulate monitoring stations as described in section 3.6.1. The proposed action would temporarily increase the amount of fugitive dust in the area and may require more frequent air sampler replacements.

Emissions and fugitive dust from worker vehicles, project machinery, and haul trucks are expected to be localized and temporary, lasting less than 6 months (HMC, 2023). The ET cover and LTP would not produce gaseous emissions above regulatory requirements upon completion of the proposed action. The NRC staff concludes the proposed action would have no significant impacts on air quality.

HMC would move soil from two borrow areas off site to the tailings pile and use heavy machinery to place and stabilize the new tailings ET cover over a period of roughly 6 months (HMC, 2023). Equipment, worker vehicles, and truck shipments associated with these activities emit criteria pollutants and GHGs. HMC anticipates haul trucks would cross County Road 63/Road 334 approximately 76 times per day during daylight hours for 3 months (HMC, 2023). HMC would minimize daily GHG emissions through regular maintenance of onroad construction vehicles and offroad construction equipment. Air emissions from machinery due to ground-disturbing activities from the proposed action would be localized and temporary and unlikely to contribute measurably to GHG concentrations in the region. The resulting ET cover after completion of the proposed action is designed to be a passive system with limited offgassing that does not require actions beyond routine monitoring and maintenance. The NRC staff concludes the proposed action would not significantly contribute to climate change due to the short timeframe of the proposed action and passive nature of the long-term storage.

3.5 Ecological Resources

This section evaluates the potential impacts of the proposed action on ecological resources.

3.5.1 Terrestrial Resources

Terrestrial Resources Affected Environment

In 2022, HMC contracted Cedar Creek Associates, Inc. (Cedar Creek), to conduct vegetation characterization and biointrusion surveys on the LTP to support this license amendment. Vegetation types at the GRP site and immediate vicinity consist largely of semidesert grassland, mixed salt desert scrub, and greasewood flat (HMC, 2022). Much of the GRP site has been disturbed over the last 50 years from uranium milling activities and the creation of tailings piles, evaporation and settling ponds, and groundwater restoration and monitoring activities. HMC (2023) reports that in 1995, much of the GRP site was bladed and reseeded with native grasses and shrubs.

Wildlife observations during the Cedar Creek 2022 vegetation characterization and biointrusion surveys included characteristic animals previously observed at the GRP site. Black-tailed prairie dogs (*Cynomys ludovicianus*) and Gunnison's prairie dogs (*Cynomys gunnisoni*) and colonies were present in the southwest west portion of the GRP site between 1990 and 2013; however,

prairie dogs or indications of prairie dog colonies were not observed during Cedar Creek’s 2022 surveys (HMC, 2023). Prairie dog colonies provide important habitat for a variety of other grassland wildlife, such as burrowing owls (*Athene cunicularia*) and gophers. During spring and fall seasons, a variety of shorebirds and waterfowl have been observed using the evaporation ponds at the GRP site (HMC, 2013; NRC, 2019). Land in the GRP site vicinity provides habitat for elk, cougar, and mule deer (NMDGF, 2024); however, most of the perimeter of the GRP site is fenced, which limits their movement through the project area.

State-Listed Terrestrial Species

In June 2025, the NRC staff used the New Mexico Department of Game and Fish (NMDGF) New Mexico Environmental Review Tool (NMERT) to review the proposed action (NMDGF, 2025). The NMERT report provides an initial list of recommendations regarding potential impacts to wildlife or wildlife habitats from the proposed project. The NMERT report identified three terrestrial species that are listed in the New Mexico Wildlife Conservation Act of 1978, as amended, as potentially occurring within 1.6 km (1 mi) of the GRP site as of January 2024: the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), and spotted bat (*Euderma maculatum*) (table 3-1) (NMDGF, 2025). The NMERT review also identifies the Mexican spotted owl (*Strix occidentalis lucida*) as a federally threatened species potentially occurring within 0.8 km (0.5 mi) of the GRP site. Section 3.5.3 discusses the Mexican spotted owl. The NRC staff also reviewed the New Mexico Rare Plant List that identifies three State-listed plants that occur in Cibola County: (1) American hart’s-tongue fern (*Asplenium scolopendrium* var. *americanum*), (2) pecos sunflower (*Helianthus paradoxus*), which is also a federally listed species discussed in section 3.5.3, and (3) Parish’s alkali grass (*Puccinellia parishii*). The GRP site contains no suitable habitat for these plant species (EMNRD, 2024).

Table 3-1 State-Listed Terrestrial Animals Potentially Within 1.6 km (1 mi) of the GRP and State-Listed Plants Reported in Cibola County

Common Name	Scientific Name	Status	Description	Habitat	Habitat Occurrence
Birds					
bald eagle	<i>Haliaeetus leucocephalus</i>	ST ^a	Large raptor with wingspread of about 2.1 m (7 ft). Adults have a dark brown body and wings, white head and tail, and a yellow beak. Juveniles are mostly brown with white mottling on the body, tail, and undersides of wings	Perching areas and nesting sites with good food base near estuaries, large lakes, reservoirs, rivers and some seacoasts; sometimes found near farmland and suburban areas	P
peregrine falcon	<i>Falco peregrinus</i>	ST ^a	Medium to large raptor, with bluish-gray upperparts in adults, variable-width blackish facial stripe extending down from the eye; underparts whitish, grayish, or buff with variable amount of blackish spotting and barring	Found globally in a variety of habitats, including mountains, forests, cities, valleys, deserts, and coastlines	SH

Common Name	Scientific Name	Status	Description	Habitat	Habitat Occurrence
Mammals					
spotted bat	<i>Euderma maculatum</i>	ST ^a	Highly visible white spots on black back, white belly, large pink ears with pink wings	Forages in forest openings, piñon juniper woodlands, riparian habitats, meadows, and agricultural fields. It is a broad-ranging species; however, its distribution is highly associated with prominent rock features. Rocky cliffs with suitable roosting substrate (e.g., crevices, cracks) are critical to this species. Perennial water sources also are important for this species	P
Plants					
American hart's-tongue fern	<i>Asplenium scolopendrium</i> var. <i>americanum</i>	SE ^b	Perennial evergreen fern with smooth, unserrated fronds 20–40 cm (8–16 in) in length; erect unbranched stems	The lava fields, in one cave, within El Malpais National Monument	NSH
pecos sunflower	<i>Helianthus paradoxus</i>	FT ^c ; SE ^b	Annual flowering plant 1–2 m (3–6.5 ft) tall with yellow ray flowers 3–5 cm (1.2–2 in) across; flowers August to October	Distinct wetlands that are alkaline in nature and often present as seeps, springs, and cienegas (unique freshwater wetlands that are permanently saturated and highly organic, dominated by mostly sedges and rushes)	NSH
Parish's alkali grass	<i>Puccinellia parishii</i>	SE ^b	Annual grass with one to many spiky stems 5–28 cm (2–11 in) tall; leaves are 1–6 cm long and 1–2 mm (0.03–0.06 in) wide; short lived winter or spring annual; flowering time is from late April to early June	Distinct wetlands that are alkaline in nature and often present as seeps, springs, and cienegas (unique freshwater wetlands that are permanently saturated and highly organic, dominated by mostly sedges and rushes)	NSH

^a Indicates protection status under the New Mexico Wildlife Conservation Act. ST = State Threatened, SE = State Endangered

^b Indicates status of New Mexico rare plants maintained by the New Mexico Rare Plant Technical Council

^c Indicates status under the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. § et seq.). FT = Federal Threatened, SH: Suitable Habitat Present, P: Potential Habitat Present, NSH: No Suitable Habitat Present

Sources: HMC, 2023; NMDGF, 2025; New Mexico Rare Plant Technical Council, 2024; EMNRD, 2024

3.5.1.1 Impacts on Terrestrial Resources

Terrestrial wildlife and habitats at the GRP site could experience impacts from LTP cover modification activities caused by increased noise, lights, fugitive dust, soil erosion, and surface runoff. The proposed project would occur in previously disturbed areas (i.e., the LTP and the north borrow area) and undisturbed areas (i.e., the proposed west borrow area and associated haul roads). Earth-moving and excavation activities associated with removing soil from the

borrow areas could include loss of native vegetation and wildlife habitat, and both could have direct impacts to smaller, less mobile animals, such as amphibians and reptiles, because they could be crushed by equipment or buried by fill dirt. No trees would be removed as part of the proposed project (HMC, 2024a). Animals near the LTP, borrow areas, and haul roads could experience indirect impacts, such as noise from heavy equipment that could temporarily disturb behaviors or alter uses of nearby habitats.

Because the GRP site was an industrial area that operated for several decades and has been in reclamation since 1990, nearby wildlife has generally acclimated to noise and human activity associated with the site, including noise levels expected during LTP cover modification. These noise levels are expected to be similar to noise generated from the ongoing operation and maintenance activities at the site. HMC plans to maintain, modify, or use newer equipment to limit excessive operating noise (HMC, 2023). Noise disturbance associated with excavating soil from the borrow areas would be intermittent and last a few months.

The LAR contains HMC's revegetation plan and monitoring protocol for the LTP (HMC, 2023, 2025a). Disturbed areas at the site would be revegetated similarly to the LTP. Dust generation from LTP cover modification activities and associated increased truck traffic would last a few months and would have a temporary and localized adverse impact to wildlife. In addition to the described revegetation plan, HMC would use BMPs to abate dust such as using water or other approved dust control agents, enforcing speed limits on haul roads; placing aggregate on haul roads, and developing an action plan to limit or modify borrow and hauling operations during high-wind events (HMC 2023, 2025a).

The mitigation measures would limit fugitive dust that may settle on vegetation, which otherwise could make vegetation unpalatable to animals. The NRC staff finds that these measures would minimize erosion, runoff, and fugitive dust and minimize adverse impacts to terrestrial habitats.

No perennial surface water is present at the action area, although some surface water flows in channels after storm events. Although the San Mateo Creek drainage bisects the north borrow area, BMPs (e.g., diversion ditches, terraces, cofferdams, berms) as part of a storm water pollution prevention plan would be used to limit erosion and impacts to surface water during excavation, grading, and construction (HMC, 2023). Haul roads constructed in drainageways would use cross drainage features, such as ditches, structures, and culverts, to minimize erosion (HMC, 2023). Concentrated water discharges would be directed into water courses that are stable or piped to stable outfall locations. The NRC staff finds that these measures would minimize erosion and runoff and prevent adverse impacts to terrestrial habitats.

Impacts to Terrestrial State-Listed Species and Species of State Importance

As stated in section 3.5.1, the GRP site does not contain suitable habitat for the State-listed American hart's-tongue fern, pecos sunflower, and Perish's alkali grass, and these plants are not present. The NRC staff concludes that the proposed action would not impact these plant species. The NRC staff further concludes that impacts to the State-listed bald eagle, peregrine falcon, and spotted bat would be insignificant.

NMDGF's NMERT report (NMDGF, 2025), discussed in section 3.5.1, states that burrowing owls are protected by the Migratory Bird Treaty Act (MBTA) and under New Mexico State statute. The report also states that both black-tailed prairie dogs and Gunnison's prairie dogs are designated as New Mexico species of greatest conservation need, and their colonies provide important habitat for other grassland wildlife. Under the MBTA, it is unlawful—without a

permit—to kill, injure, capture, trap, or collect burrowing owls or destroy active nests or eggs. New Mexico Statute § 17-2-14 prohibits the taking, possession, trapping, injuring, or selling of owls, among other birds, without an appropriate State-issued permit. The NRC assumes that the applicant will comply with these laws when conducting land disturbance in association with the proposed action. For instance, HMC may retain a qualified biologist to survey the area for the presence or absence of burrowing owls before proceeding with land disturbing activities to gather information on whether HMC must consult with the FWS and NMDGF and acquire permits if activities may disturb burrowing owls or their habitat. For these and the same reasons that the NRC staff concludes that impacts to terrestrial resources would be insignificant (i.e., impacts would be localized, temporary, and mitigated), the staff concludes that impacts to prairie dogs and burrowing owls would be insignificant. Potential impacts to prairie dogs and burrowing owls would be further minimized if HMC implements the NMDGF recommendations pertaining to borrowing owls and prairie dog borrows as provided in the NMERT report (NMDGF, 2025).

Conclusion

The NRC staff concludes that the overall direct and indirect impacts to terrestrial ecology, including State-listed species, would be insignificant. Direct terrestrial impacts to vegetation and terrestrial habitats would occur within the proposed project area from the LTP cover modification, construction of haul roads, and grading and excavation activities associated with removing soil from the borrow areas. These impacts would be localized, temporary and mitigated through reseeding and revegetating disturbed areas. Project activities may temporarily displace individual small animals and small groups of bird species. However, suitable habitat is present in nearby locations, and wildlife would likely reinhabit the area once it is reseeded and revegetated. The NRC staff does not expect changes to local species populations. No trees would be removed as part of the proposed project (HMC, 2024a). Indirect terrestrial resource impacts from elevated noise levels and dust could affect animals close to the project area; however, potential indirect impacts from noise and dust would be temporary and would be similar to noise levels generated from current operations and maintenance activities at the site. BMPs would serve to limit noise and fugitive dust during the proposed project. For these reasons, the NRC staff concludes that impacts to terrestrial resources would be insignificant.

3.5.2 Aquatic Resources

Aquatic Resources Affected Environment

San Mateo Creek offers the potential for aquatic habitat in the project area. However, the creek is an ephemeral arroyo and flows only after heavy precipitation events (section 3.3.1) and cannot support aquatic habitat or species. The San Mateo Creek drainage enters the GRP from the north and is diverted to the west by the channel created around the LTP (HMC, 2023). The proposed project area does not contain aquatic or diverse riparian habitat and aquatic species, and the NRC expects that no downstream aquatic resources would be affected from modification of the LTP cover. NMDGF's NMERT report (NMDGF, 2025), discussed in section 3.5.1 identifies no aquatic species of concern (Species of Greatest Conversation Need or Species of Economic and Recreational Importance) related to the LTP cover modification project.

3.5.2.1 Impacts on Aquatic Resources

Direct and indirect impacts to aquatic resources are not expected because aquatic habitat is not present in the project area. Surface water is not expected in San Mateo Creek; however, HMC's LAR provides BMPs for controlling dust and to prevent sediment transport, accidental spillage of solid or liquid matter, contaminants, debris, and other pollutants and wastes into waterways (HMC, 2023, 2025a). The NRC staff concludes that no direct or indirect aquatic resource impacts would occur because aquatic or diverse riparian habitat and aquatic species are not present in the proposed project area.

3.5.3 Federally Protected Ecological Resources

The implementing regulations for section 7(a)(2) of the ESA define "action area" as all areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The NRC staff used the FWS Environmental Conservation Online System Information for Planning and Conservation (IPaC) database to identify federally protected species and critical habitats that may be present in the Homestake LTP action area. The IPaC database identified eight terrestrial species under FWS jurisdiction that potentially occur in the action area (table 3-2).

Aquatic species and critical aquatic habitats designated as protected under the ESA have not been identified within the action area. In the identification of species and habitat to be evaluated for the proposed action, the NRC staff consulted the FWS's IPaC report and available scientific literature and studies. The NRC staff concludes that the proposed action may affect but is not likely to adversely affect the Mexican wolf (*Canis lupus baileyi*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), monarch butterfly (*Danaus plexippus*), or Suckley's cuckoo bumble bee (*Bombus suckleyi*) and would have no effect on the pecos sunflower (*Helianthus paradoxus*) or the Zuni fleabane (*Erigeron rhizomatus*). The NRC staff provided its determinations to the FWS in an email dated June 26, 2024 (NRC, 2024b). The FWS concurred with the NRC's determination by letter dated July 29, 2024 (FWS, 2024a).

Table 3-2 State-Listed Terrestrial Animals Potentially Within 1.6 km (1 mi) of the GRP and State-Listed Plants Reported in Cibola County

Species Common Name	Scientific Name	Status Federally Listed	State Listed	Description	Habitat	Habitat Occurrence
Mammals						
Mexican wolf	<i>Canis lupus baileyi</i>	FE	-	Patchy black, brown to cinnamon, and cream color, with primarily light underparts	Montane woodlands characterized by sparsely to densely forested mountainous terrain and adjacent grasslands with low livestock density and minimal human development	SH
Birds						
Mexican spotted owl	<i>Strix occidentalis lucida</i>	FT	-	Mottled appearance with irregular white and brown spots on its otherwise brown abdomen, back, and head	Nests in complex forest structure or rocky canyons; owls generally forage in a broader array of habitats than they use for nesting and or roosting	SH
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE	-	Brownish-olive to gray-green above with conspicuous light-colored wingbars, whitish throats, pale olive breasts, and a yellowish belly	Requires dense riparian habitats with cottonwood/willow and tamarisk vegetation for nesting; habitat not suitable for nesting may be used for migration and foraging	SH
yellow-billed cuckoo	<i>Coccyzus americanus</i>	FT	-	Fairly large, long and slim birds where the mostly yellow bill is almost as long as the flat head; very long tail	Wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes	SH
Insects						
monarch butterfly	<i>Danaus plexippus</i>	FPT	-	Bright orange wings, black border, black veins, white spots	Near milkweed and flowering plants, grassland, coastal, urban, rural, wetland	SH
Suckley's cuckoo bumble bee	<i>Bombus suckleyi</i>	FPE	-	Variable; thorax (including below the wings) is mostly yellow, with a black spot or band between the wings	Various habitat types with a diversity of native floral resources (pollen and nectar) for nutrition and availability of suitable host colonies	SH
Flowering Plants						

Species		Status		Description	Habitat	Habitat Occurrence
Common Name	Scientific Name	Federally Listed	State Listed			
Pecos sunflower	<i>Helianthus paradoxus</i>	FT	SE	Annual flowering plant 1-2 m (3.3-6.6 ft) tall with yellow ray flowers 3-5 cm (1.2-2 in) across; flowers August to October	Distinct wetlands that are alkaline in nature and often present as seeps, springs and/or cienegas (unique freshwater wetlands with permanently saturated and highly organic, dominated by mostly sedges and rushes	NSH
Zuni fleabane	<i>Erigeron rhizomatus</i>	FT	SE	Tall, sparsely branching from near the base, growing in clumps; white or tinged blue-violet ray flowers and yellow disc flowers that bloom in May and June	Occurs mostly on or adjacent to the poorly defined transition zone between the Baca Formation below and the Spears Group above; most often found on north or east-facing moderate to steep slopes in open pinyon-juniper woodlands and ponderosa pine forests	NSH

FE = Federally Endangered, FT = Federally Threatened, SE = State Endangered, FPE= Federally Proposed Endangered, FPT= Federally Proposed Threatened, NSH = No Suitable Habitat Present, SH = Suitable Habitat Present

Sources: EMNRD, 2024; New Mexico Rare Plant Technical Council 2024; FWS, 2024b, 2025

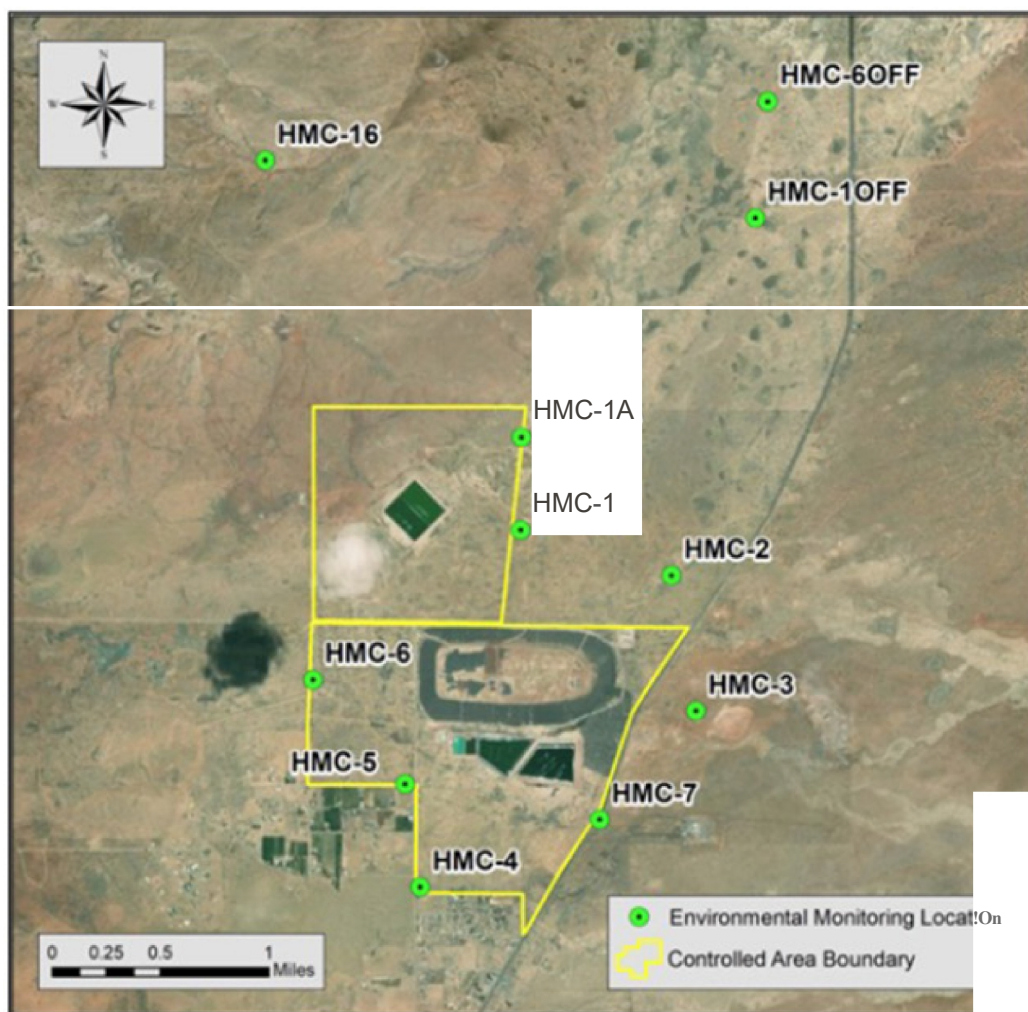
3.6 Public and Occupational Health

This section summarizes the sources of radiation exposure at and in the vicinity of the GRP site and the radiation dose limits established under 10 CFR Part 20, “Standards for Protection Against Radiation,” for the protection of public and occupational health and safety, potential exposure pathways, and receptors.

3.6.1 Existing Radiological Conditions

HMC does not assess internal dose for routine operations at the GRP site because there is little potential for inhalation or ingestion of radioactive materials outside of work performed under a radiation work permit (HMC, 2023). The maximum annual total effective dose equivalent for a worker in 2024 was 0.08 millisievert (mSv) (8 millirem [mrem]) reported for one worker in HMC’s 2024 Annual Monitoring Report and Performance Review (HMC, 2025b). Eight staff received an internal dose of 0.054 mSv (5.4 mrem) in 2024 (HMC, 2025b). Onsite HMC staff, except for administrative staff, are required to use radiation monitoring badges under the personal radiation monitoring protocol in the Radiation Protection Program Manual (HMC, 2025b). HMC’s radiation safety officer conducted a study in 2017 and 2018 that identified the maximum potential dose to a worker at the site as 0.54 mSv/year (54 mrem/year). The maximum potential dose at the GRP site is just over 1 percent of the occupational limit in 10 CFR 20.1201(a)(1)(i) and the 10 percent threshold for required monitoring in 10 CFR 20.1502(a)(1) (ERG, 2018). HMC reported in its 2024 Annual Monitoring Report and Performance Review that the maximum total effective dose equivalent for badged workers was 0.08 mSv (8 mrem), and the majority of deep dose exposures for workers were below 0.04 mSv/year (4 mrem/year) (HMC, 2025b).

HMC measures total suspended particulates in the air at seven monitoring stations along the site boundary where total suspended particle matter is monitored as shown in figure 3-5: HMC-1, HMC-1A, HMC-2, HMC-3, HMC-4, HMC-5, and HMC-6. The monitors are positioned to record the total suspended particulates at the GRP site boundary and are downwind of the most frequent wind direction (from the southwest) and closest to the nearest residences located southwest of the GRP site. Two monitoring stations are located off site northeast of the GRP site (HMC-1OFF and HMC-6OFF) to monitor potential offsite impacts in the predominant wind direction. LC 10 requires HMC to determine background radon and gamma radiation data by averaging the radiation measurements obtained from three monitoring stations: HMC-1OFF, HMC-1A, and HMC-6.



Location ID	Sampling Unit	Latitude	Longitude
HMC-1	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.25333	-107.86286
HMC-1A	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.25954	-107.86281
HMC-2	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.25029	-107.85053
HMC-3	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.24122	-107.84856
HMC-4	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.22941	-107.8707
HMC-5	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.23632	-107.87231
HMC-6	Hi-Vol Particulate (Air), Track-Etch Cup (Radon), OSL (Gamma)	35.24331	-107.87985
HMC-7	Track-Etch Cup (Radon)	35.23393	-107.85641
HMC-10FF	Track-Etch Cup (Radon), OSL Badge (Gamma)	35.27424	-107.84370
HMC-6OFF	Track-Etch Cup (Radon), OSL Badge (Gamma)	35.28206	-107.84270
HMC-16	Track-Etch Cup (Radon), OSL Badge (Gamma)	35.27809	-107.88376

Figure 3-5 Air Monitoring and Sampling Locations (Source: HMC, 2023)

The monitoring stations identified in figure 3-5 collect continuous samples of ambient air and report the average radionuclide concentrations in air particulates. The radon monitors at the nine onsite locations identified in figure 3-5 are replaced and analyzed quarterly. Gamma radiation is monitored at eight of the sampling stations identified in figure 3-5, with optically stimulated luminescence badges that are replaced and analyzed semiannually.

In 2025, HMC reported the public dose at the southwestern edge of the NRC-licensed boundary from the monitoring stations identified as HMC-4 and HMC-5 to be 0.471 mSv/year (47.1 mrem/year) (HMC, 2025c). The 2024 calculated dose at HMC-4 and HMC-5 accounts for 0.32 mSv/year (32 mrem/yr) from radon, less than 0.01 mSv/year (1 mrem/year) from airborne particulates, and 0.15 mSv/year (15 mrem/year) from direct gamma radiation (HMC, 2025c). The radon and direct gamma monitoring from the HMC-4 and HMC-5 monitoring stations were averaged to demonstrate compliance with the regulatory requirements. The dose from inhalation of air particulates is calculated separately for HMC-4 and HMC-5. HMC-4 and HMC-5 are the closest monitoring stations to the nearest resident to the southwest of the site (HMC, 2025b). Previously reported total annual effective dose equivalents at HMC-4 were 0.442 mSv/yr (44.2 mrem/yr) in 2023, 0.53 mSv (53 mrem/yr) in 2022, 0.49 mSv/year (49 mrem/year) in 2021, 0.46 mSv/year (46 mrem/year) in 2020, and 0.50 mSv/year (50 mrem/year) in 2019 (HMC, 2025b).

The representative background monitoring stations are HMC-6 for air particulates and the average of HMC1-OFF, HMC-1A, and HMC-6 for radon and direct gamma. HMC-16 was the background monitoring station for radon and direct gamma for previous years but is no longer active (HMC, 2025b). Atmospheric transport modeling and direct measurements indicated that the HMC-16 location on the slopes was underreporting background radon concentrations and the revised background of the average of HMC1-OFF, HMC-1A, and HMC-6 is more representative of the background radon concentration at the site (HMC, 2025b). There is no discernable trend in the calculated dose at the site boundary.

3.6.2 Potential Radiological Impacts

The proposed action does not include moving or handling any known radioactive material. No tailings would be exposed during the cover replacement. Activities conducted during the cover replacement would be carried out in accordance with the HMC Site and Health Safety Plan. The proposed action would be conducted in accordance with the as-low-as-reasonably-achievable principle. The Radiation Safety Officer is responsible for conducting a radiological scan of the surface in the work area to calculate dose and support required monitoring (HMC, 2025a). No worker would be expected to receive a total effective dose equivalent of more than 1 mSv/yr (100 mrem/yr) from the proposed action.

Gaseous radioactive effluent from the LTP would be reduced by the addition of the proposed ET cover, which is designed to maintain radon flux measurements within regulatory parameters. The proposed action would likely decrease the total effective dose equivalents at the southwestern corner of the NRC-licensed boundary (HMC-4), since the new ET cover would reduce radon flux. Therefore, the proposed action would further reduce radiological exposure at the NRC-licensed boundary. The public dose at the NRC-licensed boundary is already below the regulatory threshold defined in 10 CFR 20.1301, "Dose limits for individual members of the public," and 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations."

3.6.3 Potential Non-radiological Impacts

The proposed action would use heavy ground-disturbing equipment to excavate soil and rock and large haul trucks to move large quantities of soil and rock from the two proposed borrow areas and rock stockpile to the LTP which could generate fugitive dust for less than 6 months (HMC, 2023). HMC would control fugitive dust by following a dust control plan, using dust suppression measures, limiting vehicle speeds on site, and stabilizing soil stockpiles (HMC, 2023). All work at the site would follow established BMPs and standard operating procedures. There are no expected impacts to public health from the proposed action that would require additional mitigation measures.

3.7 Socioeconomics

This section describes the demographic characteristics of the area around the GRP site and the potential socioeconomic impacts from the proposed action.

3.7.1 Demography and Socioeconomics

Homestake employed a total of 14 permanent staff members at the end of 2024, including 3 administrative personnel, and contractors related to the operation and maintenance of the continuing groundwater restoration activities (HMC, 2025b). Contractors often are present onsite for several days per quarter. HMC reported that 82 workers spent at least 5 days at the GRP site in 2022 (HMC, 2025b).

According to the 2020 U.S. Census, there were 27,127 people in Cibola County (USCB, 2020). Approximately 1,162 people lived within 6.4 km (4 mi) of the GRP Site in 2022 (MCDRC, 2023). The population of Cibola County is projected to be 26,787 by 2025 (New Mexico, 2021). The City of Grants, located approximately 9 km (5.5 mi) south of the GRP site, is the closest and largest incorporated area in Cibola County. It hosts a variety of community services (e.g., police, fire response, hospitals and health care providers).

3.7.2 Potential Socioeconomic Impacts

For the ET cover project, which would take an estimated 6 months to complete (HMC, 2023), HMC would add up to approximately eight people to the existing workforce at the GRP site (HMC, 2023). The daily number of workers would vary by type of activity (e.g., removing material from borrow areas, hauling material to the LTP, constructing the ET cover). After ET cover installation is complete, the number of onsite workers would return to the current number of employees and contractors to support operations and maintenance associated with groundwater corrective action and environmental monitoring activities (HMC, 2023). Based on the number of people living in the region, adding approximately eight people would not noticeably increase the demand for housing, utilities, or public services. The NRC staff expects that HMC's property tax payments will remain about the same after the proposed ET cover is completed and through the period of proposed license termination. The proposed action at the GRP site would not affect current socioeconomic conditions. Therefore, there would be no significant socioeconomic impacts.

3.8 Historic and Cultural Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), requires Federal agencies to consider the effects of their undertakings on historic properties, and the

proposed ET cover modification activities, including using material from borrow areas, are an undertaking that could potentially affect historic properties. As defined in 36 CFR 800.16(l), historic properties are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This includes properties of traditional religious and cultural importance to Native American Tribes that meet the NRHP criteria. The NRC complies with the obligations required under NHPA section 106 through its process under the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. § 4321 et seq.) and has done so for this proposed action.

3.8.1 Affected Environment

Numerous cultural resources surveys were completed during the latter 20th century; the latest survey occurred in 2018 (HMC, 2023). Additional assessments of historic resources at the GRP were conducted in November 2024 and July 2025 (Lone Mountain Archaeological Services, Inc. 2024, 2025). The area of potential effects (APE) consists of the north and west borrow areas and associated stockpile areas, the LTP, two rock stockpiles located west of the LTP, and haul roads that connect the borrow areas and rock stockpiles to the LTP (figure 1-1). No ethnographic traditional cultural properties or landscapes have been identified in the APE. Eighteen historic resources, listed in table 3-3, are in or near the APE (NRC, 2025b). The NRC staff determined that one of these sites, LA 153557, is eligible for listing on the NRHP and is near an existing road that will be used to reach a borrow area, five sites located in the north borrow area have an undetermined eligibility (i.e., unevaluated) to the NRHP, and the remaining sites in or near the APE are not eligible for listing on the NRHP (NRC, 2025b,c). The New Mexico State Historic Preservation Officer (NMSHPO) concurred with NRC's determinations of eligibility (NMSHPO, 2025a,b).

Table 3-3 List of Historic Sites Within or Near the Direct APE

	Site Number	Recommendation (survey year)	NMSHPO Determination (year)
1	LA 104308	Ineligible (1995, 2024)	Not Eligible
2	LA 104309	Potentially eligible (1995) Ineligible (2024)	Not Eligible
3	LA 104310	Ineligible (1995, 2024)	Not Eligible
4	LA 104311	Eligible (1995) Ineligible (2024)	Undetermined
5	LA 153550	Ineligible (2006)	Not Eligible
6	LA 153551	Ineligible (2006)	Not Eligible
7	LA 153552	Eligible (2006) Undetermined (2024)	Undetermined
8	LA 153555	Ineligible (2006)	Not Eligible
9	LA 153556	Unevaluated (2006) Ineligible (2024)	Not Eligible
10	LA 153557	Eligible (2006, 2018)	Eligible

	Site Number	Recommendation (survey year)	NMSHPO Determination (year)
11	LA 153558	Ineligible (2006)	Not Eligible
12	LA 190258	Ineligible (2018)	Not Eligible
13	LA 100359	Eligible (1995), located (2006)	Undetermined (2018)
14	LA 100360	Ineligible (1995)	Not Eligible (1995)
15	LA 100361	Eligible (1995)	Not Eligible (1995)
16	LA 153549	Ineligible (2006)	Not Eligible (2006)
17	LA 153553	Ineligible (2006)	Undetermined (2006)
18	LA 153554	Ineligible (2006)	Undetermined (2006)
<p>Qualified individuals can access these confidential references at the NMSHPO website:</p> <ol style="list-style-type: none"> 1. Taschek Environmental Consulting. (TEC). 2006. Cultural Resources Inventory of 350 Acres for the Homestake Mining Company in Cibola County, New Mexico. July. NM State Permit No. NM-06-121-S, NMCRIS No.100406. 2. Complete Archaeological Service Associates. 1995. Cultural Resource Testing, Evolution and monitoring of Eight Sites for Homestake Mining Company Near Miland, Cibola County, New Mexico. May. CASA 95-201. 3. Lone Mountain Archaeological Services, Inc. 2024. Homestake Mine Site Evaluation for LA 104308, LA 104309, LA 104310, LA 104311, LA 153552, and LA 153556 in Cibola County, New Mexico. November. NM State Permit No. NM-25-073-S, NMCRIS 157162. 4. Lone Mountain Archaeological Services, Inc. 2025. Cultural Resource Update of LA 100359 and LA 100361 at Homestake Mine in Cibola County, New Mexico. July. NM State Permit No. NM-25-073-S, NMCRIS 159072. 			

3.8.2 Potential Impacts on Historic and Cultural Resources

HMC will plan land disturbance activities so that appropriate fences and boundaries are maintained around eligible or undetermined sites and, thus, are avoided based on the NMSHPO recommendations (HMC, 2024c; NMSHPO, 2025a,b). Additionally, as stated in the LAR and SUA-1471, LC 43, if cultural resources are uncovered during excavation activities, an archaeologist will be contacted to conduct a survey of the site to ensure features of significance are protected (HMC, 2023; NRC, 2025a,b). Therefore, the NRC staff determines that there will be no adverse effects on eligible or undetermined sites due to the proposed action. Section 4 of this EA describes the NRC's consultation with the NMSHPO, the Advisory Council on Historic Preservation (ACHP), and federally recognized Native American Tribes.

3.9 Visual and Scenic Resources

This section describes the visual environment around the site and the potential visual impacts of the proposed action.

3.9.1 Affected Visual and Scenic Environment

Aesthetic and recreational areas found within Cibola County include the following resources: San Mateo Mountains (including Mt. Taylor), Cibola National Forest, Acoma Village, San Estaban Del Ray Mission, El Malpais National Monument, El Morro National Monument, El

Morro National Monument Inscription Rock Historical Marker, Old Fort Wingate-Zuni Wagon Road Historic Site, Pueblo Revolt Tricentennial Historical Marker, Petaca Plata Wilderness Study Area, Long Park, San Rafael Historical Marker, and Pueblo of Acoma Historical Marker. (NRC, 2008; HMC, 2023). Major land uses are discussed above in 3.1. Facility buildings and mill tailings impoundments associated with the GRP site are visible from State Highway NM 605, County Road 63/Road 344, and surrounding residential areas to the south and west of the NRC-licensed boundary. The LTP is the most visible feature at the GRP site and is approximately 30.5 m (100 ft) high (HMC, 2025b).

3.9.2 Potential Impacts on Visual and Scenic Resources

Under the proposed action, the height of the LTP would increase by 2.6 m (8.5 ft), and the surface of the LTP would be revegetated with mostly shallow rooted grasses with some forb and shrub species. The proposed action includes the surface of the 68.8 ha (170 ac) LTP, the north and west borrow areas (180 ha [445 ac]), two rock stockpiles located west of the LTP (11 ha [27 ac]), and temporary haul roads (3.3 ha [8.3 ac]). HMC does not expect these changes would noticeably affect the visual impact of the LTP (1) because of the relatively small 2.6 m (8.5 ft) change in height, and (2) because revegetation with grasses, forbs, and shrubs would blend the LTP surface with the surrounding areas more than the existing rock cover (HMC, 2023, 2025a). The borrow areas and haul roads would be scraped and excavated and revegetated after construction activities end to minimize the impacts the proposed action would have on the current viewscape. Construction activities would last only a few months, and visual impacts would be temporary. Permanent changes are not expected to the current viewscape, on site or off site. Therefore, the NRC staff finds the activities associated with construction of the ET cover would not significantly affect visual or scenic resources.

3.10 Noise

This section describes noise levels in the surrounding environment and the potential noise impacts from the proposed action.

3.10.1 Noise Levels in the Affected Environment

The proposed LTP cover installation activities are located within 0.8 km (0.5 mi) of the nearest resident (HMC, 2023). Operational noises routinely generated at the GRP site related to groundwater restoration and reclamation activities include vehicle traffic, heavy equipment operation, pumping mechanisms, and groundwater well drilling. No sensitive noise receptors (e.g., schools, hospitals) are known to be located within 4.8 km (3 mi) of the GRP site.

Overall noise within 4.88 km (3 mi) of the GRP site is generated from multiple sources, including trains, trucks, cars, and industrial businesses. The main contributor to noise sources is traffic from State Highways 122 and 605, and County Road 63/Road 344. The noise environment near the GRP site is typical of a rural residential location.

3.10.2 Potential Impacts from Noise

The most noticeable noise generated from the proposed action would be from earth-moving equipment (e.g., haul trucks, bulldozers, backhoes, graders, loaders). These types of noises are generated at the HMC property as needed to support reclamation activities. Activities from earth-moving and drilling equipment can generate noise levels up to 95 decibels (dBA) and typically range from 80–95 dBA at distances of approximately 15 m (50 ft) from the source.

Noise levels decrease by about 6 dBA for each doubling of distance from the source and therefore would not be heard at the nearest residence (WSDOT, 2020). The proposed action would be intermittent, only occur during daylight hours, and be expected to last less than 6 months (HMC, 2023).

The proposed ET cover modification activities would occur within the HMC-owned property boundary and would be temporary. Proposed action activities would occur during daylight hours (HMC, 2023). Individuals working on site would not be exposed to sound levels that would require hearing protection. The overall sound levels experienced by neighboring properties would result from the combination of sound from equipment associated with the proposed action and existing ambient sound. Noise levels associated with LTP ET cover modification are expected to be similar to noise levels generated from the ongoing operation and maintenance activities at the site. HMC plans to maintain or modify newer equipment or use newer equipment to limit excessive operating noise (HMC, 2023). Upon completion of the LTP ET cover modification, noise levels are anticipated to return to typical levels that include routine operational noises to support reclamation activities. Therefore, activities associated with ET cover modification would not significantly affect the noise levels in the vicinity of the HMC property and are not expected to present an audible intrusion on the surrounding community.

3.11 Waste Management

This section describes the environment that could potentially be affected by the disposition of liquid and solid waste streams generated by HMC's proposed action in the vicinity of the GRP site and the capacity of available waste management facilities that would receive wastes as a result of the proposed action, as well as the potential impacts from waste generation and disposal.

For the proposed ET cover project, which would take less than 6 months to complete (HMC, 2023), HMC would increase the existing workforce by approximately eight people at the GRP site (HMC, 2023). Wastes that would be generated from the proposed action are primarily associated with routine activities conducted in support of construction (e.g., workforce trash, sanitary waste, cleaning, maintenance). Nonhazardous solid waste produced by the proposed action would include a small amount from routine construction activities, such as trash generated by the workforce. The GRP staff would continue to dispose of those wastes at a local municipal landfill (HMC, 2024a). The Red Rock landfill in Thoreau, New Mexico, located approximately 59.5 km (37 mi) from the GRP site, is the nearest landfill that accepts commercial municipal waste.

Liquid wastes for the proposed action include sanitary waste and materials such as oils, solvents, and fuel resulting from construction equipment maintenance. Based on the types of activities that would be conducted, limited quantities of hazardous wastes (e.g., batteries and solvents from operating equipment and vehicle maintenance) are expected to be generated and would be governed by applicable local, State, and Federal requirements regarding nonradioactive waste generation, handling, and disposal.

The NRC staff expects that HMC would continue to adhere to applicable local, State, and Federal requirements regarding nonradioactive waste generation, handling, and disposal. The NRC staff also anticipates that the GRP staff would continue to dispose of any hazardous waste appropriately. Disposal of the small amount of waste that might be generated during the proposed action would result in a minimal increase, if any, to the wastes that are already

generated at the GRP site and would not have a noticeable impact on local landfill capacity. Therefore, there would be no significant waste management impacts.

3.12 Transportation and Traffic

This section describes traffic and transportation routes on and surrounding the GRP site and the potential transportation and traffic impacts from the proposed action.

3.12.1 Affected Transportation Environment

Interstate 40 and State Highway 605 are the principal highway access routes in the vicinity. County Road 63/Road 334 crosses the NRC-licensed area immediately north of the LTP. Normal access to the GRP site is from the south using State Highway 605 then traveling west on County Road 63/Road 334. The NRC-licensed area is fenced with HMC signage.

Figure 1-1 shows the location of dirt roads that traverse the GRP site. The nearest public use airport is the Grants-Milan Municipal Airport, approximately 8 km (5 mi) south-southwest of the GRP site. This airport can serve planes up to 30,000 pounds. The nearest airport served by major air carriers is in Albuquerque, New Mexico, approximately 128.8 km (80 mi) east of the HMC property.

3.12.2 Potential Transportation Impacts

The proposed action requires loading material in the north and west borrow areas and rock stockpile onto haul trucks and transporting the material to the LTP. New temporary haul roads would be constructed to provide access from the north and west borrow areas and rock stockpile to the LTP. Figure 1-1 shows the proposed locations of the temporary haul roads. HMC anticipates hauling activities would last for about 3 months and would occur only during daylight hours (HMC, 2023). Earth-moving equipment and heavy machinery, such as bulldozers, backhoes, graders, and loaders, would be at the GRP site for several months until the ET cover project is completed (HMC, 2023). Nonradiological waste generated during ET cover modification is likely to be trash from contractor personnel, such as wrappers, paper, and bags. This waste would be placed with other nonradiological waste on the HMC property and would be transported routinely, but not daily, during the life of the project.

No traffic or road infrastructure improvements outside of the HMC-owned area would be needed. HMC estimates that there would be three daily round trips in personal trucks between the HMC property and Grants, New Mexico (HMC, 2023). According to the New Mexico Department of Transportation (NMDOT) traffic monitoring program (NMDOT, 2025), in 2024 approximately 2,585 vehicles traveled daily on State Highway 605 between Grants and the HMC property. The addition of three daily round trips during the ET cover modification would increase traffic on State Highway 605 by approximately 0.1 percent.

HMC anticipates haul trucks would cross County Road 63/Road 334 approximately 76 times per day during daylight hours for 3 months (HMC, 2023). (NMDOT, 2025). In 2024, approximately 160 vehicles traveled daily on the portion of County Road 63/Road 334 between the LTP and borrow areas. The addition of 76 crossings per day would increase traffic on County Road 63/Road 334 by approximately 72 percent for 3 months during the proposed action (HMC, 2023). HMC would follow all permit requirements for using public roads for hauling materials (HMC, 2023). After 3 months, the volume of vehicle traffic would return to preexisting levels.

Because the proposed action would require a small workforce (section 3.7.2), the NRC staff concludes that the increased traffic impacts on local roads from the proposed action would not be significant. Because County Road 63/Road 334 is lightly traveled compared to State Highway 605, adverse environmental impacts to transportation on County Road 63/Road 334 would be temporary and localized. The NRC expects that HMC will comply with all regulations and requirements for transport of waste and materials.

4 CONSULTATION AND COORDINATION

4.1 State Review

The NRC submitted the draft EA via email to the NMED for their review and comment. NMED responded on August 7, 2025 (NMED, 2025b) that they had previously provided the NRC staff with comments (NMED, 2025a, NMED, 2025b) and had no additional comments on the EA.

4.2 National Historic Preservation Act Section 106 Consultation

In accordance with 36 CFR 800.8(c), the NRC initiated the NHPA section 106 consultation process and notified consulting parties, including the ACHP, the NMSHPO, and Native American Tribes, of its intent to use the NEPA process to comply with NHPA section 106. The NRC staff contacted seven federally recognized Native American Tribes with historic and ancestral ties to the project vicinity to ensure that they were afforded the opportunity to identify their concerns; provide advice on the identification and evaluation of historic properties, including those of traditional religious and cultural significance; and, if necessary, participate in the resolution of any adverse effects to such properties (NRC, 2024c). The seven Native American Tribes were the (1) Apache Tribe of Oklahoma, (2) Pueblo of Jemez, (3) Pueblo of Laguna, (4) Zuni Tribe of the Zuni Reservation, (5) Navajo Nation, (6) Pueblo of Acoma, and (7) Pueblo of Isleta (NRC, 2024c).

By letters dated March 26, 2024 (NRC, 2024d), the NRC staff also consulted with the NMSHPO and the ACHP. In the letters, the NRC staff explained the activities involved in the proposed action and requested any information the NMSHPO and ACHP might have regarding historic and cultural resources that might be affected by the proposed action. In the NMSHPO's reply, dated April 23, 2024 (NMSHPO, 2024), the NMSHPO indicated that it was aware of archaeological sites in the area and listed a number of surveys that have taken place in the area.

During follow-up conversations with the NMSHPO, the NRC staff clarified the APE in relation to the sites and discussed measures the licensee plans to take to avoid known eligible or undetermined sites and its license condition in place to stop work in the event of an inadvertent discovery. In response to the NMSHPO's expressed concerns, the licensee verified the location of the identified sites (Lone Mountain Archaeological Services, Inc., 2024). Additionally, when the licensee identified a location for the west borrow area, the licensee positioned it 30.5 m (100 ft) from a known eligible site (HMC, 2024c). Therefore, the NRC staff determined that although the scope of activities described in the LAR includes ground disturbance, approval of the undertaking will have no adverse effect, as defined in 36 CFR 800.16(i), on historic properties present (NRC, 2025c).

In subsequent letters dated February 18, 2025, to nine Native American Tribes (NRC, 2025d),¹ the NRC informed them of the staff's no adverse effects determination and requested their concurrence regarding the determination. No comments were received from the nine Native American Tribes. The NMSHPO responded, in a letter dated April 1, 2025 (NMSHPO, 2025a), that it concurred with the NRC's no adverse effect determination, provided that sites eligible for

¹ (1) Apache Tribe of Oklahoma, (2) Pueblo of Jemez, (3) Pueblo of Laguna, (4) Zuni Tribe of the Zuni Reservation, (5) Navajo Nation, (6) Pueblo of Acoma, (7) Pueblo of Isleta, (8) Pueblo of Zia, and (9) Hopi of Arizona.

listing on the NRHP or of undetermined eligibility will be fenced or otherwise identified to ensure that construction activities do not impact the sites. The NRC staff shared this recommendation with HMC.

HMC submitted a revised design report to the NRC on June 3, 2025 (HMC, 2025a), as an update to its LAR that expanded the direct APE where sites are located in the north borrow area that were not previously evaluated. In letters dated August 6, 2025, and August 21, 2025, to the NMSHPO and 10 Native American Tribes² (NRC, 2025c,e), respectively, the NRC provided an update of the expanded APE and the staff's no adverse effects determination and requested their concurrence regarding the determination. The NRC staff determined that although the scope of activities described in the expanded APE includes ground disturbance, approval of the undertaking will have no adverse effect, as defined in 36 CFR 800.16(i), on historic properties present. The NMSHPO responded, in a letter dated August 15, 2025 (NMSHPO, 2025b), that it concurred with the NRC's no adverse effects determination, provided that sites eligible for listing on the NRHP or that are of undetermined eligibility will be fenced or otherwise identified to ensure that construction activities do not impact the sites. No comments were received from the Tribes.

4.3 Endangered Species Act Section 7 Consultation

The NRC must consider the effects of its actions on the ecological resources protected under several Federal statutes and must consult with the FWS or the National Oceanic and Atmospheric Administration before acting if an agency action may affect those resources. The NRC considers this EA and associated correspondence with the FWS (FWS, 2024a) to fulfill its obligations under ESA section 7.

Upon receipt of HMC's application, the NRC staff considered whether any federally listed or proposed species or designated or proposed critical habitats may be present in the action area (as defined at 50 CFR 402.02) for the proposed action. As discussed in section 3.5.3, the NRC staff finds that the proposed action may affect but is not likely to adversely affect the Mexican wolf, Mexican spotted owl, southwestern willow flycatcher, yellow-billed cuckoo, monarch butterfly, or Suckley's cuckoo bumble bee and would have no effect on the pecos sunflower or the Zuni fleabane.

The NRC staff transmitted a letter detailing the NRC determinations to the FWS for its review and concurrence on June 26, 2024 (NRC, 2024b). On July 29, 2024 (FWS, 2024a), the FWS concurred with the NRC determinations and provided no additional comments.

After concurring with the NRC determinations, FWS removed the Mexican spotted owl and the Zuni fleabane from the IPaC database as species under FWS jurisdiction that potentially occur in the action area and added the Suckley's cuckoo bumble bee as a proposed endangered species that potentially could occur in the project area (FWS, 2025). Several factors affect the conservation of this species, including habitat alteration, herbicide use, drought, and climate change (FWS, 2024c). These factors are similar to those that affect the conservation of the monarch butterfly. The potential impacts to the bumble bee from the proposed project would be similar to those of the monarch butterfly. The NRC staff provided the FWS with a description of potential impacts to the monarch butterfly and concluded that the proposed action may affect

² (1) Apache Tribe of Oklahoma, (2) Pueblo of Jemez, (3) Pueblo of Laguna, (4) Zuni Tribe of the Zuni Reservation, (5) Navajo Nation, (6) Pueblo of Acoma, (7) Pueblo of Isleta, (8) Pueblo of Zia, (9) Hopi of Arizona, and (10) Mescalero Apache.

but is not likely to adversely affect the monarch butterfly (NRC, 2024b), and the FWS concurred with the NRC staff's conclusion (FWS, 2024a). Because of the similarities between the monarch butterfly and the Suckley's cuckoo bumble bee, the NRC staff concludes that the proposed action may affect but is not likely to adversely affect the Suckley's cuckoo bumble bee.

Because the bee is proposed for Federal listing, the ESA does not require the NRC to consult with the FWS or to receive concurrence from the FWS regarding this species unless the species is likely to be jeopardized. The NRC determined that the proposed action may affect but is not likely to adversely affect, and would not jeopardize, the species. Therefore, the NRC's obligations under the ESA are complete.

5 CONCLUSIONS AND FINDING OF NO SIGNIFICANT IMPACT

The NRC staff have prepared this EA in support of the proposed agency action to amend License SUA-1471. As analyzed in this EA, and in accordance with the requirements in 10 CFR Part 51, the NRC staff has concluded that approval of HMC's proposed LAR to amend License SUA-1471 to modify the final cover design for the LTP will not significantly affect the quality of the human environment. Therefore, the NRC has determined that, pursuant to 10 CFR 51.31, "Determinations based on environmental assessments," preparation of an environmental impact statement is not required for the proposed action and pursuant to 10 CFR 51.32(a), a finding of no significant impacts is appropriate. This determination will be published in the *Federal Register*.

6 LIST OF PREPARERS

This EA was prepared by the Environmental Center of Expertise in the Division of Rulemaking, Environmental, and Financial Support in the Office of Nuclear Material Safety and Safeguards. Table 6-1 lists contributors to the EA.

Table 6-1 List of Preparers

Contributor	Education, Years of Experience
Amy Minor	<ul style="list-style-type: none"> • BA Environmental Studies • Duke NEPA Certificates • 24 years of experience in environmental site analysis and evaluations
Marla Morales	<ul style="list-style-type: none"> • BA Geology • MS Geology • Licensed Professional Geoscientist - States of Virginia and Texas • Shipley Group NEPA Certificate • 18 years of environmental site analysis and evaluations
Isaac Johnston	<ul style="list-style-type: none"> • BA Marine Science • PhD Environmental Engineering and Earth Sciences • 3 years of professional experience
Michelle Sutherland	<ul style="list-style-type: none"> • BS Biology • BS Geology • MS Geology • Masters of Business Administration • 17 years of professional experience
Jean Trefethen	<ul style="list-style-type: none"> • BA Biology and Chemistry • Duke NEPA Certificate • 16 years of professional experience
Beau Goldstein	<ul style="list-style-type: none"> • BA Anthropology • MS Environmental Engineering • Register of Professional Archaeologists, #15107 • 26 years of professional experience
Patrick Donohue	<ul style="list-style-type: none"> • BA Earth Science • 12 years of professional experience

7 REFERENCES

10 CFR Part 20. *Code of Federal Regulations* (CFR), “Standards for Protection Against Radiation,” Chapter I, Title 10, “Energy.”

10 CFR Part 40. CFR, “Criteria Relating to the Operations of Uranium Mills and to the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for their Source Material Content,” Chapter I, Title 10, “Energy.”

10 CFR Part 51. CFR, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions,” Chapter I, Title 10, “Energy.”

36 CFR Part 800. CFR, “Protection of Historic Properties,” Title 36, “Parks, Forests, and Public Property.”

40 CFR Part 81. CFR, “Designation of Areas for Air Quality Planning Purposes.” Title 40, “Protection of Environment.”

40 CFR Part 190. CFR, “Environmental Radiation Protection Standards for Nuclear Power Operations.” Title 40, “Protection of Environment.”

50 CFR Part 402. CFR, “Interagency Cooperation—Endangered Species Act of 1973, as Amended.” Chapter IV, “Joint Regulations (United States Fish and Wildlife Service, Department of the Interior and National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce); Endangered Species Committee Regulations,” Title 50, “Wildlife and Fisheries.”

ACHP (Advisory Council on Historic Preservation), 2024. “Homestake Mining Company of California Modification of the Evapotranspiration Cover (Docket Number: 040-08903), Cibola County, New Mexico, ACHP Project Number: 020787,” May 3, 2024. Agencywide Documents Access and Management System Accession No. [ML24143A023](#)

AK Geoconsult, Inc., Applied Environmental Consulting, Inc., Jenkins Environmental, Inc., and Radiant Energy Management (AK Geoconsult et al.), 1991. “Final Reclamation Plan and Interim Surety,” for Homestake Mining Company Grants Operation, January 31, 1991. [ML080030080](#)

Arcadis, 2013. “Decommissioning and Reclamation Plan Update,” Grants Reclamation Project, Docket No. 40-8903, License No. SUA-1471, April 4, 2013. [ML131070607](#)

Baldwin, J.A., and Anderholm, S.K., 1992. “Hydrogeology and Ground-Water Chemistry of the San Andres-Glorieta Aquifer in the Acoma Embayment and Eastern Zuni Uplift, West-Central New Mexico,” U.S. Geological Survey Water-Resources Investigations Report 91-4033, 1992. <https://pubs.usgs.gov/publication/wri914033> (Accessed June 17, 2024)

Brown and Caldwell, 2018. “San Mateo Creek Basin and HMC Mill Site Hydrogeologic Site Conceptual Models,” Technical Memorandum, January 8, 2018. [ML18025B341](#)

Cibola County, 2024. “Cibola County, NM.” <https://www.cibolacountynm.com/> (Accessed March 6, 2024)

Complete Archaeological Service Associates. 1995. Cultural Resource Testing, Evolution and monitoring of Eight Sites for Homestake Mining Company Near Miland, Cibola County, New Mexico. May. CASA 95-201. (*non-public*)

DOE (U.S. Department of Energy), 2002. "Methodology for determining revegetation success at the Monticello Repository," GJO-2002-325-TAR, 2002.

EMNRD (Energy, Minerals, and Natural Resources Department), 2024. Email to U.S. Nuclear Regulatory Commission "RE: [EXTERNAL] Rare Plant Occurrence Inquiry," from E. Rowe, New Mexico State Botanist, April 8, 2024. [ML24109A278](#)

ESA, Endangered Species Act of 1973, as amended, 16 U.S.C. § 1531 et seq.

EPA (U.S. Environmental Protection Agency), 2024a. "AirData Air Quality Monitors Map." <https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=5f239fd3e72f424f98ef3d5def547eb5&extent=-146.2334,13.1913,-46.3896,56.5319> (Accessed August 1, 2024)

EPA 2024b. "EnviroAtlas Interactive Map." <https://enviroatlas.epa.gov/enviroatlas/interactivemap/> (Accessed June 13, 2024)

ERG (Environmental Restoration Group, Inc.), 1995. "Final Radon Barrier Design for the Large Tailings Piles, Homestake Mining Company of California, Grants Operations, License No. SUA-1471," June 16, 1995. [ML20085M655](#)

ERG, 2018. "Radiation Protection Program—Occupational Radiation Exposure Study—HMC Grants Reclamation Project—Cibola County, New Mexico—Final Report," August 20, 2018. [ML19154A582](#)

FAA (Federal Aviation Administration), 2023. "2023 Airport Improvement Program (AIP) Grants," 2023. https://www.faa.gov/airports/aip/2023_aip_grants (Accessed June 12, 2024)

FAA, 2024. "Bipartisan Infrastructure Law Airport Infrastructure Grant Funding Amounts." <https://www.faa.gov/general/bipartisan-infrastructure-law-airport-infrastructure-grant-funding-amounts> (Accessed June 12, 2024)

Frenzel, P.F., 1992. "Simulation of Ground-Water Flow in the San Andres-Glorieta Aquifer in the Acoma Embayment and Eastern Zuni Uplift, West-Central New Mexico," U.S. Geological Survey Water-Resources Investigations Report 91-4099, 1992.

FWS (U.S. Fish and Wildlife Service), 2024a. "FWS Concurrence for Homestake ET Cover," New Mexico Ecological Services Field Office, July 26, 2024. [ML24212A246](#)

FWS, 2024b. "Find a Species." <https://www.fws.gov/species/search> (Accessed March 12, 2024)

FWS, 2024c. "Species Status Assessment for Suckley's Cuckoo Bumble Bee," August 2024. <https://iris.fws.gov/APPS/ServCat/DownloadFile/263505> (Accessed June 23, 2025)

FWS, 2025. "List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project," Project Code 2024-0058743, New Mexico Ecological Services Field Office, November 2025. [ML25317A507](#)

HDR, Inc., 2016. “Homestake Mining Company of California—Grants Reclamation Project—Alternate Concentration Limit Application for the Groundwater Corrective Action Program,” 2016 Draft Remedial Investigation Report, June 21, 2016. [ML22263A347](#)

HMC (Homestake Mining Company of California), 1982. Volume III, “State of New Mexico—Environmental Improvement Division—Uranium Mill License Renewal Application—Environmental Report,” April 1982. [ML101200118](#)

HMC, 1993. “Reclamation Plan Revision 10/93,” Volume 1, “Texts, Tables, and Figures,” HMC Grants Operation, October 1993. [ML091490367](#)

HMC, 2007. “Environmental Report for the Construction of Evaporation Pond #3 and Associated Operations Boundary Expansion,” January 30, 2007. [ML070850561](#)

HMC, 2012. “Grants Reclamation Project Updated Corrective Action Program (CAP),” March 31, 2012. [ML120890113](#)

HMC, 2013. “Grants Reclamation Project—Decommissioning and Reclamation Plan Update 2013,” License SUA-1471, April 4, 2013. [ML131070607](#)

HMC, 2022a. “Homestake Mining Company of California—Grants Reclamation Project—Request for Amendment to License No. SUA-1471 for the Large Tailings Pile Evapotranspiration Cover Design,” March 21, 2022. [ML22080A186](#)

HMC, 2022b. “Homestake Mining Company of California—Grants Reclamation Project—Large Tailings Pile Evapotranspiration Cover Design—Environmental Report,” May 17, 2022. [ML22139A146](#)

HMC, 2023. “Homestake Mining Company of California—Grants Reclamation Project—Request for Amendment to License No. SUA-1471 for the Large Tailings Pile Evapotranspiration Cover Design,” July 28, 2023. [ML23222A171](#) package

HMC, 2024a. “Response to Nuclear Regulatory Commission Request for Additional Information Regarding the Environmental Report in Support of the Proposed Evapotranspiration Cover Design—License Amendment Request—NRC Docket No. 40-8903, License No. SUA-1471,” July 12, 2024. [ML24197A248](#)

HMC, 2024b. “Response to Nuclear Regulatory Commission Request for Additional Information Regarding the Proposed Evapotranspiration Cover Design—License Amendment Request,” October 7, 2024. [ML24283A192](#)

HMC, 2024c. “Response to Nuclear Regulatory Commission Request for Additional Information Regarding the Proposed Evapotranspiration Cover Design—License Amendment Request,” December 18, 2024. [ML24354A217](#)

HMC, 2024d. Letter from B. Bingham, HMC, to NRC, “Request for NRC Audit, Homestake Mining Company of California – Grants Reclamation Project – Groundwater Flow and Contaminant Transport Model, Radioactive Materials License SUA-1471, Docket 040-08903.” June 10, 2024. [ML24164A317](#)

HMC, 2025a. “Stantec Consulting Services, Inc.—Design Report,” June 3, 2025. [ML25163A318](#)

HMC, 2025b. “2024 Annual Monitoring Report/Performance Review, for Homestake’s Grants Project Pursuant to Nuclear Regulatory Commission, License SUA-1471 and Discharge Plan DP-200,” March 2025. [ML25114A153](#)

HMC, 2025c. “2024 Revised Public Dose Calculations, Radioactive Materials License SUA-1471, Docket 040-08903,” May 28, 2025. [ML25150A038](#)

Hydro-Engineering (Hydro-Engineering, LLC), 1996. “Tailings Impoundment Infiltration Modeling,” 1996.

Kelley, V.C., 1967. “Tectonics of the Zuni-Defiance Region, New Mexico, and Arizona.” In: F.D. Trauger (ed.), Guidebook of Defiance-Zuni-Mt. Taylor Region, Arizona, and New Mexico. Eighteenth Field Conference, October 19, 20, and 21, 1967.

Lone Mountain Archaeological Services, Inc. 2024. Homestake Mine Site Evaluation for LA 104308, LA 104309, LA 104310, LA 104311, LA 153552, and LA 153556 in Cibola County, New Mexico. November. NM State Permit No. NM-25-073-S, NMCRIS 157162. (*non-public*)

Lone Mountain Archaeological Services, Inc. 2025. Cultural Resource Update of LA 100359 and LA 100361 at Homestake Mine in Cibola County, New Mexico. July. NM State Permit No. NM-25-073-S, NMCRIS 159072. (*non-public*)

MCDC (Missouri Census Data Center), 2023. “Circular Area Profiles—ACS.” <https://mcdc.missouri.edu/applications/capsACS.html> (Accessed March 4, 2024)

NEPA. National Environmental Policy Act of 1969, as amended, 42 U.S.C. § 4321 et seq.

NHPA. National Historic Preservation Act of 1966, as amended, 54 U.S.C. § 300101 et seq.

New Mexico, 2021. “State Population Trends,” New Mexico Legislature, April 2021. https://www.nmlegis.gov/Entity/LFC/Documents/Program_Evaluation_Reports/Policy%20Spotlight%20-%20State%20Population%20Trends.pdf (Accessed March 4, 2024)

NMDGF (New Mexico Department of Game and Fish), 2025. “Homestake ET Cover,” Project ID NMERT-3198, June 18, 2025. [ML25171A177](#)

NMDGF, 2024. “Big Game.” <https://www.wildlife.state.nm.us/hunting/information-by-animal/big-game/> (Accessed March 4, 2024)

NMDOT (New Mexico Department of Transportation), 2025. “NMDOT Traffic Monitoring Program Web Maps.” <https://experience.arcgis.com/experience/1756c4f6a69048669373c5627809520f/page/Page?views=NMDOT-Traffic-Sections> (Accessed November 18, 2025)

NMED (New Mexico Environment Department), 2025a. “Homestake Mining Company Large Tailings Pile Evapotranspiration Cover Project Design Report Review,” July 11, 2025. [ML25199A049](#)

NMED, 2025b. Email from J. Fox, NMED to A. Minor, NRC, re: “Re: Draft Environmental Assessment: Homestake Mining Company of California Large Tailings Pile Evapotranspiration

Cover Design License Amendment Request - Opportunity for Review and Comment,” August 7, 2025. [ML25223A125](#)

New Mexico Rare Plant Technical Council, 2024. “New Mexico Rare Plants.” <https://nmrareplants.unm.edu/rarelist> (Accessed March 12, 2024)

NMSHPO (New Mexico State Historic Preservation Office), 2024. “Homestake Mining Company of California Modification of the Evapotranspiration Cover (Docket Number: 040-08903; HPD Log#122253),” April 23, 2024. [ML24117A356](#)

NMSHPO, 2025a. “US Nuclear Regulatory Commission Finding of No Adverse Effects Homestake Mining Company of California Modification of the Evapotranspiration Cover, Cibola County, New Mexico (Docket Number: 040-08903) (HPD Log#124913),” April 1, 2025. [ML25111A197](#)

NMSHPO, 2025b. Reply to Letter from D. Davis, NRC, to J. Pappas, Interim State Historic Preservation Officer, “Update to Section 106 Consultation of the the National Historic Preservation Act for Homestake Mining Company of California Modification of the Evapotranspiration Cover (Docket Number: 040-08903), (NMSHPO Log Number: 124913),” HPD Log # 126110, August 15, 2025. [ML25228A002](#)

NRC, 1993. “Environmental Assessment for the Decommissioning and Reclamation of the Grants Mill and Tailings Ponds,” May 1993. [ML060310523](#)

NRC, 1995. “Revision to Radon Barrier Thickness,” October 10, 1995. [ML080030057](#)

NRC, 2003a. “Environmental Review Guidance for Licensing Actions Associated with Nuclear Material Safety and Safeguards Programs,” NUREG-1748, August 2003. [ML032540811](#)

NRC, 2003b. “Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978,” NUREG-1620, Revision 1, June 2003. [ML032250190](#)

NRC, 2008. “Environmental Assessment Related to the Issuance of a License Amendment for Construction of a Third Evaporation Pond, Homestake Mining Company of California, Grants, New Mexico Project,” July 2008. [ML080920594](#)

NRC, 2019. “Environmental Assessment for the Proposed License Amendment for the Zeolite Water Treatment System at the Homestake Grants Reclamation Project in Cibola County, New Mexico,” December 2019. [ML19263C623](#)

NRC, 2022a. Email from R. Linton, NRC, to B. Bingham, HMC, re: “Evapotranspiration Cover Design LAR request—Acceptance Review,” April 21, 2022. [ML22117A064](#)

NRC, 2022b. “U.S. Nuclear Regulatory Commission Staff Acceptance Review of the Homestake Mining Company of California Request for Amendment to License SUA-1471 for the Large Tailings Pile Evapotranspiration Cover Design Docket No. 04008903,” September 28, 2022. [ML22256A283](#)

NRC, 2023. “Homestake Mining Company of California, Grants Reclamation Project. U.S. Nuclear Regulatory Commission Acceptance Review, Request for Amendment to License

No. SUA-1471 for the Large Tailings Pile Evapotranspiration Cover Design, Docket 040-08903,” October 18, 2003. [ML23283A044](#)

NRC, 2024a. “Homestake Mining Company of California—NRC Inspection Report 040-08903/2024-002,” September 11, 2024. [ML24249A176](#)

NRC, 2024b. Email from A. Minor, NRC, to New Mexico Ecological Services Field Office, “NRC Request for Concurrence with Endangered Species Act Determinations for the Homestake Evapotranspiration Cover Project (Consultation Code: 2024-0058743),” June 26, 2024. [ML24176A207](#)

NRC, 2024c. Letter from J. Moses, NRC, to Tribal Historic Preservation Officers, “Request to Initiate Section 106 Consultation of the National Historic Preservation Act for Homestake Mining Company of California Modification of the Evapotranspiration Cover (Docket Number: 04-08903),” March 27, 2024. [ML24065A043](#)

NRC, 2024d. Letter from R. Sun, NRC, to New Mexico State Historic Preservation Offices and Advisory Council on Historic Preservation, “Request to Initiate Section 106 Consultation of the National Historic Preservation Act for Homestake Mining Company of California Modification of the Evapotranspiration Cover (Docket Number: 04-08903),” March 26, 2024. [ML24065A055](#)

NRC, 2025a. U.S. NRC Materials License SUA-1471, Amendment 63, April 1, 2025. [ML25072A121](#)

NRC, 2025b. Letter from M. NRC, to J. Pappas, Interim State Historic Preservation Officer, “U.S. Nuclear Regulatory Commission Finding of no Adverse Effects Homestake Mining Company of California Modification of the Evapotranspiration Cover, Cibola County, New Mexico (Docket Number: 040-08903),” February 11, 2025. [ML25030A253](#)

NRC, 2025c. Letter from D. Davis, NRC, to J. Pappas, Interim State Historic Preservation Officer, “Update to Section 106 Consultation of the National Historic Preservation Act for Homestake Mining Company of California Modification of the Evapotranspiration Cover (Docket Number: 040-08903), (NMHPO Log Number: 124913),” August 6, 2025. [ML25213A193](#)

NRC, 2025d. Letter from J. Moses, NRC, to Tribal Leaders, “U.S. Nuclear Regulatory Commission Finding of No Adverse Effects Homestake Mining Company of California Modification of the Evapotranspiration Cover, Cibola County, New Mexico (Docket Number: 040-08903),” February 18, 2025. [ML25037A148](#), [ML25044A053](#), [ML25044A057](#), [ML25044A060](#), [ML25044A068](#), [ML25044A071](#), [ML25044A075](#), [ML25049A279](#), and [ML25049A286](#)

NRC, 2025e. Letter from D. Davis, NRC, to Tribal Leaders, “U.S. Nuclear Regulatory Commission Finding of No Adverse Effects Homestake Mining Company of California Modification of the Evapotranspiration Cover, Cibola County, New Mexico (Docket Number: 040-08903),” August 21, 2025. [ML25226A145](#)

Taschek Environmental Consulting. (TEC). 2006. Cultural Resources Inventory of 350 Acres for the Homestake Mining Company in Cibola County, New Mexico. July. NM State Permit No. NM-06-121-S, NMCRIS No.100406. (*non-public*)

Tetra Tech, 2012. "Screening Level Evaluation of an Off-Site Relocation of the Large Tailings Pile, Homestake Mining Company—Grants Site," June 2012. [ML12334A056](#)

USACE (U.S. Army Corps of Engineers), 2010. "Focused Review of Specific Remediation Issues, An Addendum to the Remediation System Evaluation for the Homestake Mining Company (Grants) Superfund Site, New Mexico," prepared for U.S. Environmental Protection Agency, Region 6, December 23, 2010. <https://www.epa.gov/sites/default/files/2015-05/documents/hmc-rse-addendum-final-report.pdf> (Accessed March 26, 2024)

USCB (U.S. Census Bureau). Table P1, "Race," Cibola County, New Mexico. 2020. <https://data.census.gov/table/DECENNIALPL2020.P1?q=cibola+county+population+2020> (Accessed August 12, 2025)

Waugh, W.J., 2004. "Design, Performance, and Sustainability of Engineered Covers for Uranium Mill Tailings," Proceedings of the Workshop on Long-Term Performance Monitoring of Metals and Radionuclides in the Subsurface: Strategies, Tools, and Case Studies, U.S. Geological Survey, 2004. <https://semspub.epa.gov/work/09/1127967.pdf> (Accessed July 31, 2024)

Waugh, W.J., C.H. Benson, and W.H. Albright, 2009. "Sustainable Covers for Uranium Mill Tailings, USA: Alternative Design, Performance, and Renovation," Proceedings of the 12th International Conference on Radioactive Waste Management and Environmental Remediation, Liverpool, United Kingdom, October 11–15, 2009. https://asmedigitalcollection.asme.org/ICEM/proceedings-pdf/ICEM2009/44083/639/4543995/639_1.pdf (Accessed July 31, 2009)

WRCC (Western Regional Climate Center), 2024a. "Period of Record Monthly Climate Summary." <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm3682> (Accessed May 9, 2024)

WRCC, 2024b. "Evaporation Stations." https://wrcc.dri.edu/Climate/comp_table_show.php?stype=pan_evap_avg (Accessed May 9, 2024)

WSDOT (Washington State Department of Transportation), 2020. "Construction Noise Impact Assessment," Chapter 7, *Biological Assessment Preparation Manual*, August 2020. https://wsdot.wa.gov/sites/default/files/2021-10/Env-FW-BA_ManualCH07.pdf (Accessed February 2, 2024)