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Silver Peak Lithium Operation Expansion Project Draft Environmental Impact Statement

August 2025

SILVER PEAK LITHIUM OPERATION EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT

DOI-BLM-NV-B020-2025-0005-EIS

Silver Peak Lithium Operation Expansion Project

Esmeralda County, Nevada

Prepared by

U.S. Department of the Interior
Bureau of Land Management
Tonopah Field Office
1553 South Main Street
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August 2025

MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. The BLM is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield of our Nation's resources within the framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife habitat, wilderness, air, and scenic quality, as well as scientific and cultural values.

DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE SILVER PEAK LITHIUM OPERATION EXPANSION PROJECT

Responsible Agency: U.S. Department of the Interior, Bureau of Land Management

Document Status: Draft (X) Final ( )

Abstract:

Albemarle U.S., Inc. (Albemarle) (the Applicant) submitted an initial Amended Plan of Operations (APO) for the Silver Peak Lithium Operation Expansion Project (Project) with the Bureau of Land Management (BLM) Tonopah Field Office (TFO) in June 2022 and submitted a revised APO in March 2023. Albemarle proposes to 1) reconcile existing disturbance that has not been formally authorized, and 2) further expand the lithium brine extraction operation at their facility. The existing unauthorized surface disturbances, known as reconciliation areas, include impoundments, a transfer pump station, piping infrastructure, and a conveyance trench across 168 acres of private land and 770 acres of BLM-administered lands. The proposed expansion involves constructing and operating a new strong brine complex with two transfer pump stations, related pipelines, two weak brine ponds, and future production well drilling on 375 acres of private land and 283 acres of BLM-administered land.

The Project is located approximately 200 miles northwest of Las Vegas in Goldfield, Nevada, in Esmeralda County. The BLM has prepared this Draft Environmental Impact Statement (EIS) with input from the public, cooperating agencies, stakeholders, and Native American Tribes to address the direct, indirect, and reasonably foreseeable future impacts of the Project. This Draft EIS evaluates the Proposed Action and the No Action Alternative. Major environmental and planning issues addressed include impacts on migratory birds and raptors, lands and realty, and water resources.

Review Period: Comments on the Draft EIS will be accepted for 30 calendar days following publication of the U.S. Environmental Protection Agency's Notice of Availability in the *Federal Register*. Comments can be submitted through the ePlanning website (https://eplanning.blm.gov/eplanning-ui/project/2035664/510) or through physical mail or hand delivery at the address provided below. All comments must be received or postmarked no later than the end of October 1, 2025.

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LIST OF ACRONYMS AND ABBREVIATIONS

AFY	acre-feet per year
Albemarle or Applicant	Albemarle U.S., Inc.
amsl	above mean sea level
AO	Authorized Officer
APE	Area of Potential Effects
APO	Amended Plan of Operations
APP	Avian Protection Plan
bgs	below ground surface
BLM	Bureau of Land Management
BMD	Battle Mountain District Office
BMP	best management practice
BMRR	Bureau of Mining Regulation and Reclamation
CAA	Clean Air Act
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
dB	decibels
dBA	A-weighted decibels
DOI	U.S. Department of the Interior
DPS	distinct population segment
E	east
EDM	EDM International, Inc.
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPM	environmental protection measure
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act of 1976
FONSI	Finding of No Significant Impact
GHG	greenhouse gas

H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HDPE	high-density polyethylene
HUC	Hydrologic Unit Code
IAMP	Integrated Avian Management Program
IM	Instruction Memorandum
kV	kilovolt
LSP	lime solids pond
LWC	Lands with Wilderness Characteristics
MOU	memorandum of understanding
MSHA	Mine Safety and Health Administration
N	north
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NBAPC	NDEP Bureau of Air Pollution Control
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSAAQS	Nevada State Ambient Air Quality Standards
O_3	ozone
OHV	off-highway vehicle
Pb	lead
PCRI	property of cultural and religious importance
PCS	petroleum-contaminated soil

PFYC	Potential Fossil Yield Classification
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
PoO	Plan of Operations
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RFFA	reasonably foreseeable future action
RFFEAA	Reasonably foreseeable future effects analysis area
RMP	Resource Management Plan
ROD	Record of Decision
S	south
SER	Supplemental Environmental Report
SHWMP	Solid and Hazardous Waste Management Plan
SIR	Supplemental Information Report
SO_2	sulfur dioxide
SOP	Standard operating procedure
SPLO	Silver Peak Lithium Operation
SQRU	Scenic Quality Rating Unit
SR	State Route
SRK	SRK Consulting, Inc.
SWPPP	Stormwater Pollution Prevention Plan
SWReGAP	Southwest Regional Gap Analysis Project
TCP	traditional cultural property
TDS	total dissolved solids
TFO	Tonopah Field Office
U.S.	U.S. Route
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UUD	unnecessary or undue degradation

VAA	visual, auditory, and atmospheric
VRM	Visual Resource Management
W	west
WOTUS	waters of the United States
WPCP	Water Pollution Control Permit

EXECUTIVE SUMMARY

Albemarle U.S., Inc. (Albemarle) is proposing to amend the Authorized Plan of Operations with the Bureau of Land Management (BLM) under the Mining Law of 1872 and the regulations found at 43 Code of Federal Regulations 3809 on private land and BLM-administered land, which would allow the Silver Peak Lithium Operation (SPLO) to reconcile existing activities and expand operations.

The SPLO is just east of the town of Silver Peak in Esmeralda County, Nevada. Mining has occurred in the area since the mid-1800s, and mining commenced at the SPLO by Albemarle's predecessor, Leprechaun Minerals, in 1965, pursuant to a federal minerals lease.

On June 9, 2022, Albemarle submitted an Amended Plan of Operations (APO) for the SPLO to the BLM Tonopah Field Office and the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulations and Reclamation. Through the APO, Albemarle seeks BLM approval of existing, unauthorized disturbance and expansion of the facility. The existing, unauthorized disturbance was completed between 2013 and 2014, prior to Albemarle taking over the operation.

The proposed APO would include the reconciliation of approximately 938 acres of existing but previously unauthorized disturbance, and an expansion of approximately 658 acres disturbance. These areas would increase the total authorized disturbance by 1,596 acres, for a total of 8,058 acres (See Tables 2-1, 2-2, and 2-3). The reconciliation disturbance consists of 168 acres of private land and 770 acres of BLM-administered land, and includes the following facilities:

- Impoundments (18 South (S) and 18 North (N))
- A transfer pump station and additional piping infrastructure (16S-18S)
- A 1.6-mile-long conveyance trench (13-9 West (W))

The expansion disturbance consists of 375 acres of private land and 283 acres of BLM-administered land, and would include the following facilities:

- Two transfer pump stations and related pipelines (1 Pond, 2W, 3W, 4W, 5W, 6W, and 7 Pond)
- Two weak brine ponds (12W and 13N)
- Future production well drilling

The proposed years of mine life and annual production of lithium would not be modified with this action.

Under the Proposed Action, Albemarle's APO authorization would create operations and maintenance efficiencies and flexibility in existing Albemarle lithium extraction operations with limited additional disturbance associated with the proposed reconciliation and expansion lands in the SPLO. The lithium brine reserves documented at the SPLO indicate the operations would continue for at least the next 30 years prior to disturbance reclamation and closure with or

without the Proposed Action. The APO would not impact or change the current operating conditions with respect to water consumption.

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CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

Albemarle U.S., Inc. (Albemarle or Applicant) owns and operates the Silver Peak Lithium Operation (SPLO), a lithium brine extraction facility located in central Esmeralda County, approximately 40 miles southwest of Tonopah, Nevada (Appendix A, Figure 1-1). The SPLO has been operating its lithium extraction operation since 1965. Since operations began, lithium has been recognized as a critical mineral due to the need for lithium-ion batteries (U.S. Geological Survey [USGS] 2021, 2022). The SPLO currently provides the only operational domestic production of lithium, making it an important contributor to meet U.S. lithium demand and the goals of Executive Order (EO) 14241, Immediate Measures to Increase American Mineral Production (March 20, 2025).

Most of the mine and its associated facilities are on lands owned by Albemarle; however, portions of the current mining operation and substantial areas adjacent to the mine are on Bureau of Land Management (BLM)-administered land (see Figure 1-1). The lithium mining operations began in Silver Peak with the Plan of Operations (PoO) originally approved in 1965 and has been amended several times since.

To operate on federal lands managed by BLM, the SPLO must have an approved mine PoO, including a reclamation plan, and must post a bond to provide financial assurance that it will complete reclamation at mine closure. The SPLO obtained its first PoO approval from BLM on March 2, 1982. As a federal action, BLM's approval required compliance with National Environmental Policy Act (NEPA). BLM issued a Finding of No Significant Impact (FONSI) and approved the first PoO. The SPLO PoO has been amended and approved by BLM with appropriate NEPA review a number of times since then. Every 3 years, the reclamation bond for the SPLO is also updated, after approval by the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) and BLM. The SPLO is current and in compliance with its reclamation reporting and financial assurance requirements.

On June 14, 2022, Albemarle submitted the Silver Peak Lithium Project (NVN-072542/ Reclamation Permit #0092) Amended Plan of Operations (APO) for the SPLO to the BLM Tonopah Field Office (TFO) and the BMRR. On July 27, 2022, BLM issued a Plan of Operations Amendment Completeness Determination. In March 2023, Albemarle submitted changes to the APO in accordance with BLM Surface Management Regulations 43 Code of Federal Regulations (CFR) 3809, as amended, and Nevada reclamation regulations at Nevada Administrative Code (NAC) 519A.

In the APO approval request, further described in this Environmental Impact Statement (EIS) as the Proposed Action, Albemarle proposes to 1) reconcile existing disturbance that has not been formally authorized, and 2) further expand the lithium brine extraction operation at their facility. The Proposed Action reconciles approximately 938 acres of disturbance, 168 acres on private land and 770 acres on public land administered by the BLM. The Proposed Action expansion would add 658 acres of disturbance, 375 acres on private land and 283 acres on public land administered by the BLM. The Proposed Action would allow for operational efficiencies and

flexibility of the existing operations. The reserves documented at the SPLO indicate the operations would continue for 30 years with or without this Project.

The BLM determined that the above requests (hereafter referred to as the Project) are subject to a NEPA EIS level of analysis. The preparation of this EIS is intended to assist the BLM in the decision-making process through the identification, analysis, and public disclosure of potential impacts of the Project on the human environment, including environmental, social, and economic impacts. Aside from BLM-administered lands, there are no additional federally or state-managed lands that would be disturbed by future mining operations as proposed in the 2022 APO (Albemarle 2022). Additionally, the BLM is not aware of any other proposed activities in the Project Area that would be considered a connected action to the proposed APO under NEPA. An analysis of likely or potential direct, indirect, and reasonably foreseeable future impacts to area resources and human uses resulting from BLM approval of the proposed reconciliation and expansion of mine operations is provided in Chapter 3, Affected Environment and Environmental Consequences. The Proposed Action and No Action Alternative are consistent with the BLM's TFO Resource Management Plan (RMP) Record of Decision (ROD), dated October 1997 (BLM 1997).

The Notice of Intent (NOI) for the Silver Peak APO was published on February 28, 2025, to the Federal Register. At the time of the NOI publication, the authorized BLM regulations and procedures for implementing NEPA included the following:

- 43 CFR Part 46 (version prior to June 30, 2025);
- Part 516 of the Department Manual (version prior to June 30, 2025);
- Executive Order 14154[1] (Unleashing American Energy (January 20, 2025); and
- Presidential Memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (January 21, 2025)

In accordance with these regulations and procedures, the evaluation of the social cost of greenhouse gases and environmental justice is not legally required or necessary to make a reasoned decision under NEPA; therefore, these analyses are not included in the document. Additionally, an interim final rule was published by the Department of Interior (DOI) on July 3, 2025, regarding updated and partially rescinded NEPA procedures. Due to the advanced nature of this Project at the time of the interim final rule, and the publication of the NOI in February 2025, this document follows and references the regulations and procedures outlined in 43 CFR Part 46 and Part 516 of the Departmental Manual as they were written prior to June 30, 2025.

[1] EO 14154, Unleashing American Energy (January 20, 2025), and a Presidential Memorandum, Ending Illegal Discrimination and Restoring Merit-Based Opportunity (January 21, 2025), require the Department to strictly adhere to the NEPA, 42 United States Code (USC) 4321 et seq. Further, such Order and Memorandum repeal EOs 12898 (February 11, 1994) and 14096 (April 21, 2023). Because EOs 12898 and 14096 have been repealed, complying with such Orders is a legal impossibility. The BLM verifies that it has complied with the requirements of NEPA, including the Department's regulations and procedures implementing NEPA at 43 CFR Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 Order and Memorandum. The BLM has also voluntarily considered the Council on Environmental Quality's rescinded regulations implementing NEPA, previously found at 40 CFR Parts 1500–1508, as guidance to the extent appropriate and consistent with the requirements of NEPA and EO 14154

1.1.1 Project Location

The Project is located approximately 40 miles southwest of Tonopah, near the town of Silver Peak, in Esmeralda County, Nevada. The Project occupies private land owned by Albemarle and unpatented mining claims on BLM-administered land (Project Area). The BLM-administered lands under this proposed Project are listed in Table 1-1. The Project Area is approximately 6,462 acres, composed of 5,914 acres of private land owned by Albemarle and 548 acres of public land administered by the BLM (Appendix A, Figure 1-2). The Proposed Action reconciliation and expansion of the SPLO would add another 543 acres of private land owned by Albemarle and 1,053 acres of public land administered by the BLM.

The Project Area is accessed by traveling from Tonopah approximately 34 miles west on U.S. Route (U.S.) 95/U.S. 6 to the junction of State Route (SR) 265/Nivloc Road. From that junction, the Project Area is accessed by proceeding south on SR 265 and east through the town of Silver Peak. The Project Area is within the Mount Diablo Baseline and Meridian in Esmeralda County, Nevada, as described in Table 1-1.

Table 1-1. Project Area Legal Description

Township	Range	Section
1 South (S)	40 East (E)	26, 27, 28
2 S	39 E	1, 12, 13, 21, 22, 23, 24, 25
2 S	40 E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 16, 17,18, 19, 20, 29, 30, 31, 32

1.1.1.1 Project History and Background

The Project is within the Silver Peak Mining District, just east of the Silver Peak Range, in Esmeralda County. The original town of Silver Peak was founded in 1847. The Silver Peak Mining District was founded in 1863 and is one of the oldest mining districts in Nevada. The first mineral discovered in the district was silver; however, the region was also known to produce substantial quantities of gold and other minerals. The town of Silver Peak was officially established in 1864. After a century of fluctuating mineral production, the town was destroyed by fire in 1948 and remained inactive until Leprechaun Minerals, Albemarle's predecessor, began lithium brine extraction in 1965 under a federal minerals lease (Esmeralda County 2023). Today, the prominent industry in Silver Peak is the mining of lithium, precious metals, and other industrial minerals. Other local industries include solar energy development, transmission, and geophysical exploration.

1.1.1.2 History of the Silver Peak Lithium Operation

Albemarle's predecessors mined lithium-bearing brine from beneath the Clayton Valley Playa starting in 1965. Initially, the lithium was mined under a mineral lease. Under the lease, the lease holders were required to pay royalties on the sodium and potassium minerals that were collected as byproducts of the lithium evaporation process.

In 1974, Chemetall Foote Minerals filed placer mining claims for lithium that covered the lithium mining area, asserting that the only profitable product being produced was lithium and

the mine byproducts, sodium and potassium, were non-economic byproducts. In 1981, the Federal Court rendered a decision in Foote Minerals Co. v. U.S., 228 CT. CL. 230, finding lithium in brine to be "locatable," not "leasable." The case addressed the SPLO and involved a predecessor in interest of Albemarle. As a result, if lithium is the "primary valuable mineral sought," as is the case at the Project, such operations are subject to the General Mining Law of 1872 and not the federal mineral leasing laws. Following this decision, Cyprus Foote Mineral Company received a U.S. Mineral Patent on November 25, 1988 (Patent No. 27-89-0018) for 10,793 acres. Since that decision, Cyprus, and successors of the operation, including Albemarle, have continuously operated the Project under this patent.

By 1991, a mutual agreement, "The Settlement Agreement," was made with the United States and the Nevada State Office of the BLM. This agreement concluded that Cyprus Foote Mineral Company's rights to mine lithium did not include the right to the leasable minerals described in the Mineral Leasing Act of 1920, 30 United States Code (USC) 181 et seq., as amended, including but not limited to sodium and potassium, or the resources described in the Geothermal Steam Act of 1970, 30 USC 1001-1025, as amended. These minerals have since been stockpiled within the Project Area for use by the United States and the BLM Nevada State Office at a future date following completion of lithium mining operations.

In 1994, a proposal was submitted to construct a lithium hydroxide monohydrate production facility. This expansion was completed in April 1996. Although the Project no longer produces lithium hydroxide monohydrate, the facility and associated processing components remain in place, as portions of the facility are still utilized for the production of lithium hydroxide anhydrous. The head feed for this process is sent to the SPLO from Albemarle's Kings Mountain, North Carolina, processing plant.

The SPLO now consists of numerous deep brine production wells, solar evaporation ponds, lime solids ponds (LSPs), process plants, and stockpiled salt piles. The lithium-saturated groundwater or subsurface brines of the Clayton Valley Playa are the "ore" for the Project. This lithium-bearing brine is pumped from beneath the playa surface by a series of production wells, which discharge into solar evaporation ponds that allow for the lithium to concentrate over time. Once the lithium reaches an adequate concentration, the brine is pumped to the processing facility to be converted to lithium carbonate. The final product is sent to customers around the world.

1.2 PURPOSE OF AND NEED FOR ACTION

The purpose of the federal action is to respond to the Albemarle U.S., Inc., Silver Peak Lithium Project (NVN-072542/Reclamation Permit #0092) APO as the Proposed Action to reconcile 770 acres of unauthorized disturbance on BLM-administered lands and to expand their lithium brine extraction operation and increase operational efficiencies with an additional 283 acres of BLM public land in Esmeralda County, Nevada. This will also include reconciliation of 168 acres of private land existing disturbance and 375 acres of proposed new disturbance. The need for federal action is established by the BLM's responsibilities under the surface management regulations at 43 CFR 3809 and under Section 302(b) of the Federal Land Policy and Management Act of 1976, as amended (FLPMA), to respond to an applicant's request for a surface use authorization under the APO, and to take any action necessary to prevent unnecessary or undue degradation (UUD) of public lands as a result of the actions taken to

prospect, explore, assess, develop, and process mineral resources that are subject to disposal under the mining laws on public lands.

The BLM is responsible for administering mineral rights access on certain federal land as authorized by the General Mining Law of 1872. Under the law, qualified prospectors are entitled to reasonable access to mineral deposits on public land. In order to use public lands managed by the BLM for locatable mineral exploration and development, persons must comply with the FLPMA and the BLM's 3800 Surface Management Regulations, State of Nevada laws and regulations applicable to mine reclamation, and other applicable statutes and regulations.

1.3 APPLICANT OBJECTIVES

The Applicant's objective is to reconcile 770 acres of previous disturbance by a predecessor operator on BLM-administered land that is not formally authorized and to expand the Project's lithium brine extraction operation to an additional 283 acres on BLM-administered land. The expansion would allow the SPLO to have greater operational efficiencies and flexibility. The expansion areas include a new strong brine complex, two weak brine ponds, and future production well drilling, and would enable the SPLO to maintain or increase its lithium production efficiencies. Through the expansion, Albemarle's objective is to have greater flexibility resulting in an increase in operational efficiencies, including the management of evaporation ponds and salt removal and stockpiling.

1.4 DECISIONS TO BE MADE

The BLM's TFO Manager would decide under 43 CFR 3809.411 whether to approve the Project as described within the APO as submitted, approve the APO subject to changes or conditions necessary to meet the performance standards of 43 CFR 3809, or disapprove, or withhold approval of, the proposed APO. This decision would be made through consideration of the results of this EIS analysis conducted under NEPA and other applicable federal, state, or local requirements.

1.5 LAND USE PLAN CONFORMANCE

The Proposed Action is consistent with the BLM's Approved TFO RMP ROD, dated October 1997 (BLM 1997). The RMP guides land management activities in the Project Area ecosystems. The RMP provides for protecting fragile and unique resources while not overly restricting the potential for the production of commodities (e.g., mining) from other resources. The RMP identifies 17 management issues and, for each of these issues, outlines the objectives, short-term and long-term management actions, standard operating procedures (SOPs), and implementation measures. While each of these issues has been identified through public involvement as important for the RMP planning area, they do not all apply to the Project Area. The main management issue that specifically applies to the Proposed Action is that mining is identified as one of the primary RMP land use activities. Therefore, the Proposed Action conforms to the RMP, which allows and supports mining activities.

1.6 RELATIONSHIPS TO OTHER POLICIES, PLANS, AND PROGRAMS

The BLM considers a number of laws, policies, and orders when analyzing the proposed actions described in the 2022 APO, including the General Mining Law of 1872, Section 302 of FLPMA, and BLM surface management regulations at 43 CFR 3809, and NEPA. In accordance with 43 CFR 46.235, the final alternatives, scope of analysis, and issues to be addressed in the EIS are further informed by and incorporate the results of the public scoping process.

1.6.1 General Mining Law of 1872 and BLM Oversight

Locatable mineral activities conducted on federal land are authorized under the General Mining Law of 1872 (as amended) (30 USC 21–42). The BLM's regulations regarding surface management on federal land are set forth in 43 CFR 3809, while the regulations regarding use and occupancy under the Mining Laws are found in 43 CFR 3715. Mining operations on BLM-managed land must be conducted in accordance with an approved plan of operations.

When a proposed plan of operations or its modification (amendment) is complete and deemed ready for environmental analysis, the BLM initiates a review under NEPA. Numerous measures to reduce impacts on the surrounding environment are typically described in the proposed plan; specific stipulations and/or mitigating measures may be developed during the NEPA process, typically when the NEPA analysis is nearing completion and a preferred alternative has been identified. Once the BLM and the operator can be reasonably certain of how future mining activities, if approved, would be conducted, any new voluntary applicant committed environmental protection measures (EPMs) to the operator's proposed plan are then included as conditions of approval in the BLM decision document.

1.6.2 Esmeralda County Master Plan and Public Lands Policy Plan

The Proposed Action conforms with the Esmeralda County Master Plan (Esmeralda County 2011) and the Esmeralda County Public Lands Policy Plan (Esmeralda County 2013).
The Esmeralda County Master Plan was most recently updated in 2011 with policies and objectives aimed at directing future decisions regarding the development and use of public and private land in the county. This includes keeping the county open to prospecting and mining in order to maintain mining and private industry as basic economic activities (Esmeralda County 2011).

Esmeralda County's Public Lands Policy Plan was first developed in 1984 and was most recently updated in 2013. The plan outlines the County's vision and policies for public lands and how the County should be involved in decisions made on public lands within the County's boundaries. These policies include "encouraging the careful development and production of Esmeralda County's metal, mineral, and geothermal resources while recognizing the need to protect the environment and ecologic resources" (Esmeralda County 2013).

1.6.3 Project Permits and Approvals

In addition to NEPA compliance, the Project also requires authorizing actions from other federal, state, and local agencies with jurisdiction over certain aspects of the Project. Table 1-2 lists the required permits or approvals that Albemarle has obtained from the responsible regulatory agencies as part of their current operations. Albemarle would be responsible for amending existing permits, and applying for and acquiring additional permits, as needed.

Table 1-2. Required Permits and Regulatory Authority

Permits and Authorizations	Regulatory Agency
Plan of Operations/Record of Decision	BLM
Migratory Bird Special Purpose Utility Permit, Rehabilitation Permit	USFWS, Migratory Bird Permit Office
Class II Air Quality Operating Permit	Nevada Department of Conservation and Natural Resources, NDEP, Bureau of Air Pollution Control
Water Pollution Control Permit	Nevada Department of Conservation and Natural Resources, NDEP, BMRR
Mining Reclamation Permit	Nevada Department of Conservation and Natural Resources, NDEP, BMRR
Industrial Artificial Pond Permit, Wildlife Rehabilitation Permit	NDOW
Class III Landfill Waiver	Nevada Department of Conservation and Natural Resources, NDEP, Bureau of Solid Waste
Hazardous Materials Storage Permit	State of Nevada, Fire Marshall Division
Dam Safety Permit	Nevada Department of Conservation and Natural Resources, Nevada Division of Water Resources (NDWR)
On-site Septic Disposal Systems Permit	Nevada Department of Conservation and Natural Resources, NDEP, Bureau of Solid Waste
Liquefied Petroleum Gas Class 5 License	Nevada Board of Regulation of Liquefied Petroleum Gas

1.7 ISSUES AND RELATED RESOURCE TOPICS IDENTIFIED THROUGH SCOPING

Scoping is one of the first steps and an integral part of the NEPA process as it provides an opportunity to engage state, local, and Tribal governments and the public in the early identification of concerns, potential impacts, relevant effects of past actions and possible alternative actions (43 CFR 46.235). The process involves both internal and external scoping. The BLM conducts internal scoping to determine preliminary issues and concerns. External scoping provides an opportunity for members of the public to learn about the proposed project and the agency-identified preliminary issues and to expand on those issues with any concerns or comments they may have. Specific information regarding public scoping dates is included in Section 4.1.

In total, 15 submissions were received via emails, the BLM NEPA Register, and letters during the public scoping period from February 28 to April 1, 2025. The comments received consisted

of 94 public comments. Of the 15 submittals, seven were submitted by individuals, four were submitted on behalf of nongovernmental organizations, three were submitted by federal agencies, and one was submitted by a Tribe. The final scoping report for the Project is available on the BLM National NEPA Register (BLM 2025o).

An issue is a point of disagreement, debate, or dispute with a Proposed Action, based on some anticipated environmental effect. While many issues are identified during the scoping process, not all identified issues warrant analysis in the EIS. Issues identified in scoping warrant inclusion in the EIS if analysis of the issue is necessary to make a reasoned choice among the alternatives; if the issue is associated with a direct, indirect, reasonably foreseeable future impact; or if analysis of the issue is necessary to determine the significance of the impacts. Resources that are not being carried forward for analysis are included in discussed in Section 1.8.1. These issues are analyzed, but not at a level of detail required to make a reasoned choice between alternatives or to determine significance. The resources that are being carried forward for detailed analysis are analyzed in detail in Chapter 3.

1.7.1 Resources Considered but Dismissed from Detailed Analysis

Resource topics and issues considered but dismissed from detailed analysis are those issues that are not directly related to the decisions to be made regarding the proposed APO, as well as issues that are not relevant to the purpose and need for the Proposed Action and action alternatives. Table 1-3 provides a list of the resource issues identified by the BLM where the impacts of the Proposed Action and the No Action Alternative can be disclosed and rationalized without detailed analysis.

Table 1-3. Issues/Resources Dismissed from Detailed Analysis

Resource Topic	Rationale for Dismissal from Detailed Analysis
Areas of Critical Environmental Concern	Not present. There are no Areas of Critical Environmental Concern within 5 miles of the Project Area or within the jurisdiction of the Battle Mountain District (BMD) Office (BLM 2024a).
Prime Farmland	Not present. The Project is not located on prime farmland (Natural Resources Conservation Service [NRCS] 2024).
Floodplains	Not present. The Project operations occur at the lowest point in the Clayton Valley Hydrologic Basin where no drainage nor floodplains exist.
National Historic Trails	No National Historic Trails are within 5 miles of the Project (National Parks Service 2025).
Wild and Scenic Rivers	No known Wild and Scenic Rivers are within 5 miles of the Project (National Wild and Scenic Rivers System 2024).
Forestry	No Forest lands are present within 5 miles of the Project Area.
Rangeland Management	The project is adjacent to two grazing allotments; however, impacts would be negligible because the Project is an existing facility in a location with no available forage (see Section 3.15 on Vegetation).
Human Health and Safety	Human Health and Safety issues associated with the Proposed Action are anticipated to be the same as those associated with the existing facility. The Proposed Action would generate fugitive dust during construction, but this would be minimized with the implementation Applicant-committed EPMs AQ-1, AQ-2, and AQ-3.

Resource Topic	Rationale for Dismissal from Detailed Analysis
Federally Listed Species	There are three federally listed or proposed federally listed species with potential to occur at the Project: the Bi-State distinct population segment (DPS) greater sage-grouse (*Centrocercus urophasianus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and monarch butterfly (*Danaus plexippus*) (USFWS 2025b). There are no known observations of southwestern willow flycatcher at the Project Area, and it is not expected the Project would impact the species. The Bi-DPS of Greater sage-grouse and monarch butterfly are discussed in Section 3.8. Section 3.8 also includes a discussion of the Fish Lake Valley tui chub, which was recently proposed for listing as an endangered species.
General Wildlife	Desktop analysis and field observations indicate that the playa system supports a low diversity of wildlife. Small mammals and reptiles occur in low densities, and it is not anticipated that mule deer (*Odocoileus hemionus*) or bighorn sheep (*Ovis canadensis*) would occur within the playa. It is not anticipated that the Project would have considerable impacts to the habitats of the species that could occur within the playa setting (SWCA 2020a).
Wilderness/Wilderness Study Area/Lands with Wilderness Characteristics	Wilderness or Wilderness Study Areas are not present within the Project; however, there are Lands with Wilderness Characteristics (LWC) within 5 miles of the Project Area. Specifically, LWCs are managed for multiple uses and would experience negligible impact due to the minimal change to the existing landscape due to the Proposed Action. Therefore, this element is not further analyzed in this EIS.
Transportation and Access	The Proposed Action includes the expansion of the existing SPLO, which has been in operation since 1965. These resources are dismissed from detailed analysis because the APO does not include changes to transportation and access. Additionally, existing access within or near the Analysis Area would not be blocked or affected.
Geology and Minerals	The Proposed Action includes the expansion of the existing SPLO, which has been in operation since 1965. These resources are dismissed from detailed analysis because the APO does not impact the existing conditions related to geology and minerals.
Recreation	Recreation does not occur within the PoO boundary and will, therefore, not be impacted by the Proposed Action.
Land Use Authorization	No land use authorizations exist within or are required beyond the APO boundary.
Wild Horses and Burros	There are no Herd Management Areas within the PoO boundary, and wild horses and burros are unlikely to be present on the playa (BLM 2024a).

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

Albemarle proposes changes to the SPLO (NVN-07542/ Reclamation Permit #0092) PoO. The proposed PoO changes are prepared by Albemarle in compliance with the BLM regulations (43 CFR 3809) and Nevada regulations governing the reclamation of mined lands (NAC 519A.010-035). The Project is located in Esmeralda County, Nevada, on both private land controlled by Albemarle and unpatented mining claims on public land administered by the BLM.

In June 2022, Albemarle submitted a request to the Battle Mountain District (BMD) to authorize the SPLO APO to 1) reconcile existing disturbance that has not been authorized and 2) further expand the lithium brine extraction operation at their facility in Esmeralda County (Tables 2-1, 2-2, and 2-3; Appendix A, Figure 1-2). Albemarle's APO also includes reclamation of the land disturbances involving reconciliation areas, as well as lands for expansion. The Proposed Action in this EIS analyzes the BLM response to the requested Albemarle APO authorization, as is presented in Section 2.2.2 below. The Proposed Action would allow for operational efficiencies and expanded flexibility in existing operations including reclamation.

This chapter presents the alternatives considered and analyzed in this EIS addressing the Proposed Action as described in Section 2.2.2. To meet the purpose and need for the federal action and the Applicant objectives, as described in Section 1.2, all alternatives must provide for development of valid existing mining claims in the Albemarle PoO area while ensuring that there is no UUD of other resources managed by the BLM.

In addition to the Proposed Action, the BLM is also considering the No Action Alternative, which is described in Section 2.2.1. Furthermore, the chapter also presents alternatives considered but eliminated from detailed analysis as described in Section 2.3.

2.2 ALTERNATIVES ANALYZED IN THE EIS

2.2.1 No Action Alternative

Through FLPMA, the U.S. Congress specifically empowers the Secretary of the Interior—and extends by delegation of authority to the BMD Manager—the authority to deny approval of any proposed mining activity planned for locatable minerals on BLM-administered lands if it is determined the proposed activity would not comply with BLM 43 CFR 3809 surface management regulations and the FLPMA mandate to prevent UUD (43 USC 1732(b); 43 CFR 3809.5). Therefore, for the BLM to select the No Action Alternative, the BLM would have to demonstrate that UUD would result from approval of the APO as submitted. The No Action Alternative provides a useful baseline for comparison of environmental consequences of not meeting the need for the action. The baseline comparison helps to better inform the BLM decision with an estimate of the impacts of denying the proposed APO.

Under the No Action Alternative, the BLM would not accept the 2022 APO, and the activities described in the Proposed Action would not occur. The proposed expansion areas would not be

constructed, and the reconciliation areas would remain in place but would be subject to BLM action.

2.2.2 Proposed Action

The Proposed Action in this EIS is the BLM providing the response to Albemarle's request to the BMD to authorize the SPLO (NVN-072542)/Reclamation Permit (#0092) APO. The BLM response would decide whether to approve the Project as described in the APO submitted, approve the APO subject to changes or conditions necessary to meet the performance standards, or disapprove, or withhold approval of, the proposed APO (No Action Alternative) under the Mining Act of 1872 and to meet the performance standards of the regulations at 43 CFR 3809. The changes proposed by Albemarle in the APO are also submitted for compliance with BLM regulations for surface management and Nevada regulations governing the reclamation of mined lands (NAC 519A.010-035), as required. In consideration of reclamation compliance, a reclamation cost estimate update for the APO, if approved, would be necessary for the BLM bonding requirements.

Albemarle uses the existing 56-kilovolt (kV) transmission line and substation as the power supply for the facilities. One backup fire water generator is available on-site for emergency operations. Vehicles are generally powered by gasoline or diesel fuel, but electric vehicles are also in use at the facility.

The Proposed Action analysis would consist of the reconciliation of existing, but currently unauthorized, disturbance (reconciliation areas) and the disturbance on expansion of additional BLM public lands at the SPLO in Esmeralda County. The planned reclamation of these lands in the APO is also included in the EIS analysis. The existing unauthorized disturbance that is proposed for reconciliation areas includes: two pond impoundments (18S and 18N); a transfer pump station and additional piping infrastructure (16S-18S); a 1.6-mile-long conveyance trench (13-9W); and a salt pile (9N). The facilities that would be included in the proposed expansion are a new strong brine complex with two transfer pump stations and related pipelines (1 Pond, 2W, 3W, 4W, 5W, 6W, and 7 Pond), two weak brine ponds (12W and 13N), and future production well drilling (Appendix A, Figure 1-2). See Table 2-1, Table 2-2, and Table 2-3 for the disturbance acreage associated with the SPLO facility and the Proposed Action.

Table 2-1. Total Disturbance Summary

Description	Private (acres)	Public (acres)	Total (acres)
Current Authorized Disturbance	5,914	548	6,462
Proposed Reconciliation Disturbance	168	770	938
Proposed Expansion	375	283	658
Total	**6,457**	**1,601**	**8,058**

Table 2-2. Reconciliation Disturbance Summary

Description	Private (acres)	Public (acres)	Total (acres)
18N Pond	128	278	406

Description	Private (acres)	Public (acres)	Total (acres)
18S Pond	1	492	493
16S Pump System	5	0	5
Lined Trench	7*	0	7*
9N Salt Pile	34	0	34
Total	**168**	**770**	**938**

* Not included in the total, as this disturbance is accounted for within the acreage of decommissioned ponds 12N and 12S.

Table 2-3. Proposed Expansion Disturbance Summary

Description	Private (acres)	Public (acres)	Total (acres)
1 Pond	1.6	11.8	13.4
2 West	0	20.2	20.2
3 West	0	20.2	20.2
4 West	0	20.2	20.2
5 West	0	20.2	20.2
6 West	0	20.2	20.2
7 Pond	1.6	11.8	13.4
12 West	134.1	135.3	269.4
13 North	237.4	23.6	261.0
Well drilling*	0	0	0
Total	**374.7**	**283.5**	**658.2**

* Minor surface disturbance would be associated with well drilling; however, quantity and locations of potential wells has yet to be determined. Therefore, no acre value is currently associated with the wells.

Under the Proposed Action, Albemarle would continue their existing SPLO, including the operation of the currently unauthorized reconciliation areas, and would expand their operations areas for lithium brine evaporation with nine additional ponds consisting of two weak brine ponds and a complex of seven, smaller strong brine ponds. The addition of these ponds would increase the efficiency of the strong brine system and enhance lithium recoveries through operational flexibility. Minor surface disturbance through the drilling of new wells would continue. As active wells fail, new wells would be drilled to maintain or increase brine production levels.

Construction would commence based upon the BLM response to the proposed APO, with a currently anticipated mine life of at least another 30 years. Site closure and reclamation activities are expected to take approximately 5 years to complete. Post-closure reclamation monitoring is estimated to continue for an additional 5 years. The Proposed Action would create operational efficiencies and flexibilities but would not change the projected mine life.

2.2.2.1 Proposed Disturbance Reconciliation Areas

The disturbance reconciliation areas include SPLO process components that have been constructed but are not included in the currently authorized PoO. The reconciliation areas have

become operational over the last decade and Albemarle proposes that these areas be formally authorized by the BLM. The reconciliation areas component described below include 18S Pond, 18N Pond, 16S Pumping System, a lined trench from ponds 13-9 W, and an additional salt pile near 9N Pond containing BLM-owned leasable materials.

Ponds 18S (493 acres) and 18N (406 acres) were constructed by a predecessor company, Rockwood Lithium, between 2013 and 2014 for use as solar evaporation ponds to concentrate the well brine. The surface of the playa was sloped to accommodate the necessary flow from one pond to the next. Once the surface contour was completed, the dikes were constructed to a height of 7 feet. The top of the dike crest was built at a width of 18 feet to accommodate vehicle and equipment traffic. The bottom of the dike has a width of 46 feet. Ponds 18S and 18N are unlined; however, an impervious clay core was installed in the dikes of the ponds to minimize any seepage, and the embankments were lined with riprap to minimize dike erosion.

To convey brine to ponds 18S and 18N, a transfer pump station was installed in 16S Pond by Rockwood Lithium. This system consists of a turbine pump and motor, and a 24-inch pipeline that runs 1.17 miles along the embankment of the surrounding ponds and utilizes 5 acres located entirely on private land. Albemarle also installed a 1.6-mile-long and 35-foot-wide high-density polyethylene (HDPE)-lined trench utilizing 7 acres from Pond 13 to Pond 9 W. This conveyance was necessary due to the brine composition and was constructed within decommissioned ponds 12N and 12S located entirely on private land.

Albemarle is obligated to stockpile salts that fall under the Leasable Minerals Act, mainly potassium and sodium. Due to the distance from the existing salt piles (45, 10, R3), a fourth pile was formed near the 9 N Pond and is added to, as needed, from ponds in proximity. The total disturbance proposed for the 9 N salt pile is 34 acres, and it is not expected the 9 N salt pile would exceed 34 acres over the lifetime of its use; however, if there comes a point when this acreage needs to be increased, an acreage adjustment would be included in a future proposed PoO amendment and reclamation cost estimate update for the BLM's approval.

2.2.2.2 Proposed Expansion

The proposed expansion described in the APO would include a new strong brine complex, two weak brine ponds, and future well drilling.

STRONG BRINE COMPLEX

The current strong brine complex at the SPLO consists of nine evaporation ponds ranging from 11 to 40 acres each. These ponds impound brine following the liming process. To increase the efficiency of the strong brine complex and enhance lithium recoveries, the proposed new strong brine complex would include the construction of a series of seven new ponds totaling 126 acres, which would be lined with HDPE. Some of the current strong brine ponds would remain in the flow system. Once the brine enters the new complex, it would flow through the series of seven ponds, continuously concentrating lithium and precipitating leasable minerals. The brine in the final pond of the new strong brine complex would be pumped via a transfer pump and 8-inch pipeline to the existing final reservoir pond (R3). Over time, the leasable minerals that precipitate within the new complex would need to be removed and the SPLO's current method of salt stockpiling would be utilized.

WEAK BRINE PONDS

In addition to the seven ponds discussed in the strong brine complex, two weak brine ponds, 12 W and 13 N, would be constructed covering 269 acres (134 acres on private land and 135 acres on BLM land) and 261 acres (237 acres on private land and 24 acres on BLM land), respectively. These ponds, along with the other currently authorized active weak brine ponds, would act as early-stage solar evaporation ponds until the brine reaches adequate concentrations to begin removing magnesium through the liming process. By increasing the surface area of the weak brine system, the Project would have more available natural treatment surface area via solar evaporation and, therefore, higher evaporation to accommodate future production rates and increase operational flexibility.

FUTURE WELL DRILLING

As part of the APO, Albemarle would continue minor surface disturbance through the drilling of new wells. As active brine production wells fail, it would be necessary to replace or drill new wells to maintain production levels. Failed wells would either be converted to monitoring wells, subject to applicable permitting, or properly plugged and abandoned. Concurrent reclamation would also be conducted, if practical. See Section 2.2.2.7 for more information on reclamation. The surface disturbance associated with additional wells would be the area of the well pad, approximately 150 × 200 feet (0.69 acre); however, exact locations of the wells have not yet been determined. The well pads would be built using material from various borrow pits on Albemarle's property.

Once a pad is completed, the construction of the well would follow the regulations outlined in NAC 534, which provides details on construction, compliance, and prevention of contamination, and suspension of drilling activities.

2.2.2.3 Power Supply

Albemarle uses the existing 56-kV transmission line and existing substation to power the facilities. One backup fire water generator is available on-site for emergency operations. Vehicles are generally powered by gasoline or diesel fuel, but electric vehicles are also in use at the facility.

2.2.2.4 Stormwater Diversion and Management

The NDEP has exempted the Project from the Stormwater Pollution Prevention Plan (SWPPP) requirement since any stormwater runoff from the facility would discharge to a dry playa in a closed hydrological basin (NDEP 1992). There are no federal jurisdictional waters within the Project Area.

2.2.2.5 Water Rights and Water Consumption

Albemarle's predecessors acquired water rights for 20,000 acre-feet of brine annually; this represents the perennial yield of the Clayton Valley Hydrographic Basin (Nevada Division of Water Resources [NDWR] 2025). All of Albemarle's water rights were granted and are administered by the Nevada State Engineer, and Albemarle's permitted and certificated rights

remain in good standing with the State Engineer. Albemarle continues to work on expanding brine production through rehabilitating existing wells and drilling new production wells to use the full permitted 20,000 acre-feet annually. The Proposed Action would not impact or change the current operating condition with respect to water.

2.2.2.6 Work Force

The SPLO operates 24 hours per day, 365 days per year. No temporary or interim closures of the facility are planned. The workforce that lives locally in the town of Silver Peak, Nevada, commute daily to site. Other workers that live in neighboring towns of Dyer, Goldfield, and Tonopah commute up to 120 miles daily to the site. The rest of the workforce travels 4 or more hours away to the site and stays in on-site housing during their assigned workdays.

2.2.2.7 Proposed Reclamation

Reclamation of all disturbed areas would be completed in accordance with BLM and NDEP regulations. The purpose of the BLM regulations at 43 CFR 3809, Surface Management, is to prevent UUD of public land by operations authorized by the mining laws. Anyone intending to develop mineral resources on public land must prevent UUD of the land and reclaim disturbed areas. This 3809 Plan of Operations regulation establishes procedures and standards to ensure that operators and mining claimants meet this responsibility and provide for the maximum possible coordination with appropriate state agencies to avoid duplication and to ensure that operators prevent UUD of public land by operations authorized by the mining laws. The State of Nevada requires that a reclamation plan be developed for any new mining projects and for expansions of existing operations (NAC 519A).

The reclamation measures to be utilized by Albemarle for the Project are described in the following sections. The intent is to reclaim areas within the Project Area to a beneficial post-mining land use, prevent UUD of the environment, and reclaim disturbed areas to ensure visual and functional compatibility with surrounding areas. The proposed post-reclamation land use is intended to allow for continued use of the Project Area for livestock grazing, wildlife, recreational use, and mineral exploration.

Final reclamation of the Project Area would occur at the end of the Project life, although concurrent reclamation would be conducted during the life of the operation, when feasible. Reclamation would begin within the Project Area when the surface disturbance has been deemed inactive and would no longer be used. Revegetation is not necessary on disturbed areas of the playa surface because the playa surface does not support vegetation. In areas of non-playa disturbance, natural revegetation would be supported. Reclamation activities would be coordinated with the BLM and the NDEP BMRR as necessary.

Mine operations (including processing) are expected to operate 24 hours per day, 365 days per year. No temporary or interim closures of the facility are planned; however, it is possible that mining and process facilities may have to be temporarily closed due to mechanical or technical difficulties, unfavorable economic conditions, litigation, or other unforeseen events. The Interim and Seasonal Closure Management Plan, included as Appendix J of the June 2022 APO (Albemarle 2022), provides details on measures that Albemarle would implement, should a temporary closure be required.

FINAL GRADIENT SLOPE STABILITY

The SPLO has not constructed any large topographical features, apart from the borrow pits and the stockpiled salts. The borrow pits would be left at their slope of 2H:1V. The stockpiled salts have been accumulated in four different areas by the process of excavating salts that have precipitated in adjacent ponds. During the harvesting process, the salts added to the pile are benched and graded to provide a stable slope. Exposure to weather cements each salt pile into a very hard stable mass that would not require further stabilization at the time of mine closure.

The solar evaporation pond embankments would also not be removed; neither the ponds nor the salt that has precipitated in the ponds pose a hazard to public safety. At the time of closure, the salt that has precipitated within a pond would remain in place as it too becomes concrete-like. The embankments, or dikes, surrounding each pond would be stabilized according to the applicable provisions of the NDWR, Department of Conservation and Natural Resources, laws and regulations pertaining to dams (Appendix B, Applicant-committed EPM DAM-1). This would consist of breaching select dikes to prevent retention or accumulation of water during storm events. Potential physical hazards, such as pump stations and associated piping infrastructure would be removed from the ponds.

There have been cases of ground surface subsidence in the Project Area. In areas where minor subsidence has occurred, material would be added to resemble the original contour of the surrounding area. Where larger subsidence has occurred, a fence would be erected at a safe distance around the perimeter of the subsided area, along with appropriate signage, to protect humans and wildlife from getting stuck within the subsidence (Albemarle 2022; p 33).

RECLAMATION OF MATERIAL BORROW AREAS

One of the sources of rock material mined on the property occurs in portions of Sections 13 and 14, Township 2 South, Range 39 East on BLM-administered land. Clay and rock sale contracts have been granted by the BLM TFO for removal of clay and rock material sourced from this area. Any material sale set to expire would be renewed at the designated time as demand is needed. Reclamation of this area would be in accordance with the provisions of these contracts and the PoO for this activity.

RECLAMATION OF LIME SOLIDS PONDS

During normal operation, it is necessary to remove magnesium from the lithium-saturated brine through treatment of the brine with slaked lime. The lime treatment results in the production of a lime solid, consisting mainly of magnesium hydroxide and calcium sulfate, which is deposited for final storage in the LSP.

Final reclamation of this pond would involve decanting all fluids away from the pond to allow the solids to dewater. The dike would be breached at the lowest part to ensure the surface remains dry. A four-strand standard barbed-wire fence would be erected to prevent access to the surface of the pond. The lime solids would solidify but would not support vehicular traffic.

The fence erected to prevent access to the LSP would be inspected annually after closure and would be repaired as necessary. Warning signs determined to be necessary in the final closure

plan would be maintained at the same time the fence is inspected. If it is determined that the material in the LSP presents dust or other hazards, Albemarle would cooperate with appropriate state regulatory agencies to correct the situation. If the correction includes capping or covering the pond, the appropriate actions would be included in the final closure plan.

RECLAMATION OF EVAPORATION PONDS

At the conclusion of lithium mining operations, as the last of the brine is moved from pond to pond in the normal concentration cycle, each pond would, in turn, be abandoned as the concentrate is moved to a successive pond. In ponds that contain precipitated salt, the salt beds would be trenched, and all available lithium brine would be recovered from the voids within the salt. As each pond is abandoned, all equipment associated with its operation would be removed and sold or disposed of properly away from the Project site. Processing all the brine through the lithium carbonate plant would require between 2.0 and 2.5 years. During this time, wells would be plugged and abandoned, and the pumping and electrical distribution systems would be removed.

RECLAMATION OF ROADS

All culverts, pipelines, and road structures would be removed from the well field once no longer needed for operations or closure. Dikes that are not needed for post-closure mining would be graded to a stable side slope. All roads in the well field would be ripped/scarified after the berms have been graded to a smooth and stable slope.

Waterbars are not necessary on the playa, as the natural gradient is less than 5 feet vertical drop in a mile. Grading the road berms smooth and ripping/scarifying would return the roads to the natural pre-disturbed surface and prevent concentrations of water on old road surfaces. Reclamation would be conducted by Albemarle, as required BLM, where natural revegetation does not occur.

The Silver Peak Road would remain open to the public to allow access to and from Silver Peak as well as to allow access during post-mining inspections.

WELL PLUGGING AND ABANDONMENT

All drill holes and wells used for process and/or freshwater supplies or monitoring that would be closed upon completion of lithium activities would be plugged in a manner consistent with the requirements of NAC 534.420 through 534.428, as applicable.

BUILDING AND SUPPORT FACILITIES

Buildings erected at the pond system would be dismantled to bare concreate foundation if they are deemed not necessary for post-lithium mining use. All pipelines, electrical distribution systems, and related equipment deemed not necessary for post-lithium mining use would be dismantled and removed or disposed of properly. Production buildings and equipment would be dismantled to foundations. Tanks, pipelines, pumping stations, and miscellaneous equipment would also be removed. All materials would be salvaged or scrapped, where possible. Any

material that cannot be salvaged or scrapped would be disposed of in the permitted landfill on-site. Records would be maintained to verify appropriate disposal methods.

REVEGETATION

Revegetation is not necessary on the disturbed areas of the playa surface because the playa surface does not support vegetation. Rainfall has averaged 3.83 inches per year over the period 1966 through 2016. In areas of non-playa disturbance, natural revegetation would be supported and would be reestablished during reclamation.

In the event the BLM or the NDEP recommend revegetation for certain areas, Albemarle would coordinate to ensure stable vegetation growth and ground cover of all reclaimed areas. Annual revegetation monitoring (including noxious weed monitoring and abatement), maintenance, and reporting, would continue for the period of time agreed on with the BLM and NDEP following mine closure and revegetation activities, or until revegetation success has been achieved. Success of revegetation would be based on seasonal growth patterns, precipitation, and weather conditions. If the revegetation does not occur as required, Albemarle would work to establish revegetation acceptable to the BLM or NDEP.

RECLAMATION MONITORING

The Proposed Action would be active for approximately 30 years, which includes 1 year of construction, 30 or more years of continued mining, 2.5 years of closure including processing all the brine through the lithium carbonate plant, and 2.5 years of reclamation. Post-reclamation monitoring is expected to be required for 5 years. This schedule may be modified based on the rate of mining and future commodity prices.

Concurrent reclamation monitoring would be ongoing over the life of the Project in areas that have been determined to have no future potential use. At final close-out, Project components would be removed and disturbed lands would be recontoured to pre-existing conditions.

Post-reclamation monitoring and maintenance would include the following:

- Following mine closure, berm and sign maintenance, site inspections, and any other necessary monitoring for the period of reclamation responsibility would be conducted. Monitoring of revegetation success would be conducted annually until the revegetation standards have been met and would include noxious weed monitoring and abatement, as necessary.
- Post-mining groundwater quality would be monitored according to the requirements established by the NDEP and BLM in the Water Pollution Control Permit (WPCP) with the goal of demonstrating the site poses no potential to degrade waters of the state through the successful implementation of the detailed Final Plan for Permanent Closure. The reclamation cost estimate would contain costs for 5 years of groundwater monitoring.
- Revegetation monitoring would be conducted for a minimum of 5 years following implementation of revegetation activities or until revegetation success has been achieved.

Revegetation monitoring would occur based on seasonal growth patterns, precipitation, and weather conditions.

- Noxious weed monitoring and control, as described in the Noxious Weed Management Plan (SWCA 2023e), would be implemented for a 5-year period following closure.

Albemarle would adhere to BLM and NDEP BMRR requirements, procedures, and standards relating to post-reclamation monitoring.

INFRASTRUCTURE FACILITIES

Some infrastructure in the form of roads, dikes, electrical distribution equipment, buildings, and pipelines may be necessary for post-lithium mining use. Specific infrastructure not subject to reclamation would be determined at the time the final closure plan is prepared.

The main access road (Silver Peak Road) across the Clayton Valley Playa would not be reclaimed to provide public access to the town of Silver Peak. Esmeralda County would be contacted and requested to maintain the Silver Peak Road across the playa. Confirmation of this would be provided at mine closure. Buildings on the pond system would be left for future mining use or removed as deemed appropriate according to post-lithium mining use in consultation with the NDEP and BLM. Electrical distribution equipment originating from the Silver Peak substation and north of the main access road would be left for future mining use. Electrical equipment not necessary for post-lithium mining use would be removed as deemed appropriate according to post-lithium mining use in consultation with the NDEP.

2.2.2.8 Applicant-Committed Environmental Protection Measures

Albemarle has committed to implementing specific measures to prevent UUD during the Project life. These practices were derived from the general requirements established in the FLPMA, from the BLM's surface management regulations at 43 CFR 3809 and from the NDEP BMRR, as well as other water regulations and BLM guidance documents, including BLM Handbook H-3809-1. Albemarle employees working at the Project site, as well as any contractors, would be trained to comply with the following environmental responsibilities, as well as state and federal law.

The Applicant-committed (EPMs) outlined in Appendix B are a combination of those measures proposed by Albemarle in the APO and those developed during the pre-planning and NEPA process in coordination with the lead agency and cooperating agencies. Applicant-committed EPMs have been developed for the following resources to reduce potential impacts from the Proposed Action:

- Air Quality (AQ)
- Dam Safety (DAM)
- Public Safety (PHS)
- Water Quality (WATERS)
- Petroleum-Contaminated Soil (PCS)

- Wildlife (WILD)
- Fire Prevention and Control (FIRE)
- Noxious Weeds and Invasive Non-Native Species (VEG)
- Hazardous Materials and Solid Wastes (HAZ)
- Survey Monuments (SURVEY)
- Water Consumption/Management Plan (WATER)
- Cultural and Paleontological Resources (CR)
- Access Roads (ACCESS)
- Preventing UUD (UUD)

The full list of Project Applicant-committed EPMs is provided in the SIR – Proposed Action and Project Alternatives and Appendix B of this document.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Pursuant to 43 CFR 46.415(b), the EIS shall document the examination of the range of alternatives, which should include those reasonable alternatives that meet the purpose and need of the Proposed Action (43 CFR 46.420(b)). The range of alternatives should include all reasonable alternatives, or a reasonable number of examples, that can be rigorously explored and evaluated (43 CFR 46.420(c)). For those alternatives that were explored but eliminated from detailed study, the EIS can briefly discuss the reasons for them being eliminated.

Potential alternatives were reviewed to determine whether they were consistent with the following criteria: 1) consistent with the purpose and need, 2) technically practical and feasible, 3) economically practical and feasible, and 4) environmentally reasonable. In addition to the Proposed Action, the No Action Alternative is included in this document as an alternative carried through for full analysis.

Table 2-4. Alternatives Considered but Eliminated from Detailed Analysis

Alternative Category	Alternative Considered but Eliminated from Detailed Analysis	Rational for Elimination of Alternative
Storage Design Component Alternative	Salt Pile Alternative	Not Environmentally Reasonable / Not Economically Practicable
Pond Design Component Alternative	Strong Brine Complex Alternative	Not Environmentally Reasonable
Pond Design Component Alternative	Larger 12W and 13N Pond Alternative	Not Technically Feasible
Pond Design Component Alternative	Northeast Pond Alternative	Not Environmentally Feasible / Not Technically Feasible
Pond Design Component Alternative	Embankment Height Alternative	Not Environmentally Reasonable / Not Technically Feasible

2.3.1 Salt Pile Alternative

Under this alternative, once existing salt piles within the SPLO have reached their maximum capacity, any new salt piles that are needed would be placed on BLM-administered land. Currently, the salt piles are located on private land owned by Albemarle; however, the harvested salt is owned by the BLM as a leasable material.

It was determined this alternative would not be reasonable due to increased emissions and the additional impact to federal land. Increased emissions would result from the process of desalting the ponds, transporting the salt longer distances to federal land, and fugitive dust from vehicle use on the playa. Each salt pile on federal land would also eliminate the occupied footprint from other uses. Furthermore, this alternative is cost prohibitive due to the large energy consumption in the desalting process.

2.3.2 Strong Brine Complex Alternative

Under this alternative, a different configuration of the new strong brine complex would be utilized. Instead of the 7-pond cross-shaped system proposed in the 2022 APO, a 2-pond trapezoidal design for the new strong brine complex would be constructed. The trapezoidal design would be approximately 128 acres of new disturbance compared to the 126 acres within the Proposed Action.

A similar configuration was originally proposed as early as 2016; however, by 2018, it was re-evaluated and was determined that this design did not meet Albemarle's operational purpose and need. The purpose of the strong brine complex is to provide operational flexibility to periodically remove ponds from service to conduct salt harvesting. This eliminated alternative results in similar or greater harm than the Proposed Action being considered.

2.3.3 Larger 12W and 13N Pond Alternative

Under this alternative, pond locations were previously considered to be a larger size. Pond 12W was initially designed as 360 acres, with pond 13N initially designed as 400 acres in size. It was determined that the land use conflicts resulting from the presence of third-party mining claim encumbrances provide rationale for this alternative being eliminated from further consideration. The acreage was reduced (as shown in the Proposed Action) to remove ponds from surface encumbrance of other mining claims.

2.3.4 Northeast Pond Alternative

Under this alternative, pond locations were considered to the northeast side of the current SPLO Project Area. There are multiple topographic limitations in this area as well as third-party mining claims. It was determined that the land use conflicts resulting from the presence of third-party mining claim encumbrances provide rationale for this alternative being eliminated from further analysis consideration.

2.3.5 Embankment Height Alternative

Under this alternative, a higher pond embankment height was considered in order to increase the capacity of the proposed new evaporation ponds. This alternative was eliminated from consideration in analysis due to the known increase in bank stability issues that arise with higher embankments and the loss of pond evaporation efficiency. This loss of pond evaporation efficiency means this alternative would negatively affect production capacity, increase costs, and create more unstable conditions and, therefore, does not meet Albemarle's purpose and need.

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CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the existing conditions of the physical, biological, cultural, and socioeconomic resources that have the potential to be affected by activities related to the Proposed Action and the No Action Alternative described in Chapter 2. The affected environment and environmental consequences were determined through desktop research, field surveys, input from the public scoping period (BLM 2025o), ongoing coordination with agencies, and baseline resource reports. The resource reports are available for public review on the BLM National NEPA Register (also known as ePlanning) https://eplanning.blm.gov/eplanning-ui/project/2035664/510.

3.1.1 Affected Environment

In accordance with the BLM's regulations and procedures implementing NEPA at 43 CFR Part 46 and Part 516 of the Departmental Manual (versions prior to June 30, 2025 the BLM must describe the environment of the area to be affected by the alternatives under consideration. The affected environment sections describe the resources that could be affected by the implementation of the alternatives carried forward for detailed analysis from Chapter 2. The resource descriptions provided in the affected environment sections serve as the baseline from which to evaluate the potential impacts of the alternatives.

3.1.2 Environmental Consequences

The alternatives carried forward for detailed analysis from Chapter 2 may cause changes in the human environment. This document assesses and analyzes these potential changes and discloses the effects to the decision-makers and public. This process of disclosure is one of the fundamental aims of NEPA. There are many concepts and terms used when discussing impacts assessment that may not be familiar to the average reader, and these are discussed below.

Effects or impacts means changes to the human environment from the Proposed Action or No Action that are reasonably foreseeable and have a reasonably close causal relationship to the Proposed Action or alternatives, including those effects that occur at the same time and place as the Proposed Action or No Action. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect would be beneficial.

A direct impact is an effect on a resource that is caused by the Proposed Action or action alternatives and occurs at the same time and in the same place. An indirect impact is an effect that is caused by the action and is later in time or removed in distance but is still reasonably foreseeable. Indirect impacts remain consistent within the temporal and spatial boundaries of analysis established for the resource.

Reasonably foreseeable future impacts are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of which agency (federal or non-federal) or person undertakes such other actions. A reasonably foreseeable future impacts analysis focuses on important issues of national, regional, or local significance. The Reasonably Foreseeable Future Effects Analysis is covered in more detail in Section 3.1.4.

Residual impacts are those impacts that remain after mitigation measures are applied. The level of residual impact is determined by how effective the mitigation measure is in reducing or avoiding the initial impact. Locations and intensities of potential residual impacts anticipated to occur from the Project were assessed for each issue statement and alternative analyzed in this chapter. The disclosures of impacts below are predominantly focused on residual impacts, because it is assumed all necessary design features and applicable mitigation measures would be applied, where appropriate. Applicant-committed EPMs, which include design features, are covered in Appendix B.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. This document primarily uses the terms major, moderate, minor, or negligible in describing the intensity of effects.

Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines, location, type, or size of area affected (e.g., local or regional); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant. For impact definitions specific to each resource, see Appendix C and the resource SERs for the Project (BLM 2025a–2025n).

To properly and meaningfully evaluate the potential impacts of each alternative, the impacts of each action alternative are measured against the impacts projected to occur under the No Action Alternative. The No Action Alternative is the baseline for purposes of comparison of the alternatives to one another.

3.1.3 Irretrievable and Irreversible Commitment of Federal Resources

These sections for each resource provide a brief summary of those impacts that would cause irretrievable and irreversible commitment of resources. Description of these impacts are consistent with the following criteria:

1) Irretrievable commitment of resources are impacts that would occur until reclamation/restoration is completed.
2) Irreversible commitment of resources are impacts that cannot be reclaimed and would continue indefinitely.

3.1.4 Reasonably Foreseeable Future Effects Analysis

These sections under each resource analyze the potential impacts from past actions, present actions, and reasonably foreseeable future actions (RFFAs) combined with the Proposed Action within the Reasonably Foreseeable Future Effects Analysis Area (RFFEAA) specific to the resources for which impacts may be anticipated. This analysis focuses on reasonably foreseeable future impacts of the Proposed Action and other actions within the RFFEAA. Major past and present land uses and disturbances within the resource RFFEAAs that are projected to continue into the future include lithium mining, other mineral development and exploration, utilities, solar development, road restoration, and livestock grazing. Dispersed recreation (including hunting, fishing, and off-highway vehicle [OHV] use) also occur and are expected to continue in portions of the RFFEAA. Past and present actions are included in the affected environment descriptions as they are part of the existing environment. Although oil and gas and geothermal leases exist within many of the RFFEAAs analyzed in this section, leased properties are not present actions of RFFAs under this analysis as many leased properties are never developed. In cases where they are developed, the potential future development details are unknown until a proposed project is submitted to the BLM; therefore, leased properties do not qualify as RFFAs until a detailed proposed project associated with the property is submitted for agency acceptance.

The boundaries of the RFFEAAs vary by resource. Reasonably foreseeable future effects should be evaluated in terms of the specific resource, ecosystem, and human community being impacted. To determine the size of the RFFEAAs, each environmental resource was analyzed to determine the extent to which the environmental effect from the Project could be reasonably detected and the geographic area impacted was defined.

The geographical areas considered for the analysis of reasonably foreseeable future effects are illustrated on the RFFEAA figures for each resource. The RFFEAA boundaries vary in size and shape to reflect each evaluated resource (Appendix A, Figure 3-1). Table 3-1 outlines the RFFEAAs and their sizes. The RFFEAA boundaries are the same for the Proposed Action and No Action Alternative.

Past actions, present actions, and RFFAs were identified within each RFFEAA as projects that could potentially interact or have a close causal relationship with the Proposed Action. These actions were identified using BLM's Mineral and Lands Records System records and the BLM NEPA Register. Present actions that are considered include those that have existing and/or ongoing disturbance. RFFAs are those actions where a permit application has been submitted but an action has not yet been authorized. The past actions, present actions, and RFFAs shown in Table 3-2 were used to analyze reasonably foreseeable future impacts for each resource within their respective analysis area.

Table 3-1. RFFEAA by Resource

Resource	Geographic Scope	Size	Figure
Air Quality	Clayton Valley Hydrographic Basin (143) as defined by NDWR	356,409 acres	3-2
Cultural Resources	APO Boundary (Physical Area of Potential Effects [APE])	1,600 acres	3-3
Socioeconomics	Esmeralda County	2,295,358 acres	3-4

Resource	Geographic Scope	Size	Figure
Water Resources	Clayton Valley Hydrographic Basin (143) as defined by NDWR	356,409 acres	3-2
Noxious Weeds and Invasive, Non-Native Species	APO Boundary + 1 mile buffer	33,230 acres	3-5
Migratory Birds and Raptors	Migratory birds and raptors – APO Boundary +3-mile buffer Golden Eagle – Project Area + 10-mile buffer	80,422 acres 368,911 acres	3-6 3-7
Special Status Species	APO Boundary + 4-mile buffer	109,724 acres	3-8
Noise	APO Boundary + 3-mile buffer	80,422 acres	3-6
Native American Religious Concerns	APO Boundary	13,743 acres	3-9
Hazardous and Solid Wastes	APO Boundary	13,743 acres	3-9
Visual Resources	APO Boundary + 1 mile buffer	33,230 acres	3-5
Soils	APO Boundary	1,600 acres	3-3
Paleontological Resources	APO Boundary	13,743 acres	3-9
Vegetation	APO Boundary + 1 mile buffer	33,230 acres	3-5

Table 3-2. Past, Present, and Reasonably Foreseeable Future Actions

Name	Project Type	Size	Status	RFFEAA Boundaries
Ameriwest Lithium Inc: Deer Musk East Lithium Property	Lithium Mine	7,391 acres	Planning Stages	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noise; Noxious Weeds; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources
Century Lithium Corp Angel Island Lithium Project	Lithium Mine	5,430 acres	Planning Stages	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noise; Noxious Weeds; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources
Gold Dust Solar Project, proposed by Gold Dust Solar LLC	Solar	16,720 acres	NEPA in Progress	Socioeconomics
Grid Battery Metals Clayton Valley Lithium Project	Lithium Mine	2,288 acres	NEPA Completed	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Hazardous Materials; Native American Religious Concerns; Noise; Noxious Weeds; Paleontological Resources; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources
Esmeralda Energy Center Project, proposed by Boulevard Associates LLC	Solar	8,360 acres	NEPA in Progress	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Socioeconomics; Water Resources
Esmeralda SR 264 Road Work	Road Restoration	33.64 miles	Proposed	Socioeconomics
Esmeralda SR 266 Road Work	Road Restoration	9.35 miles	Proposed	Socioeconomics
Esmeralda SR 267 Road Work	Road Restoration	40.34 miles	Proposed	Socioeconomics

Name	Project Type	Size	Status	RFFEAA Boundaries
Greenlink West Project (GLWP)	Transmission	423 miles, from Las Vegas to Reno, NV	Construction in 2025	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Socioeconomics; Special Status Species; Water Resources; Noise; Noxious Weeds; Socioeconomics; Vegetation; Visual
Lone Mountain Solar Project, proposed by Lone Mountain Solar LLC	Solar	8,350 acres	NEPA in Progress	Socioeconomics
Nivloc Energy Project, proposed by Nivloc Solar LLC	Solar	8,280 acres	NEPA in Progress	Socioeconomics
Noram Lithium Corp (Norman ventures inc.): Zeus Lithium Project	Lithium Mine	3,000 acres	Planning Stages	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noise; Noxious Weeds; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources
Ormat Lone Mountain Geothermal Utilization and Development Project	Geothermal	173 acres	Planning Stages	Golden Eagle; Socioeconomics;
Ormat Pearl Geothermal Utilization and Development Project	Geothermal	244 acres	Planning Stages	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noise; Noxious Weeds; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources
Pure Energy/ Schlumberger: Lithium Brine Project	Lithium Mine	50 acres	Planning Stages	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noise; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources
Red Ridge 1 Project	Solar	6,190 acres	NEPA in Progress	Socioeconomics
Red Ridge 2 Project, proposed by 336SP 8me LLC	Solar	6,860 acres	NEPA in Progress	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noxious Weeds; Socioeconomics; Water Resources
Rockwood Lithium Inc.: Goat Island mineral materials pit	Minerals for Lithium Pod Repairs	50 acres	NEPA Completed	Air Quality; Cultural Resources; Migratory Birds and Raptors (including Golden Eagles); Hazardous Materials; Native American Religious Concerns; Noise; Noxious Weeds; Paleontological Resources; Socioeconomics; Soils; Special Status Species; Vegetation; Visual; Water Resources
Smoky Valley Solar Project, proposed by CG Western Renewables III LLC	Solar	4,890 acres	NEPA in Progress	Socioeconomics
Spearmint Resource Inc.: McGee Lithium Clay Deposit	Lithium Mine	850 acres	Planning Stages	Air Quality; Migratory Birds and Raptors (including Golden Eagles); Noise; Noxious Weeds; Socioeconomics; Special Status Species; Vegetation; Visual; Water Resources

3.2 AIR QUALITY

More information on air quality is provided in the Air Quality SER for the SPLO (BLM 2025a).

3.2.1 Affected Environment

3.2.1.1 Analysis Area and Regulatory Framework

The Analysis Area for air quality includes Clayton Valley Hydrographic Basin (143), as defined by NDEP's Bureau of Air Quality Planning (Appendix A, Figure 3-10). The nearest town is Silver Peak, which is located approximately 1.5 miles west of the reconciliation and expansion areas, with the Project Area boundary located closer. This Analysis Area captures the area in which construction, operations, and reclamation activities would occur, as well as emissions from neighboring sources within the 355,200-acre Clayton Valley Hydrographic Basin (143). The nearest Class I area is the John Muir Wilderness, which is approximately 64 miles from the Project Area.

Air quality and pollutant emissions are regulated under federal Clean Air Act regulations and Nevada state laws and regulations implemented by the NDEP Bureau of Air Pollution Control (NBAPC). Both federal and state regulations require that ambient concentrations for specific criteria pollutants not exceed allowable levels, referred to as ambient air quality standards. These standards have been established by the U.S. Environmental Protection Agency (USEPA) and the State of Nevada at levels deemed to preclude adverse impacts on human health and welfare with an adequate margin of safety. To obtain an Air Quality Operating Permit in Nevada, the Project must comply with NAC 445B.001 through 445B.395 by identifying all regulated air pollutant emissions and demonstrating adherence to ambient air quality standards.

The National Ambient Air Quality Standards (NAAQS), established by the USEPA and adopted by Nevada, aim to safeguard public health and welfare by setting air quality levels. Primary standards protect public health, including sensitive groups, while secondary standards protect public welfare and the environment. NAAQS and Nevada State Ambient Air Quality Standards (NSAAQS) have been established for the criteria pollutants of nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), lead (Pb), and ozone (O_3). The NSAAQS include a standard for hydrogen sulfide (H_2S).

3.2.1.2 Existing Conditions

The Project Area is partially on BLM lands administered by the BMD. The Project is permitted through the BLM and the NBAPC. There are no major stationary sources associated with the Project. In accordance with Nevada state air rules, the Project does not meet the definition of a Class I (Title V) or Prevention of Significant Deterioration (PSD) source. The Project is a Class II project, or minor source, with an existing Class II permit (Facility ID No. A0452 Permit No. AP2819-0050.05). The Project is not subject to Title V or PSD regulatory requirements.

Depending on whether the applicable ambient air quality standards are met or exceeded, a county is classified on a federal and state level as being in "attainment" or "nonattainment." The USEPA determines the air quality attainment status of designated areas by comparing ambient air quality measurements from state and local ambient air monitoring stations with the NAAQS and NSAAQS. These designations are determined on a pollutant-by-pollutant basis. For each criteria pollutant, the USEPA classifies areas as "nonattainment" if one or more NAAQS is exceeded.

Consistent with federal requirements, an unclassifiable/unclassified designation is treated as an attainment designation.

Esmeralda County is designated as attainment or unclassified for all pollutants. The Air Quality Analysis Area is designated as in attainment with the criteria pollutant NAAQS. Thus, the General Conformity Rule, which is designed to protect ambient air quality within nonattainment and maintenance areas against further degradation, does not apply.

Greenhouse gases (GHGs) occur naturally in the atmosphere, but human-made sources have substantially increased the emissions of GHGs over the past several decades. The primary GHGs in the atmosphere, including Esmeralda County, include CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, and sulfur hexafluoride) (USEPA 2023a). CO_2 is emitted primarily from the combustion of fossil fuels; CH_4 is emitted from the production and transport of coal, natural gas, and oil; and N_2O is emitted during agricultural and industrial activities. Fluorinated gases, which are synthetic, are emitted from a variety of industrial processes, such as sulfur hexafluoride emitted from industrial transmission and distribution of electricity.

3.2.2 Environmental Consequences

3.2.2.1 Analysis Method

The methodology used for analysis includes the comparison of the existing air quality environment with the proposed increase in emissions as a result of implementation of the Proposed Action. Potential air pollutant emissions from the existing operations, the Proposed Action, and the operational emissions that would occur after the Proposed Action were calculated using emission factors from the following:

- USEPA's Motor Vehicle Emission Simulator (MOVES3) (USEPA 2022);
- USEPA's Nonroad Diesel Engine Standards (USEPA 2023b);
- Fugitive dust emissions from vehicle travel on paved roads (USEPA AP-42 Chapter 13 Section 13.2.1 from 2011) and unpaved roads (USEPA AP-42 Chapter 13 Section 13.2.2 from 2006) (USEPA 2023c); and
- Fugitive dust emissions from earthmoving (Countess Environmental 2006).

There are currently no significance thresholds to compare estimated GHG emissions from the Project; however, GHG emissions can be compared to state and U.S. totals provided by the USEPA in the 2020 National Emissions Inventory (BLM 2025a:Table 2-3).

The effects assessment analyzes direct and indirect effects on air quality anticipated by the Proposed Action. Effects are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.2.2.2 Direct and Indirect Impacts

The Proposed Action includes reconciliation of existing disturbance at the facility and further expansion of the operation. SPLO is an existing lithium brine extraction facility with current

baseline operational emissions and operational emissions that would occur after the Proposed Action. Effects on air quality resources were evaluated to determine whether potential air pollutant concentrations resulting from the Project's air pollutant emissions would cause or contribute to impacts to air quality and increases in GHGs.

Air pollutant emissions associated with the Project can be separated into construction-related emissions and emissions associated with ongoing mine operations. The baseline operational emissions and the operational emissions, which would occur after the Proposed Action, include permitted emissions contained in Permit No AP2819-0050.05, on-site fugitive dust from surface area disturbance (also included as a condition in the current permit), fugitive dust from on-road vehicles traveling on paved and unpaved roads and the associated exhaust emissions from on-road vehicles traveling on paved and unpaved roads, and exhaust emissions from on-site, off-road equipment. The Proposed Action construction emissions include fugitive dust from surface area disturbance, fugitive dust from on-road vehicles traveling on paved and unpaved roads, exhaust emissions from on-road vehicles traveling on paved and unpaved roads, and exhaust emissions from off-road equipment. Fugitive dust impacts would be limited to less than a year of construction and minimized with implementation of Applicant-committed EPMs AQ-1, AQ-2, and AQ-3 (Appendix B).

GHG emissions associated with the Project can also be separated into construction-related emissions and emissions associated with ongoing mine operations. GHG emissions are presented in the Air Quality SER (Tables 4-5 through 4-7) and detailed in Appendix A of the SER (BLM 2025a).

Other indicators of air quality impacts are potential criteria pollutant and hazardous air pollutant (HAP) emissions and potential impacts to federal Class I areas. Criteria pollutant and HAP emissions have been calculated for current operations baseline emissions, Project construction emissions, and post-Project operations emissions (BLM 2025a:Tables 4-1, 4-2, 4-3). Construction activities would not be expected to lead to an exceedance of any applicable air quality standards, and the increase in operational emissions are below both the 40 CFR 52.21 (b)(23) thresholds and the NAC 445B.310.1.(a) threshold for criteria pollutants, as well as the USEPA major source threshold for HAPs. Air pollutant emissions from the Project during construction would be unavoidable but temporary; however, Applicant-committed EPMs to reduce emissions and potential impacts to air quality would be implemented. The increased road mileage and ground disturbance after construction would contribute to additional PM10 emissions compared to existing operations. The increase of 3.01 tpy to 184.96 tpy is an increase of less than 2 percent. The operations baseline stationary source and operations post-expansion stationary source emissions are below the NAC 445B.310.1.(a) threshold for criteria air pollutants. Therefore, the air quality impacts from operations would be anticipated to be in compliance with the ambient air quality standards.

The distance from the Project Area to the closest border of the nearest Class I area (John Muir Wilderness) is 64 miles. The Project emissions would have no substantial effect on visibility at the closest Class I area. Consequently, it would also not impact the recreational uses of those areas.

The GHG emissions associated with the Proposed Action, by themselves, have negligible effects on the atmosphere but would contribute incrementally to global atmospheric changes. The air pollutant emissions from the Proposed Action would be minimal and localized, and the Applicant-committed EPMs outlined in Appendix B would reduce emissions and potential impacts on air quality.

3.2.2.3 Irretrievable and Irreversible Commitment of Federal Resources

During construction, operational, and reclamation phases of the project, air pollutant concentrations would be higher throughout the Air Quality Analysis Area than current levels but within applicable air quality standards. Following mine closure and successful reclamation, pollutant concentrations from the Project would cease, and there would be no long-term irreversible commitment of resources. The Project would impose irretrievable commitment of resources as degradation of air quality during construction activities would not be retrievable; however, the Project would not impose irreversible commitment of resources to air quality and greenhouse gases as the greater emissions associated with construction would cease following the 8-month construction period.

3.2.2.4 Reasonably Foreseeable Future Impacts

The Air Quality RFFEAA includes the Clayton Valley Hydrographic Basin (143). Within the Air Quality RFFEAA are 11 RFFAs: six lithium operations, two solar projects, one geothermal project, one transmission project, and a mineral materials sale. The RFFAs total approximately 23,042 acres and 41 miles within the 356,109-acre Air Quality RFFEAA boundary. Past and present actions include lithium mining, other mineral exploration and development, utilities, livestock grazing, and dispersed recreation.

There is potential for all 11 RFFAs to increase criteria air pollutants and GHGs in the Clayton Valley Hydrographic Basin and potentially exceed allowable levels. Mining, solar, and geothermal operations can produce significant dust, especially during site preparation and construction, impacting air quality and visibility, and causing respiratory issues in nearby communities. While solar projects are generally low emission, dust can still be generated during land clearing and construction. Mining operations contribute to CO_2 emissions through fossil fuel use and geothermal operations contribute combustion emissions such a NO_x and VOCs. Although solar projects aim to reduce GHGs by generating clean energy, their construction phase can still contribute to emissions. However, since the RFFAs are at various stages of approval, operation, or production, not all projects will be in the construction phase, which is associated with higher emissions, simultaneously. Furthermore, each project must comply with air permits from the NBAPC. With these regulations and the implementation of Applicant-committed EPMs, the reasonably foreseeable future effects are anticipated to be short-term, minor to moderate, and regional.

3.2.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any additional associated air quality impacts would not occur.

The air quality impacts associated with the Proposed Action would not occur, and existing air quality conditions would remain unchanged. The APO would not be accepted by the BLM, and the activities described in the Proposed Action would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and the SPLO would continue to be an existing permitted lithium brine extraction facility with the estimated operations (baseline) emissions.

3.3 CULTURAL RESOURCES

More information on cultural resources is provided in the Cultural Resources SER for the SPLO (BLM 2025b).

3.3.1 Affected Environment

3.3.1.1 Analysis Area and Regulatory Framework

For the Project, there is a physical Area of Potential Effects (APE) that includes all Project components under consideration and the existing and authorized project components. The BLM determined that the physical APE for the Project is the expansion areas consisting of a 127.8-acre strong brine complex with two transfer pump stations and related pipelines, a 269.4-acre weak brine pond, and a 261-acre new weak brine pond (see Appendix A, Figure 1-2). The BLM has not defined the visual, auditory, and atmospheric (VAA) APE, as the proposed modifications will not significantly alter the existing environment.

Federal laws and regulations provide the framework by which historic properties are identified, evaluated for their significance, and protected. NEPA mandates that "federal or federally-assisted projects (federal actions) must take into account effects on historic and cultural resources" and alternatives must be considered (43 CFR 46.415(b)). The National Historic Preservation Act (NHPA) requires that federal agencies consider an undertaking's effects on historic properties included in or eligible for the National Register of Historic Places (NRHP).

More details regarding the regulatory environment for cultural resources are available in the Cultural Resources SER (BLM 2025b).

3.3.1.2 Existing Conditions

The Project Area is located in Clayton Valley, an internally drained valley west of the town of Goldfield. Clayton Valley is bordered by Lone Mountain to the north, the Palmetto Mountains to the south, and the Silver Peak Range to the southwest, with Montezuma Peak and the town of Goldfield to the east. Situated west of the Project Area, the White Mountains have the highest peak in Nevada, Boundary Peak, with an altitude of 13,140 feet above mean sea level (amsl). Clayton Valley is topographically lower than the surrounding basins, with an elevation of 4,260 feet amsl (SWCA 2023a).

The federal lands that will be affected by this proposed project have undergone Class III inventories, which identified three isolated finds consisting of opaque obsidian flakes.

The inventories did not identify any archaeological sites or architectural resources within the physical APE.

3.3.2 Environmental Consequences

3.3.2.1 Analysis Method

Impacts to cultural resources are discussed in terms of physical, VAA, and reasonably foreseeable future impacts from the Proposed Action that could result in an adverse effect on cultural resources. As defined under 36 CFR 800.5(a)(1) (Criteria of Adverse Effect), an adverse effect occurs when a federal undertaking directly or indirectly alters any characteristics of a historic property that qualifies it for the NRHP. Though an adverse effect to cultural resources is not limited to physical destruction, but also visual, atmospheric, and/or audible intrusions, a VAA APE was not defined by the BLM. Only "historic properties" are analyzed under Section 106 of NHPA.

The indicator considered in the analysis of potential impacts to cultural resources is whether the Proposed Action and alternatives would result in adverse impacts to properties listed in or determined eligible for the NRHP.

3.3.2.2 Physical and VAA Impacts

The BLM has determined that the physical APE within the Proposed Action area encompasses the footprint of the proposed mine facilities, for a total of 1,596 acres (1,053 acres BLM and 543 acres private). Physical impacts on cultural resources under the Proposed Action would be localized, permanent, and adverse. The BLM has not defined the VAA APE, as the existing environment will not be significantly altered.

Three isolated finds fall within the area of the Proposed Action's physical APE, and all were prehistoric opaque obsidian tertiary flakes, which do not meet the standards to be considered a historic or archaeological site or property. No archaeological sites are within the area of the Proposed Action; therefore, the Project would have no adverse effect on historic properties.

Applicant-committed EPMs CR-1 and CR-2 would be implemented by the Applicant to minimize risk to cultural resources (Appendix B).

3.3.2.3 Irretrievable and Irreversible Commitment of Federal Resources

As stated earlier, no adverse effects on historic properties are anticipated under the Proposed Action; therefore, no treatment would be necessary. Irretrievable and irreversible commitment of resources are not anticipated from the Proposed Action.

3.3.2.4 Reasonably Foreseeable Future Impacts

The Cultural Resources RFFEAA includes the APO (physical APE). There is one RFFA overlapping the Cultural Resources RFFEAA, the Rockwood Lithium (Goat Island) Mineral Material Sale, with a total of 6.46 acres of overlap. Past and present actions include lithium

mining. The sparsely vegetated basin and largely barren playa have no existing sites eligible for NRHP. In the event that cultural resources and/or human remains are inadvertently discovered during construction, Applicant-committed EPMs CR-1 and/or CR-2 (Appendix B) will be implemented, with reasonably foreseeable future effects anticipated to be permanent, adverse, and localized.

3.3.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and existing conditions in the Cultural Resources Analysis Area would continue.

3.4 SOCIOECONOMICS

More information on socioeconomics is provided in the Socioeconomics SER for the SPLO (BLM 2025c).

3.4.1 Affected Environment

3.4.1.1 Analysis Area and Regulatory Framework

The Analysis Area for socioeconomics is defined as Esmeralda County because Proposed Action–related changes to socioeconomic indicators are likely to be distributed across the county as workers associated with the Proposed Action purchase goods and services throughout the area. Figure 3-11 in Appendix A illustrates the Analysis Area for socioeconomics.

This socioeconomic assessment follows general federal regulations and guidance for performing NEPA analyses, and it draws on approaches taken in recent socioeconomic analyses led by the BLM (BLM 2024b) and other federal agencies.

3.4.1.2 Existing Conditions

This section evaluates baseline socioeconomic indicators in Esmeralda County with information for the State of Nevada often provided for context. It is anticipated that the potential impacts of the Proposed Action on socioeconomic conditions will be limited. Therefore, socioeconomic indicators evaluated in this report are limited to land ownership, population, employment, and income.

The vast majority of land in the county is federally managed, specifically by the BLM (approximately 94% in Esmeralda County and 63% for the state). Although a higher proportion of land is under federal management in Esmeralda County than in Nevada as a whole, the prevalence of federal land management is not uncommon in sparsely populated western geographical areas. Private land ownership constitutes the majority of land that is not federally managed in the Socioeconomics Analysis Area, with state land making up less than 0.1% of total acreage. There are no Tribal lands identified within Esmeralda County (Headwaters Economics 2024a).

With a population of 980 and a population density of 0.0004 persons per acre, Esmeralda County is characterized as rural. From 2010 to 2022, the county population's growth rate was approximately half of the Nevada state average. The number of jobs in the Socioeconomics Analysis Area has increased slightly, and per capita income has increased by more than 45% since 2000, outpacing income growth at the state level. It is common for rural areas to have higher unemployment and lower per capita income than state averages; however, Esmeralda County has a lower unemployment rate than the Nevada average, and incomes are similar between the two geographies. This is indicative of a small but robust county economy (Headwaters Economics 2024b, 2024c).

The SPLO operates 24 hours per day, 365 days per year. No temporary or interim closures of the facility are planned. The workforce that lives locally in the town of Silver Peak, Nevada, commute daily to the site. Other workers that live in neighboring towns of Dyer, Goldfield, and Tonopah commute approximately 120 miles daily to the site. The rest of the workforce travels 4 or more hours away to the site and stays in on-site housing during their assigned workdays.

Due to the relatively low number of total jobs in the county, estimated values are subject to a high degree of uncertainty and, when estimates are not possible, residual jobs are left uncategorized. Despite this statistical uncertainty, mining is the dominant industry in Esmeralda County, accounting for almost a quarter of the 412 total jobs. Government is the second largest industry (24% of county employment), and farming is the third largest (11%). At the state level, mining and farming constitute just over 1% of total employment, and government jobs account for 9%. Services-related jobs (e.g., retail trade, real estate, finance and insurance, health care, educational services) account for under a quarter of county employment, while approximately 80% of jobs across Nevada are services related (Headwaters Economics 2024b).

3.4.2 Environmental Consequences

3.4.2.1 Analysis Method

The methods of analyzing socioeconomic impacts draw on approaches taken in recent socioeconomic analyses led by the BLM and the BLM Socioeconomic Desk Guide (BLM 2024b). The primary steps in this analysis were identifying socioeconomics values likely to be affected, analyzing those effects by taking into account the unique social and economic context of the Project Area, and assessing the consequences on those values from a proposed change in environmental conditions. As pointed out in the BLM Socioeconomic Desk Guide (BLM 2024:13), there is not a single, constant approach when analyzing impacts to socioeconomic values, and the implementation of the above steps depends on the overall scope and scale of the proposed project. For this Project, the following socioeconomic indicators were identified for the Proposed Action: land ownership, population, employment, and income.

The effects assessment analyzes direct and indirect effects on socioeconomic indicators likely to be brought about by the Proposed Action. Effects are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.4.2.2 Direct and Indirect Impacts

The Proposed Action involves land disturbance on private land owned by Albemarle and public land administered by the BLM, with no anticipated impacts on land ownership during construction or operation. Consequently, this impact is deemed negligible, short-term, and localized.

Regarding population, the Project's construction phase will require 50 workers over approximately 8 months. However, Albemarle plans to use their existing SPLO employees and/or existing employees of local contractors during construction. Therefore, the Project is not expected to affect the number of persons living in the county.

Any labor demand increase during construction might slightly raise labor wages, but given the modest workforce size, this temporary effect is unlikely to significantly impact existing income levels in Esmeralda County, Nevada. Therefore, this impact is also considered negligible, temporary, and localized. After construction, no impacts on population, employment, or income levels are anticipated, maintaining the characterization as negligible, short-term, and localized. Regarding jobs by industry, the Project will not significantly alter the existing job distribution in Esmeralda County, with impacts again described as negligible, temporary, and localized.

3.4.2.3 Irretrievable and Irreversible Commitment of Federal Resources

In consideration of the Proposed Action to amend the PoO, the construction of the Proposed Action is anticipated to last approximately 8 months and would require a workforce of fewer than 50 workers drawn from the existing SPLO workforce or local contractors. Therefore, the scope of potential commitment of resources on socioeconomic conditions would be limited to the existing SPLO workforce conditions. Therefore, no irretrievable or irreversible commitment of resources to general socioeconomic conditions are anticipated.

3.4.2.4 Reasonably Foreseeable Future Impacts

The Socioeconomic RFFEAA includes Esmeralda County, Nevada. Within this RFFEAA are 20 RFFAs: six lithium projects, seven solar projects, three road restoration projects, two geothermal projects, one transmission project, and a mineral materials sale, totaling 82,368 acres and 310 miles. These projects cover 4% of the 2,295,358-acre Socioeconomics RFFEAA. Past and present actions include lithium mining, other mineral exploration and development, utilities, solar development, road restoration, livestock grazing, and dispersed recreation.

The past actions, present actions, and RFFAs in the Socioeconomic RFFEAA have or may potentially have a direct and indirect/induced effect on social and economic values through changes to employment, income, housing availability, population and demographic changes, public finance, public facility use, and social values. While past and present actions, including the Proposed Action, are not expected to alter the workforce significantly, RFFAs like solar development could increase employment opportunities, income, tax revenues, and demand for housing and community services. Since the Proposed Action is expected to have a negligible impact on socioeconomics, and since the RFFAs are at various stage of approval, the reasonably

foreseeable future effects on socioeconomics are anticipated to be minor, long-term, and localized.

3.4.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and the existing conditions in the Socioeconomics Analysis Area would continue.

3.5 WATER RESOURCES

More information on water resources is provided in the Water Resources SER for the SPLO, the Water Resources Records Review Baseline Summary, the Seeps and Springs Baseline Survey report, and the SPLO Water Level Sampling and Analysis Plan (BLM 2025d, SWCA 2023a, SWCA 2023b, SWCA 2024b).

3.5.1 Affected Environment

3.5.1.1 Analysis Area and Regulatory Framework

The Analysis Area for water resources is the Clayton Valley Hydrographic Basin (143), which encompasses 557 square miles (356,480 acres) in Esmeralda County, Nevada (Appendix A, Figure 3-12) (NDWR 2025). The Clayton Valley Hydrographic Basin (143) is similar in size and extent to the USGS Clayton Valley Watershed (Hydrologic Unit Code [HUC] 1606001113), which is 355,550 acres (USGS 2025a). Therefore, this Analysis Area is considered to be appropriate for analyzing Project impacts on both groundwater and surface water resources.

The regulation, appropriation, and preservation of water in Nevada is the responsibility of both the state and the federal government. Surface and groundwater use is regulated by the NDWR, while the NDEP BMRR oversees the protection of surface water and groundwater quality. In Nevada, waters are the property of the public and are subject to appropriation under Nevada Revised Statutes (NRS) Chapters 532 through 538. The agency responsible for managing groundwater in Nevada, including the oversight of water rights applications, appropriations, and interbasin transfers, is the NDWR.

Groundwater at the Project is governed within the designated Clayton Valley Hydrographic Basin 143 (NDWR 2025). NDWR Hydrographic Area Order No. O-1275 designated the entirety of the Clayton Valley Hydrographic Basin (143) in 2016, meaning that all permitted groundwater rights are approaching or exceeding the estimated annual recharge (NDWR 2016). The amount of water available for extraction is based on a concept of "perennial yield," which is defined in the Nevada State Water Plan as "the amount of usable water from a groundwater aquifer which can be economically withdrawn and consumed each year for an indefinite period of time without depleting the source" (NDWR 1999). The perennial yield of the basin is estimated to be 20,000 acre-feet per year (AFY) and was established based on the findings of a USGS water reconnaissance study in 1968 (Rush 1968).

The federal Clean Water Act is the basic framework that requires states to establish surface water quality standards and regulate the discharge of pollutants into waters of the United States (WOTUS). The Project is located in an internally draining closed basin that is bounded by mountain ranges and block faulting, with the topographic low area of the Clayton Valley Hydrographic Basin (143) forming a playa. The playa has no presence of or connection to WOTUS; therefore, there are no WOTUS impacted by the Proposed Action (NDEP 1992).

More details regarding the regulatory environment for water resources is available in the Water Resources SER (BLM 2025d).

3.5.1.2 Existing Conditions

The Project Area is located in the Basin and Range physiographic province, which is generally characterized by relatively narrow but elongated mountain ranges that are separated by sediment-filled valleys (Britannica 2020). The climate in the Project Area is characterized by short, hot summers and moderately cold winters. There is typically strong surface heating during the day followed by rapid nighttime cooling. Due to SPLO's location on the east side of the Sierra Nevada, the average annual precipitation at the Project is only approximately 3.35 inches (SWCA 2023a).

GROUNDWATER

Groundwater in the Project Area is governed within the designated Clayton Valley Hydrographic Basin (143) (NDWR 2025). The perennial yield of the basin, estimated at 20,000 AFY, was established based on the findings of a 1968 USGS water reconnaissance study (Rush 1968). More details regarding the inflows and outflows of the basin and the studies determinations are described in the Water Resources SER (BLM 2025d).

The characteristic block faulting of the Basin and Range physiographic province has made the Clayton Valley Hydrographic Basin (143) topographically lower than the surrounding basins. Only a portion of its groundwater is considered potable (SWCA 2023a). The extractable groundwater at the playa center is brine, which is considered SPLO's mineral resource. Some studies suggest that these block faults may create a barrier to flow into the basin, preserving brine strength by limiting freshwater introduction (Zampirro 2004).

The aquifers that provide the lithium-bearing brine are dynamic systems that have been classified as six different confined and semi-confined aquifer systems. The aquifers include the following: tula aquifer system, salt aquifer system, marginal gravel aquifer, main ash aquifer, lower ash system, and lower gravel aquifer. Each of the six aquifers have been used for lithium extraction over the life of the SPLO. The most developed and most extensively pumped aquifer is the main ash aquifer, with 94 production wells drilled since the 1960s. As more of the lithium-bearing aquifers were discovered over time, production wells were developed to target those aquifers. In total, the SPLO has drilled 160 exploration wells and 258 production wells. Currently, there are 69 active production wells (SRK Consulting, Inc. [SRK] 2021). SPLO's WPCP authorizes a total well-field production of 17.86 million gallons of lithium brine per day, which is nearly equivalent to SPLO's groundwater rights of 20,000 acre-feet annually (SWCA 2023a).

There are no known freshwater sources in the Project Area. Both the Applicant and Esmeralda County have freshwater wells approximately 2 miles southwest of the Silver Peak community, on the playa margins. The freshwater wells are located topographically higher than the Project Area and are, therefore, considered to be upgradient of operations. Prior to pumping in the Clayton Valley Hydrographic Basin (143), groundwater exited only the closed playa basin via evaporation in the central and lowest portions of the basin (SRK 2021).

The water supply for the SPLO is derived mostly from two site-owned and operated freshwater wells. This water is primarily used for processing in the plant. In other areas where potable water is needed, the Esmeralda County water supply is used. All of Albemarle's water rights were granted and are administered by the Nevada State Engineer, and Albemarle's permitted and certificated rights remain in good standing with the State Engineer. Albemarle continues to work on expanding brine production through rehabilitating existing wells and drilling new production wells to use their full permitted 20,000 AFY.

SURFACE WATER

Surface water at the Project Area is confined within the USGS Clayton Valley Watershed (HUC 1606001113) (USGS 2025a). The watershed is internally drained with a dry lakebed (playa) at its lowest point. There are no permanent surface water bodies within the playa, but there are dry ephemeral washes leading from the mountain ranges to the valley floor (SWCA 2023a). Flow in these washes is likely to occur only after significant rainfall events, with any water evaporating or infiltrating into the groundwater before or upon reaching the playa. Since the playa is not a tributary to any traditional navigable waters, it was determined to not be a WOTUS in 1992 (NDEP 1992).

Due to the evaporation rates exceeding precipitation rates in the region, any surface water in the Clayton Valley Playa is limited to seeps and springs. The springs are freshwater and are fed by recharge (SWCA 2023b). During a field reconnaissance in 2023, the conditions of seeps and springs within 5 miles of the SPLO were recorded. The survey included 24 locations, with two locations observed to be active, 14 observed to be inactive, five observed to be another feature and dismissed from further analysis, and three locations being inaccessible. No springsnails, an indicator of stable, permanent water, were observed at any locations (SWCA 2023b). While several of the inactive springs had incised channels, there was no evidence of recent spring discharge, and the absence of vegetation at the majority of springs indicates an extended period of inactivity. The locations where water was observed include Coyote Spring, a meadow-like hillslope with saturated ground, and Coyote Well, an artesian well discharging from a pipe (SWCA 2023b). These two springs are located in the mountain ranges and front range boundaries, making the springs topographically above the brine aquifers and topographically "upgradient" of the SPLO.

The NDEP has exempted the Project from the SWPPP requirement since any stormwater runoff from the facility would discharge to a dry playa in a closed hydrological basin (Albemarle 2022:Appendix G).

3.5.2 Environmental Consequences

3.5.2.1 Analysis Method

The analysis of effects on water resources is focused on the availability of groundwater in the basin, potential impacts to the integrity of fresh water for current users, the likelihood of drawdown of seep and spring features, and the risk of spills or leaks infiltrating either groundwater or surface water. This analysis is informed by historical documentation of the hydrology of the Clayton Valley Hydrographic Basin (143), the SPLO's current operational uses, and field documentation of water features within the Water Resources Analysis Area (Rush 1968, SRK 2021, SWCA 2023a, SWCA 2023b).

Effects on both groundwater and surface water are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.5.2.2 Direct and Indirect Impacts

GROUNDWATER

The SPLO was originally constructed and commissioned in 1965 and continues to operate through the present day. SPLO's first water rights were acquired in 1936, and its most junior water rights were acquired in 1989. The SPLO is currently authorized for a total well-field production of 17.86 million gallons of lithium brine per day. This is based on Albemarle's authorized 20,000 AFY of water rights being pumped over 365 days (SWCA 2023a).

Since no new water rights are being sought as part of the Proposed Action, and since pumping at the facility would not change with construction and implementation of the Proposed Action, impacts on groundwater resources are expected to be negligible, long-term, and regional. Solar evapotranspiration is the natural system by which groundwater would exit the playa and is also a necessary process for concentrating lithium brine in the ponds at the SPLO. Since the Proposed Action would not increase groundwater withdrawal, the proposed improvements would not alter the existing Clayton Valley Hydrographic Basin (143) water balance described in Rush (1968). In a water balance simulation using annual production rates at the SPLO from 1966 through 2019, the outcomes showed that the inflow and outflow rates with SPLO production are in the same order of magnitude as the pre-extraction (Rush 1968) water balance estimates (SRK 2021).

The new ponds that would be installed as part of the Proposed Action would be placed in native clay soils that would limit seepage and infiltration (Albemarle 2022). Any seepage from the ponds that does occur would return to the uppermost aquifer or aquifers of origin, leaving the overall groundwater budget unchanged from seepage and recapturing infiltration from the two new weak brine ponds. While new production wells may be drilled in the future, the extraction from those wells would be within SPLO's existing allocation and would also not alter the water balance simulation.

Freshwater inflow to the Clayton Valley Hydrographic Basin (143) occurs at the playa margins, where mountain-front freshwater recharge occurs. Since there are no freshwater sources within the playa, the freshwater for potable uses is sourced from freshwater wells approximately 2 miles from the Project. Because the available freshwater wells are topographically upgradient from the

SPLO, brine extraction is unlikely to have an impact on the freshwater sources. Due to concern of contamination, the SPLO has monitored groundwater quality in the vicinity of the freshwater wells since 2002. The monitoring well, R-2W, is used to define and monitor the groundwater quality between the playa aquifer and the freshwater aquifer. Monitoring data have shown no impact from SPLO operations to any of the freshwater wells on playa margins (SWCA 2023a). Potential contamination impacts to freshwater resources would be minimized through the existing water monitoring measures that are detailed in SPLO's permits and other approvals, such as the SPLO Water Pollution Control Plan. This would include monitoring groundwater quality in the vicinity of existing freshwater wells at the playa margin. Additionally, in the Applicant's Water Level Sampling and Analysis Plan, it is proposed that the water levels at the County well will also be monitored annually and reported to the BLM (SWCA 2024b). Since the withdrawal of groundwater is not changing due to the Proposed Action and the basin water balance will remain intact, impacts to groundwater resources for construction, operation, and decommissioning are considered negligible, long-term, and regional. Degradation of groundwater would be further minimized by the Applicant-committed EPMs described in Appendix B, including WATER-3, WATER-4, and WATER-6.

SURFACE WATER

Surface water in the Water Resources Analysis Area includes ephemeral washes and springs and seeps. Since the washes do not drain to traditional navigable water and would evaporate prior to or upon reaching the playa, negligible impacts on ephemeral washes are anticipated.

Two seeps and springs have been identified as active and are shown in Figure 3-12 in Appendix A. Both Coyote Spring and Coyote Well are approximately 3 miles from the western boundary of the SPLO and are approximately 6,000 feet amsl (SWCA 2023b). With SPLO groundwater elevation at approximately 4,100 amsl, the seeps and springs are topographically higher than the SPLO in elevation. Coyote Spring has created a meadow and an intensely vegetated oasis; however, no flow was observed at the time of the 2023 survey, only moist soils and vegetation. Coyote Well appeared to be an artesian well discharging from a pipe to a stock tank. The discharge rate at the end of the pipe was measured as 0.26 gallons per minute at the time of the 2023 survey. An imagery analysis appears to show the conditions at the survey locations to have been stable for three decades, making it unlikely that seeps and springs in the Water Resources Analysis Area have been impacted by SPLO withdrawals and operation (SWCA 2023b). Since SPLO withdrawals would not change as part of the Proposed Action, impacts on seeps and springs are not anticipated.

The Applicant has developed a Water Level Sampling and Analysis Plan to assess the conditions of the active springs twice annually with the same methods used in the field reconnaissance in August 2023 (SWCA 2024b). Through completion of this monitoring and compliance with other permits, the impacts on surface water resources from the Proposed Action are expected to be negligible, long-term, and regional.

3.5.2.3 Irretrievable and Irreversible Commitment of Federal Resources

All of Albemarle's water rights are granted and administered by the Nevada State Engineer, and remain in good standing. Albemarle continues to work on expanding brine production through rehabilitating existing wells and drilling new production wells to use the full permitted 20,000 AFY. The Proposed Action would not impact or change the current operating condition with respect to water. Therefore, no irretrievable or irreversible commitments of resources are anticipated for water resources.

3.5.2.4 Reasonably Foreseeable Future Impacts

GROUNDWATER

The Water Resources RFFEAA includes the Clayton Valley Hydrographic Basin (143). Within the Water Resources RFFEAA there are 11 RFFAs, including six lithium mines, two solar projects, a geothermal project, a transmission line, and use of a mineral materials site. These 11 RFFAs cover approximately 23,042 acres within the Water Resources RFFEAA. There is potential for all of the lithium mining, solar, and geothermal RFFAs to require groundwater for construction and operation. Solar projects would likely use the highest volume of water during construction, while mining and geothermal projects would continue to use high volumes of water during operation. The Clayton Valley Hydrographic Basin is a designated basin, meaning that all permitted groundwater rights are approaching or exceeding the estimated annual recharge. The Applicant is currently authorized for a total of 20,000 AFY, equivalent to the perennial yield of the basin, and continues to work on expanding brine production through rehabilitating existing wells and drilling new production wells to use their permitted 20,000 AFY of groundwater. Since no new water rights are being sought as part of the Proposed Action, collective impacts to groundwater would only occur if groundwater resources beyond the perennial yield held by the Applicant for the SPLO were to become available through appropriated water rights permitted by the State of Nevada, thus increasing overall pumpage in the basin beyond its perennial yield.

While it is not anticipated that the Proposed Action would impact groundwater quality, the RFFAs within the Water Resources RFFEAA would increase the risk of degradation of groundwater quality within the Clayton Valley Hydrographic Basin (143). Degradation of groundwater due to the Proposed Action would be minimized through implementation of the Applicant-committed EPMs described in Appendix B, including WATER-3, WATER-4, and WATER-6.

SURFACE WATER

As described above, there are 11 RFFAs, consisting of pending applications for lithium mines, solar facilities, geothermal operations, a transmission line, and use of a mineral materials site. The solar facilities, geothermal operations, and lithium mines would generally involve vegetation removal, grading, and excavation activities, and would increase the coverage of impervious surfaces in some areas of the Water Resources RFFEAA. These activities would likely alter the natural surface hydrology in the vicinity of these facilities. However, the RFFAs combined with Proposed Action would only impact approximately 6% of the 356,409-acre Water Resources

RFFEAA, and the impacts would be confined within a closed basin where ephemeral washes drain to a playa. Overall, reasonably foreseeable future impacts to surface water are anticipated to be minor, long-term, and localized.

The seeps and springs within the Water Resources RFFEAA are topographically higher than the SPLO. The reasonably foreseeable future impacts to these springs would only be possible if additional groundwater withdrawals occurred elsewhere within the basin. Since the Clayton Valley Hydrographic Basin (143) is a designated basin with fully committed water rights, reasonably foreseeable future impacts to seeps and springs would be negligible.

3.5.2.5 No Action

Under the No Action Alternative, the Project would not be developed and impacts to water resources discussed under the Proposed Action would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and existing conditions in the Water Resources Analysis Area would continue.

3.6 NOXIOUS WEEDS AND INVASIVE NON-NATIVE SPECIES

More information on noxious weeds is provided in the Noxious Weeds, Invasive, and Non-Native Species SER for the SPLO (BLM 2025e).

3.6.1 Affected Environment

3.6.1.1 Analysis Area and Regulatory Framework

The Analysis Area for Project-related noxious weed impacts include the APO boundary and a 1-mile buffer (Appendix A, Figure 3-13). This Analysis Area captures the locations in which Project construction, operation, and reclamation activities would occur, including transportation routes and where noxious weeds are most likely to be present. The affected environment for noxious weeds focuses on the only two documented weed species in the Analysis Area, tamarisk (*Tamarix* sp.) and halogeton (*Halogeton glomeratus*).

The management of undesirable plants on federal lands is mandated by the Federal Noxious Weed Act of 1974 (7 USC 2801-2813), as amended by Sec. 15, Management of Undesirable Plants on Federal Lands 1990. This legislation requires federal agencies to designate a lead office and trained personnel for undesirable plant management, establish and fund management programs, execute cooperative agreements with state agencies, and implement integrated management systems to control undesirable plant species.

The BLM defines noxious weeds as plant species designated by federal or state law possessing characteristics such as aggressiveness, difficulty in management, parasitism, hosting serious insects or diseases, or being non-native to the United States (BLM 2007). The BLM's approach to managing noxious weeds and invasive species is outlined in BLM Manual 9015 − Integrated Weed Management, emphasizing the early detection and treatment of smaller weed infestations in high-risk areas to prevent further spread (BLM 1992). The BMD adheres to the current noxious weed list designated by the Nevada Department of Agriculture, detailed in NAC

555.010. Additional regulations applicable to noxious weeds include Noxious Weed Control and Eradication Act of 2004, 7 USC 7781–7786, Subtitle E and U.S. Department of Agriculture (USDA) State Noxious-Weed Seed Requirements; Recognized in the Administration of the Federal Seed Act – 7 CFR 201 (USDA 2017).

3.6.1.2 Existing Conditions

Noxious weeds, invasive species, and non-native species are characterized by their competitive nature, aggressiveness, and propensity for rapid spread, often thriving in disturbed environments and along roadways and watercourses. The transition from native to non-native plant communities can disrupt fire regimes, degrade habitat quality, diminish biodiversity, and alter ecosystem structure and function (BLM 2007). In the Project Area (Appendix A, Figure 1-2), the presence of one noxious weed species, tamarisk, and one non-native invasive species, halogeton, were documented.

TAMARISK

In the mid-1800s, tamarisk, or salt cedar, was deliberately introduced to arid regions of the western United States as an ornamental tree and for soil erosion prevention purposes (USFWS 2019). In their given environment, distinguishing between many species relies on gross morphological features of flowers, stems, leaf bracts, foliage coloration, blooming time, or plant size and shape. However, certain species, such as *T. ramosissima*, share similarities, thereby requiring expertise from taxonomic specialists, particularly in discerning subtle differences in the stamen (androecium) structure, which is visible only under a hand lens or dissecting microscope (USFWS 2019).

In the southwestern United States, tamarisk will root along outlying ephemeral water courses, canyon bottoms, isolated marshes, wet pastures, springs, desert oases, and rangelands. Predominantly pervasive in Arizona, New Mexico, western Texas, Nevada, and Utah, it also spans across southern California, the Rocky Mountain states, the Western Plains, and parts of Oregon and Idaho. Possessing an extensive root system, tamarisks tap into water bodies and extract water from unsaturated soil layers. Its deep primary root extends with minimal branching until it reaches the water table where secondary root branching intensifies. In regions where mature plants are spaced more than 25 feet apart, their roots can intermix and dominate the entire area. Tamarisk exhibits efficient water use, enabling survival and competition in arid and semiarid environments. Despite its ability to tolerate diverse conditions and potentially achieve longevity, the extent of its dominance within habitats depends on climate, historical disturbance patterns, and the influence of riparian flow regimes on water availability, flooding, sedimentation, and native plant communities (Zouhar 2003).

Tamarisk was documented in the Project Area during baselines conducted for the Proposed Action. A total of 346 individuals were recorded, predominantly concentrated along the southern and southeastern berms of the 18-south pond, with an estimated 310 individuals in this area. Among those along the southern berm, the majority were aged between 1 to 5 years at the time of the survey. Additionally, 36 individuals were observed near Goat Island, situated to the west of the proposed strong brine complex (SWCA 2023c). Tamarisk is labeled a Category C listed noxious weed. Category C weeds are defined as generally established and generally widespread

in many counties of the state. No Category A or B listed noxious weeds were observed in the Project Area.

HALOGETON

Halogeton, a non-native invasive species, is an annual plant, prominent to the western states, and it contains the toxic compound sodium oxalate, escalating in toxicity as the growing season progresses, and peaking at maturity. This invasive species poses a high risk of poisoning livestock communities when ingested.

Halogeton is commonly found along railroad beds, roads, and sheep trails, as well as in disturbed soil areas; dense populations thrive in environments like burned-over areas, overgrazed ranges, dry lakebeds, and abandoned farms (USDA 2018). While halogeton flourishes in saline soils within colder semiarid regions where native plant cover is sparse, it struggles to compete with vigorous perennials and more aggressive annuals.

Its height ranges from 3 inches to 3 feet, and it is influenced by moisture levels during the growing season, with typically five main stems emerging directly from the base (USDA 2018). Young halogeton plants feature round fleshy leaves arranged in clusters along the stem, each adorned with a characteristic small hair about 0.03 inch long. During drought conditions, the stems take on a reddish hue. Halogeton exhibits prolific seed production, with each plant generating vast quantities of seeds, some of which can remain viable in the soil for a decade or longer. Eradicating established populations older than 2 years proves impractical due to seed longevity. However, proper herbicide application can effectively manage larger infestations, while timely treatment can eradicate smaller outbreaks (USDA 2018).

Halogeton was observed throughout the Project Area. Areas of higher-than-average density as compared with the rest of the 1-mile buffer area were mapped. Most occurrences of halogeton were observed along road berms (SWCA 2023a).

3.6.2 Environmental Consequences

3.6.2.1 Analysis Method

The effects assessment analyzes direct and indirect effects on and by noxious weeds anticipated by the Proposed Action. Effects on or by noxious weeds are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C. Potential impacts from noxious weeds include the increased likelihood for introduction or spread of noxious weeds or non-native invasive plant species, thereby degrading native vegetation communities.

3.6.2.2 Direct and Indirect Impacts

Anticipated long-term impacts on or by noxious and invasive weeds are expected within the direct impact areas, particularly on the slopes of the evaporation ponds covering approximately 355 acres, which are not slated for reclamation. The persistence of long-term impacts would be evident in areas where soil disturbance is necessary for site preparation and where revegetation or reclamation efforts would be undertaken. Revegetation is not expected to be necessary on the

playa surface, because it supports minimal vegetation, but may be required on the playa margins where intermittent shrub cover is present.

Under the context of the Noxious Weeds Analysis Area, the adverse effects from tamarisk and halogeton in the SPLO Project Area would be so negligible they would not be measurable or perceptible. The less than 1% coverage from vegetation within the Project Area would not be extensively altered, and there would be no effect on the biological value or distribution of plant communities.

If the BLM or NDEP recommends revegetation for certain areas, the Applicant would coordinate to ensure stable vegetation growth and ground cover of all reclaimed areas, complete annual revegetation monitoring (including noxious weed monitoring and abatement), maintenance, and reporting for a period of time agreed upon with the BLM and the NDEP. A signed Pesticide Use Proposal would also be obtained by Albemarle prior to any ground-disturbing activity and would be updated throughout the Project. Consequently, the implementation of the Proposed Action is poised to minimally alter the function and diversity of the existing plant community, which could exacerbate the impact on noxious weed growth. However, implementation of Albemarle's Weed Management Plan and Applicant-committed EPM VEG-1 would reduce the effects of noxious and invasive weeds on native plants in the Project Area (Appendix B).

3.6.2.3 Irretrievable and Irreversible Commitment of Federal Resources

In general, vegetation, and therefore noxious weeds, occurs only on the playa margins, which is less than 1% of the Project Area. The implementation of the Pesticide Use Proposal every 6 months would not create irretrievable and irreversible commitment of resources concerning noxious weeds.

3.6.2.4 Reasonably Foreseeable Future Impacts

The Noxious Weeds RFFEAA includes the APO plus a 1-mile buffer. Within this RFFEAA, there are nine RFFAs: six lithium projects covering 4,294 acres, one geothermal project covering 1,003 acres, one mineral materials sale covering 50 acres, and one transmission project spanning 2.71 miles. These projects cover 16% of the 33,230-acre Noxious Weeds RFFEAA. Past and present actions include lithium mining, other mineral exploration and development, utilities, livestock grazing, and dispersed recreation.

The construction, operation, and maintenance of most of these past actions, present actions, and RFFAs have already led to, and will likely continue to cause, vegetation removal, soil disturbance, and an increased potential for the establishment and spread of noxious weeds. This can result in habitat degradation and fragmentation within the RFFEAA. The Proposed Action would similarly contribute to these impacts by further removing vegetation, disturbing surfaces, and potentially facilitating weed establishment and spread, leading to habitat loss and fragmentation. The introduction and spread of noxious weeds can have cascading effects on local ecosystems, including altering soil composition and nutrient cycling, which may further impact native plant communities and wildlife habitats. Additionally, as these invasive species establish

themselves, they can outcompete native vegetation, leading to a reduction in biodiversity and potentially affecting the overall ecological balance within the RFFEAA.

Although implementing the Applicant-committed EPMs outlined in Appendix B would help minimize the Proposed Action's contribution to these reasonably foreseeable future effects, it would not completely eliminate them. The reasonably foreseeable future effects on noxious weeds are anticipated to be long-term, minor, and localized.

3.6.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and the existing conditions in the Noxious Weeds Analysis Area would continue.

3.7 MIGRATORY BIRDS AND RAPTORS

More information on migratory birds and raptors are provided in SER 6, Migratory Birds and Raptors (BLM 2025f).

3.7.1 Affected Environment

3.7.1.1 Analysis Area and Regulatory Framework

The Analysis Area for direct effects on migratory bird and raptor species includes the Project Area (Appendix A, Figure 3-14). For migratory bird and raptor species, indirect effects were assessed using a 3-mile buffer around the Project Area; for golden eagles (*Aquila chrysaetos*), a 10-mile buffer around the Project Area was used based on guidance provided in Pagel et al. (2010).

Migratory birds and raptors are provided protections under the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act. More details regarding the regulatory environment for migratory birds and raptors are available in the Migratory Birds and Raptors SER (BLM 2025f).

3.7.1.2 Existing Conditions

The Project Area is within the Basin and Range physiographic province and is along a transitional zone between the Mojave Desert and Great Basin Desert ecosystems. Areas within transitional zones can exhibit assemblages of species typically found in either of the desert ecosystems. The Project itself is located at approximately 4,200 feet amsl within a playa that has little to no vegetation and is surrounded by a salt desert scrub vegetation community.
The Project's expansion area is in a relatively barren playa area with sparse cover of shrub vegetation and located adjacent to existing ponds. The Project's reconciliation areas were likely a similarly unvegetated or sparsely vegetated playa area before the pond, trench, and salt pile facilities were built.

The Project Area is located along the Pacific Flyway, which is an area where migratory birds travel north-south within the western United States. The playa and the active pond facilities can and do provide water sources not commonly found within the general region. The closest water body to the Project is approximately 57 miles southwest at Tinemaha Reservoir, south of Bishop, California. Crowley Lake is approximately 63 miles northwest, near Mammoth Lakes, California. Mono Lake, near Lee Vining, California, is approximately 75 miles northwest. In Nevada, Lake Mead, near Las Vegas, is approximately 190 miles southeast, and Walker Lake is approximately 83 miles north, near Hawthorne.

MIGRATORY BIRDS

Through the SPLO Avian Protection Plan (APP), avian species observations are recorded on an annual basis. Between 2020 and 2024, 80 migratory bird species were recorded around the Project's ponds, all of which were shorebirds, diving birds, wading birds, gulls and terns, and waterfowl species, other than one observation of an undetermined raptor species observed in 2023. Of the average 361,000 bird observations annually, eight species comprise approximately 95% of the occurrences: eared grebe (*Podiceps nigricollis*) (26%), ruddy duck (*Oxyura jamaicensis*) (23%), red-necked phalarope (*Phalaropus lobatus*) (16%), Wilson's phalarope (*Phalaropus tricolor*) (14%), American avocet (*Recurvirostra americana*) (8%), western sandpiper (*Calidris mauri*) (4%), California gull (*Larus californicus*) (3%), and least sandpiper (*Calidris minutilla*) (1%). The data also provided that American avocets and snowy plovers (*Anarhynchus nivosus*) have used the Project Area for breeding, as evidenced when chicks of those species were observed. Species occurrences throughout each year vary based on factors such as migration and breeding seasons, and peaks occur in April and September.

SPECIAL STATUS AVIAN SPECIES

Twelve BLM sensitive special status migratory bird species were determined to potentially occur in the Project Area. The species, their status, and potential for occurrence are included in Table 2-2 in SER 6 (BLM 2025f). Special status species that have potential to occur in the Analysis Area were determined based on the desktop review of the Baseline Study Report observation history (SWCA 2020a) and habitat suitability. Species with moderate or high potential to occur include bank swallow (*Riparia riparia*), common nighthawk (*Chordeiles minor*), golden eagle, loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), peregrine falcon (*Falco peregrinus*), and western snowy plover (*Anarhynchus nivosus nivosus*).

RAPTORS AND EAGLES

During the 2019–2020 golden eagle breeding season surveys (SWCA 2020b), no golden eagle or other raptor nests were recorded within the Project Area and no occupied golden eagle nests were recorded in the survey area, which comprised a 4-mile buffer around the Project Area. The only positively identified golden eagle nest observed was 3.9 miles northeast of the Project Area, which was deteriorating, in generally poor condition, and had likely not been occupied by golden eagles for several years. An additional possible golden eagle nest was observed 2.9 miles west of the Project. While this nest was in generally good condition, it was not occupied, and no positive species identification could be determined after two surveys.

Three occupied non-eagle nests (one red-tailed hawk [*Buteo jamaicensis*]), one prairie falcon [*Falco mexicanus*], and one common raven [*Corvus corax*]) were recorded during the golden eagle nest surveys conducted during the 2019–2020 breeding season. These nests were all at least 3.4 miles from the Project. The remainder of the observed nests were all unoccupied (one red-tailed hawk and 12 undetermined but resembling *Buteo* spp. or common raven nests) (SWCA 2020b).

3.7.2 Environmental Consequences

3.7.2.1 Analysis Method

Analysis of effects on migratory birds and raptors by the Proposed Action are determined by the potential loss of individuals, habitat disturbance, or modified behavior due to noise, visual, or physical disturbances. Specifically, the primary issues considered in this analysis include take of protected species; mortality or injury of species to due vehicle, power line or equipment collisions, or chemical exposure; loss of species on a scale that would diminish their population; and habitat loss and fragmentation. The analysis is informed by desktop assessments of potential habitat, field surveys, and SPLO data on bird presence within the facility.

Effects on migratory birds and raptors are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.7.2.2 Direct and Indirect Impacts

Potential effects on migratory birds (excluding raptors) resulting from the Project could include habitat loss and fragmentation, vehicle and equipment collisions, chemical exposure, and noise and human activity. Total surface disturbance for the Project would be 1,596 acres, which would reduce potential habitat on the playa and playa margins. However, because the disturbance is adjacent to existing facilities and because the playa provides limited foraging and nesting habitat, habitat loss is expected to be minimal and no substantial adverse effects to migratory birds and raptors are anticipated. Additionally, the creation of additional ponds with low total dissolved solids (TDS) would increase available foraging, loafing, and nesting habitat for waterbird species.

The Applicant would implement the Applicant-committed EPMs (Appendix B), including avoidance and monitoring methods throughout construction, operation, and reclamation, which would reduce potential impacts to levels which are not substantially adverse but would be long-term and localized.

Since the equipment and vehicle use needed to operate the facility would be similar to current operations, potential for vehicle and equipment collisions would only be increased during the 8-month construction period. Project construction collision risk would be short-term, localized, and not substantially adverse, while operations collision risk would be long-term, localized, and not substantially adverse. Impacts for concurrent and final reclamation would be similar to construction.

In addition to the 269 acres of low-TDS (weak brine) ponds, the Proposed Action would also include the development of 126 acres of high-TDS (strong brine) evaporation ponds. The strong

brine complex can be harmful and fatal to exposed avian species, and impacts would be long-term, localized, and potentially substantially adverse. The Project utilizes the APP (EDM International, Inc. [EDM] 2019) to reduce impacts through hazing birds away from hazardous areas and rehabilitating birds that are affected by salt ingestion and encrustation. In 2018 and 2019, annual avian mortality at the Project was 0.01% and 0.04%, respectively (SWCA 2020b). The addition of the expansion areas would increase avian exposure to hazardous saline waters; however, mitigations will be utilized at the new ponds and impacts are expected to be reduced to not substantially adverse through the measures implemented under the APP. The APP (EDM 2019) includes an Integrated Avian Management Program (IAMP) "to reduce avian mortality associated with mining operations and maximize avian benefits of the Silver Peak site." The Silver Peak IAMP is designed to discourage avian use of saline ponds with high TDS and encourage the use of low-TDS saline ponds while managing low saline pond habitat to maximize its value to birds as a perennial water source, creating shorebird nesting habitat, and protecting eggs and chicks from terrestrial predators (e.g., coyotes) by cutting land bridges near nesting areas to reduce access.

Potential noise impacts to avian species during the 1-year construction phase of the Project would result from noise generated by equipment. As described in Section 3.9, the estimated construction noise levels would be approximately 70 to 85 A-weighted decibels (dBA) at a distance of 50 feet. At a distance of 8,450 feet (1.6 miles), the distance to the town of Silver Peak, this noise level would attenuate to approximately 40 dBA, which is the threshold of general wildlife tolerance to noise. Additionally, data from the APP show that the existing infrastructure near the proposed expansion facilities experience low avian use, making the impacts from noise and human activity on avian species during the construction phase short-term, localized, and not likely to result in substantial adverse effects. After construction, noise levels would return to a similar level as existing operations and would create long-term, localized, and not substantially adverse impacts. Noise impacts during concurrent and final reclamation would be similar to those incurred during construction.

Albemarle currently holds both federal and state wildlife permits pertaining to the protection of avian species. The permits would be renewed upon their expiration dates to maintain authorization for the Project's expansion of facilities and operations. Additionally, Applicant-committed EPMs WILD-1, WILD-2, and WILD-3 would be implemented by the Applicant to reduce potential impacts to migratory birds (Appendix B).

3.7.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Construction of the Project would remove some of the limited foraging and nesting habitat on the playa, and Project operations would continue to generate noise from traffic associated with mine personnel and mining activities, with no perceptible increase during the operational phase of the Project. The Proposed Action analysis provides that the commitment of resources described above for the reconciliation and expansion areas are not expected to be irretrievable or irreversible with the implementation of the SPLO APP and other Applicant-committed EPMs (Appendix B).

3.7.2.4 Reasonably Foreseeable Future Impacts

The Migratory Birds and Raptors RFFEAA is composed of the APO boundary plus a 3-mile buffer, and the Golden Eagle RFFEAA is composed of the APO boundary plus a 10-mile buffer.

Within the Migratory Birds and Raptors RFFEAA are nine RFFAs, consisting of primarily lithium mining projects, a geothermal project, a transmission line, and a project to make use of materials at a mineral materials site. These nine projects comprise approximately 15,114 acres (approximately 19%) of the Migratory Birds and Raptors RFFEAA. The primary risks to migratory birds and raptors include loss of habitat, vehicle and equipment collisions, noise, and human activity. The development of lithium mining projects and geothermal projects would introduce impacts to migratory birds and raptors during construction, and noise impacts may continue through operations. Construction impacts would include the loss of potential habitat and forage for birds; however, RFFAs near the playa would have minimal habitat impact due to the sparse vegetation, while RFFAs farther from the playa may have an increased impact from habitat loss. Collectively, impacts to migratory birds and raptors are expected to be long-term, minor, and localized and SPLO's APP would continue to minimize risk to avian species at the SPLO.

The Golden Eagle RFFEAA includes the same RFFAs as the Migratory Birds and Raptors RFFEAA plus three additional projects: two solar projects and one geothermal project. In total, these projects would cover approximately 27,351 acres, or 7%, of the 368,911-acre Golden Eagle RFFEAA. The solar projects would contribute similar impacts to the mines during construction but would be further reduced during operation. The gen-tie lines associated with the solar and geothermal projects would present the additional risk of collision. Collectively, the combination of past actions, present actions, and RFFAs are anticipated to have long-term, minor, and localized impacts to golden eagles.

3.7.2.5 No Action

Under the No Action Alternative, the Project would not be developed and impacts to migratory birds and raptors discussed under the Proposed Action would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and the existing conditions in the Migratory Birds and Raptors Analysis Area would continue.

3.8 SPECIAL STATUS SPECIES

More information on Special Status Species is provided in the Special Status Species SER for the SPLO (BLM 2025g). Migratory birds and raptors, including golden eagles, are discussed in Section 3.7, Migratory Birds and Raptors.

3.8.1 Affected Environment

3.8.1.1 Analysis Area and Regulatory Framework

The Analysis Area for direct effects on special status species is the APO boundary, and the Analysis Area for indirect effects on special status species includes the APO boundary plus a 4-mile buffer (Appendix A, Figure 3-15).

Statutory guidance for the protection of special status species is primarily under the federal Endangered Species Act (ESA) and BLM policy for the management of special status species, which frame the EIS analysis for the Proposed Action. The ESA serves to protect species determined to "endangered" or "threatened" as well as designated critical habitats. The ESA prohibits the "take" of listed species without specific exemptions, extending protection to proposed species and critical habitats. Candidate species lack statutory protection but may be considered for future listing, prompting cooperative conservation efforts. BLM special status are defined as 1) species listed or proposed for listing under the ESA and 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. This designation typically indicates that the species are of conservation concern due to factors such as declining populations, habitat loss, or threats to their survival.

More details regarding the regulatory environment for special status species is available in the Special Status Species SER (BLM 2025g).

3.8.1.2 Existing Conditions

This section documents existing conditions for special status wildlife and plant species that may occur within the Project Area. The Project Area is located on a playa that is relatively barren and lacks typical desert vegetation. However, the playa and the active pond facilities provide ephemeral and perennial water sources for wildlife not commonly found within the general region (SWCA 2019).

SPECIAL STATUS WILDLIFE

There are 152 wildlife species that are listed as sensitive in the BMD (BLM 2023). Through a desktop review and site reconnaissance surveys, 25 special status species were determined to have some potential to occur in the Project Area. Of those 25 species, only five were determined to have a moderate or high potential for occurrence (SWCA 2025g:Table 2-1): desert kangaroo rat (*Dipodomys deserti*), pale kangaroo mouse (*Microdipodops pallidus*), Merriam's shrew (*Sorex merriami*), Townsend's big-eared bat (*Corynorhinus townsendii*), and western small-footed myotis (*Myotis ciliolabrum*).

Generally, amphibians, fish, and aquatic macroinvertebrates are unlikely to occur at the Project due to the high salinity of the evaporation ponds and ephemeral nature of other inundation on the playa. In Nevada, these species are typically found in freshwater. Similarly, no special status reptile or insect species are likely to occur in the Project Area due to the playa's barren conditions in the expansion area and high salinity evaporation ponds in the reconciliation area.

Results of the Nevada Department of Wildlife (NDOW) species data request for the Project Area (NDOW 2023) indicated there are three BLM-listed sensitive small mammals with potential to occur: desert kangaroo rat, pale kangaroo mouse, and Merriam's shrew. Habitat within the Project's expansion area is composed of 658 acres of barren playa with areas of sparse shrubs (<1% cover) on the playa margins and the preconstruction reconciliation areas were likely similar.

The desert kangaroo rat inhabits desert flatlands, creosote scattered flats, and sandy soils in desert washes, and can tolerate long periods without access to water (NDOW 2025). Merriam's shrew inhabits grasslands, including grassy areas within other habitats such as sagebrush scrub, pinyon-juniper woodland, and mountain mahogany shrublands (NatureServe 2025). The pale kangaroo mouse is a sand-obligate species endemic to the Great Basin and occurs in south-central Nevada in the area of the Project (Appendix A, Figure 3-15). Small mammal surveys conducted by SWCA (2020d) found evidence of small rodents, including possible pale kangaroo mouse tracks, adjacent to but outside of the Project Area where sandy soils and shrub cover occur, and no evidence within the Project's expansion area. Pale kangaroo mice, desert kangaroo rat, Merriam's shrew, and other small rodent species are unlikely to inhabit the Project Area due to the playa's salty soils and barren nature with limited resources.

Habitat for some special status bat species is present in or immediately near the Project Area, including Townsend's big-eared bat and western small-footed myotis, which have been recorded within 4 miles of the Project (SWCA 2019). The habitat within the Project Area is anticipated to primarily support foraging activities for bats due to the ponds present in the area, which are likely to attract insect species. No abandoned mines, an important resource for roosting and hibernacula for several bat species, were identified within the APO and 4-mile buffer; however, the abandoned Nivloc Mine and associated abandoned buildings are located approximately 7 miles west of the Project (USGS 2025c). Bats frequently utilize linear features, such as roads, as commuting routes between roosts and foraging grounds, and the Nivloc Road spans between Nivloc Mine and the Project and bat species may occur in this area.

ESA-Listed Species

The Bi-State distinct population segment (DPS) of greater sage-grouse (*Centrocercus urophasianus*) was proposed to be listed as threatened under the ESA on April 7, 2023. The playa supports little vegetation, and no suitable habitat for the Bi-State DPS is present within or in the immediate vicinity of the Project Area. This is corroborated by NDOW analysis indicating there is no known greater sage-grouse habitat within the Analysis Area (NDOW 2023).

The proposed threatened species (USFWS 2025a), the monarch butterfly (*Danaus plexippus*), was identified as having the potential to occur within the Project Area. The playa supports little vegetation, except where the playa transitions to upland, creating more suitable substrate for plant establishment. No milkweed plants or other suitable monarch butterfly habitat was observed within the Project Area, thereby making the likelihood of their presence unlikely (SWCA 2019). Monarch butterflies may occur in the vicinity of the Project where milkweed plants and nectar-producing flowers occur.

On May 21, 2025, the USFWS published a proposed rule to list the Fish Lake Valley tui chub (*Siphateles obesus* ssp.) as an endangered species under the ESA, which began its 12-month finding process on the petition for listing. This species is known only to six water bodies in the Fish Lake Valley, which is approximately 20 miles west of the Project on the other side of the Silver Peak Range. The Fish Lake Valley tui chub is not known to water bodies in the Clayton Valley and would not inhabit the evaporation ponds at the Project due to the high salinity concentrations. The proposed Project does not include additional groundwater pumping apart from what is currently permitted for their ongoing operations; therefore, impacts to this species are not anticipated.

SPECIAL STATUS PLANTS

Two special status plant species were determined to have the potential to occur in or near the Project Area (BLM 2025g:Table 2-2): Tiehm's buckwheat (*Eriogonum tiehmii*) and Candelaria blazingstar (*Mentzelia candelariae*). Site surveys indicate no special status plant species were found within the Project Area. The Project Area is composed of a nearly unvegetated playa. During botanical surveys, sparse vegetation (less than 1% cover) was observed in the southwestern portion of the west proposed expansion pond and on the west side of the strong brine complex. The vegetation created mounds of sandy soil on top of the playa substrate and was typically composed of homogeneous populations of iodinebush (*Allenrolfea occidentalis*), horned seablite (*Suaeda occidentalis*), or fourwing saltbush (*Atriplex canescens*) (SWCA 2020c).

3.8.2 Environmental Consequences

3.8.2.1 Analysis Method

The analysis of effects on special status species is focused on five primary issues: 1) take of a federally threatened or endangered wildlife species, including loss of eggs or young due to nest abandonment or nest destruction; 2) loss of BLM sensitive species on a scale that would contribute to their being listed as either federally threatened or endangered; 3) wildlife habitat loss and fragmentation; 4) wildlife mortality or injury due to vehicle, power line, or equipment collisions, or chemical exposure; and 5) disruption or deterrence of wildlife from suitable habitat due to noise associated with the project.

Effects on special status species are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.8.2.2 Direct and Indirect Impacts

SPECIAL STATUS WILDLIFE

The Proposed Action would expand the existing Project footprint and would result in a total of 1,596 acres (sum of expansion and reconciliation areas) of surface disturbance and habitat loss on the playa. Fragmentation of the habitat is minimal and is not expected to have any adverse effects since the Proposed Action's disturbances are directly adjacent to the existing facilities. The playa provides limited special status wildlife and plant habitat, so the loss of playa area would have no substantial adverse effects. For special status waterbird species, the creation of low-TDS ponds would increase available foraging, loafing, and nesting habitat, which would

incur long-term, localized, but not substantially adverse effects (see SER 6, Migratory Birds and Raptors) (BLM 2025f).

Given the Project Area does not provide suitable habitat for the pale kangaroo mouse, Merriam's shrew, or desert kangaroo rat and no individuals were observed within the Project Area during site reconnaissance, it is assumed that the Project will not have substantial adverse impacts to these species.

The suitable bat habitat within the Project Area is limited to foraging habitat supported by insects associated with the brine ponds. Short-term impacts associated with construction include ground-disturbing activities and noise that may deter bats from foraging in the brine ponds; however, bats typically forage at dusk and after dark, and construction is expected to occur during daytime hours so disturbances to bats are expected to be minimal. The proposed expansion would increase the number of brine ponds, which would increase foraging habitat, assuming the ponds are host to sufficient insect populations. The proposed expansion is not anticipated to impact roosting resources within 0.25 mile of the Project, the Nevada BLM standard spatial buffer for mine workings (BLM 2014). Adverse impacts to special status bats are anticipated to be minor, short-term, and localized.

ESA-Listed Species

No suitable monarch butterfly, Bi-State DPS of greater sage-grouse, or Fish Lake Valley tui chub habitat is within the Project Area; therefore, it is assumed there would be no substantial adverse impacts on these species.

SPECIAL STATUS PLANTS

The Project Area is composed of a largely unvegetated playa (<1% cover) with no special status plant species present; therefore, no substantial direct or indirect adverse impacts are anticipated.

3.8.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Construction of the Project would remove some of the limited habitat available on the playa. The Proposed Action analysis provides that the commitment of resources described above for the reconciliation and expansion areas are not expected to be irretrievable or irreversible.

3.8.2.4 Reasonably Foreseeable Future Impacts

The past actions, present actions, and RFFAs that could contribute reasonably foreseeable future impacts to special status species primarily includes lithium mines. Nine RFFAs were identified within the Special Status Species RFFEAA (the APO boundary plus a 4-mile buffer). Six of the RFFAs are lithium mines, and the other three are a transmission line, a geothermal project, and use of a mineral materials site; in total, these projects cover approximately 17,891 acres, or 17%, of the Special Status Species RFFEAA. The primary impacts to special status species associated with these types of projects are loss of vegetation and habitat, and other disturbance, such as noise, that may result from construction and operations. The past actions, present actions, and RFFAs have and would result in permanent and temporary disturbances; however, the scale of

reasonably foreseeable future vegetation loss and the potential loss of habitat for special status species within the Special Status Species RFFEAA would be long-term, minor, and localized.

3.8.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and existing conditions in the Special Status Species Analysis Area would continue.

3.9 NOISE

More information on noise is provided in the Noise SER for the SPLO (BLM 2025h).

3.9.1 Affected Environment

3.9.1.1 Analysis Area and Regulatory Framework

The Analysis Area for noise captures the area in which construction, operations, and reclamation activities would occur in the Project Area, plus a 3-mile buffer, which includes the town of Silver Peak, Nevada, the closest sensitive receptor to the Project (Appendix A, Figure 3-16).

Noise impacts fall under analysis considerations for human health. At the federal level, in response to the Federal Noise Control Act of 1972, the USEPA identified noise levels necessary to protect public health and welfare against hearing loss, annoyance, and activity interference.

The BLM does not have specific noise level criteria for evaluating auditory resource impacts from mining operations; therefore, impacts are evaluated in this document according to the estimated degree of disturbance to the nearest sensitive receptor sites.

At the state level, NRS 268.412 prevents excessive noise in Nevada. Except as otherwise provided in subsection 3 of NRS 40.140 and subsection 9 of NRS 202.450, the city council or other governing body of a city may, by ordinance regularly enacted, regulate, control, and prohibit, as a public nuisance, excessive noise that is injurious to health, or that interferes unreasonably with the comfortable enjoyment of life or property within the boundaries of the city.

3.9.1.2 Existing Conditions

Sound is mechanical energy transmitted as pressure waves through a medium, such as air, and is measured in decibels (dB). Loudness is often approximated by dBA, which adjusts for human perception of sound. The decibel scale is logarithmic, meaning a 10-dB difference represents a tenfold difference in acoustic energy. An increase of 10 dBA is generally perceived as doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. A 3-dBA change is just noticeable to humans, while a 1-dBA change is imperceptible (Cowan 1994). For wildlife, studies show that responses such as altered vocal behavior, reduced abundance in noisy areas, changes in vigilance and foraging behavior, and

impacts on fitness and ecological structure may occur when noise levels reach 40 dBA (Graeme et al. 2015).

Examples of common activities and their noise levels: normal speech at a distance of 3 feet and heavy traffic at 300 feet are both approximately 60 dBA, a food blender at 3 feet is approximately 80 dBA, and an indoor rock band is approximately 110 dBA.

There are no known sensitive noise receptors for wildlife within the Noise Analysis Area. The closest potential human receptor to this Project-generated noise is the town of Silver Peak. The westernmost boundary of the APO is approximately 200 feet south of the town of Silver Peak; however, the Project reconciliation and expansion areas are located much farther away, approximately 8,450 feet east of the town of Silver Peak.

3.9.2 Environmental Consequences

3.9.2.1 Analysis Method

Noise levels were estimated using the Roadway Construction Noise Model, which is the Federal Highway Administration's (FHWA's) national model for the prediction of construction noise. This software is based on actual sound level measurements from various equipment types taken during the Central Artery/Tunnel Project conducted in Boston, Massachusetts, during the early 1990s (FHWA 2011).

Issues identified for noise impacts associated with the Project include noise levels that would exceed human health standards developed by the USEPA (1972) at sensitive human receptor sites, which are those in excess of a 70-dBA maximum noise level, and noise levels that may impact wildlife behavior and fitness, which are those exceeding 40 dBA (Graeme et al. 2015).

The effects assessment analyzes direct and indirect effects on noise anticipated by the Proposed Action. Effects are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.9.2.2 Direct and Indirect Impacts

The Project involves expanding the SPLO, which already experiences noise from mining operations in the reconciliation areas. Construction will introduce temporary noise from various engine-powered equipment. Noise impacts must be assessed relative to their proximity to wildlife and people. Impacts to wildlife are covered in SER 6, Migratory Birds and Raptors (BLM 2025f), and SER 7, Special Status Species (BLM 2025g). The nearest non-wildlife receptors are in the town of Silver Peak, located about 200 feet south of the APO's western boundary. However, the Project's reconciliation and expansion areas are approximately 8,450 feet east of Silver Peak.

During Project construction, noise would be generated by equipment such as graders, backhoes, excavators, loaders, cranes, dozers, cement pump trucks, pavers, rollers, welders, concrete saws, and air compressors. The average sound level of any construction activity depends on the amount of time that the equipment operates and the intensity of the construction activities at the time. During construction, different equipment would be required on-site that would result in varying

noise levels due to construction activities. Noise levels for typical construction equipment that would likely be used for the Project are in the approximately 70 to 85 dBA range at 50 feet, attenuating as one moves further away from the noise source (see Table 4-1 in BLM 2025h).

With a measured maximum noise level of 85 dBA at 50 feet, applying the inverse square law for attenuation, the noise level at 8,450 feet (the distance from the Project to Silver Peak) is estimated to be 40.4 dBA. The Project would not involve blasting, and construction would occur during daytime hours, ensuring noise levels remain below the USEPA's human health standards and do not exceed 70 dBA at sensitive human receptor sites. While noise levels would exceed the general wildlife tolerance of 40 dBA (Graeme et al. 2015) near construction areas, they would decrease to around 40 dBA at approximately 8,500 feet, reducing impacts to wildlife. Disturbance to wildlife is expected to be minimal, as the playa's habitat conditions are not suitable or attractive for many species.

Project construction can generate varying levels of ground-borne vibration, depending on the construction methods and equipment used. These vibrations decrease in amplitude with distance and can affect nearby buildings differently based on soil type, ground strata, and building construction. Vibration effects range from imperceptible to low rumbling sounds and perceptible vibrations, with slight damage possible at the highest levels. However, construction-induced vibrations rarely damage structures. Activities like grading and heavy equipment movement may produce localized vibrations, but blasting or pile-driving is not anticipated. Generally, construction-related ground-borne vibration is not expected to extend beyond 25 feet from the generating source. As a result, no vibration-related impacts to the surrounding environment would occur.

Project operations would continue to generate noise from traffic associated with mine personnel and mining activities within the APO, with no perceptible increase due to the Project. The sound generated during operations would be at the same level or below the level of construction and, therefore, would not be audible at the closest sensitive receptors, which is the town of Silver Peak. Noise impacts during decommissioning would be similar to those of construction and are expected to be shorter in duration.

3.9.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Project operations would continue to generate noise from traffic associated with mine personnel and mining activities within the APO, with no perceptible increase due to the Project. The sound generated during operations would be at the same level or below the level of construction and, therefore, would not be audible at the closest sensitive receptor, the town of Silver Peak. Noise impacts during decommissioning would be like those of construction and are expected to be shorter in duration. The analysis of the Proposed Action provides that noise from construction and operation of the reconciliation and expansion areas are not expected to be irretrievable or irreversible commitment of resources.

3.9.2.4 *Reasonably Foreseeable Future Impacts*

The Noise RFFEAA includes the SPLO boundary plus a 3-mile buffer. Within this RFFEAA, there are nine RFFAs including six lithium projects covering 13,076 acres, a mineral materials sale covering 50 acres, a geothermal project covering 1,989 acres, and one transmission project spanning 9.4 miles. These projects cover 19% of the 80,422-acre Noise RFFEAA.

New and ongoing lithium, geothermal, and transmission projects would collectively affect noise levels in and around the Noise RFFEAA. Lithium mining operations typically generate noise from activities such as drilling and the operation of heavy machinery. Solar developments, while generally quieter than mining operations, can contribute to noise during the construction phase due to land clearing, equipment installation, and increased traffic. Geothermal operations primarily contribute noise during construction and from drilling activities. The transmission line, involving activities such as pole installation and maintenance, can also add intermittent noise, further contributing to the overall soundscape.

The collective noise impacts are influenced by the spatial and temporal overlap of these projects, potentially leading to periods of heightened noise levels that could affect nearby sensitive receptors, such as the small town within proximity. However, since the RFFAs are at various stages of approval, operation, or production, not all projects will be in the construction phase, which is associated with higher noise levels, simultaneously. Additionally, any future projects sited on public land within the Noise RFFEAA would be required to incorporate measures to meet the human health standards for noise thresholds developed by the USEPA (1972). The reasonably foreseeable future effects on noise are anticipated to be short-term, minor, and localized.

3.9.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts concerning noise would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and existing conditions in the Noise Analysis Area would continue.

3.10 NATIVE AMERICAN RELIGIOUS CONCERNS

More information on Native American religious concerns is provided in the Native American Religious Concerns SER for the SPLO (BLM 2025i).

3.10.1 Affected Environment

3.10.1.1 Analysis Area and Regulatory Framework

The Analysis Area for the Proposed Action for Native American traditional values encompass the proposed disturbance reconciliation areas as well as the expansion areas, all existing within the Northern Paiute traditional homeland, which includes most of the BMD and parts of the Elko BLM District. The Northern Paiute are the Indigenous or aboriginal people of the area, with the Western Shoshone Indigenous to areas just east of the Project Area. The Analysis Area contains

a variety of wildlife and vegetation historically used by the Northern Paiute that are still used today. The Project Area is in Clayton Valley, an internally drained valley west of the town of Goldfield. Clayton Valley is bordered by Lone Mountain to the north, the Palmetto Mountains to the south, and the Silver Peak Range to the southwest, with Montezuma Peak and the town of Goldfield to the east. Situated west of the Project Area, the White Mountains have the highest peak in Nevada, Boundary Peak, with an altitude of 13,140 feet amsl.

Summaries of federal laws, regulations, and standards that govern Tribal consultation and Native American traditional values for the Project, in addition to relevant BLM plans and agreement documents, are provided in the Native American Religious Concerns SER (BLM 2025i).

3.10.1.2 Existing Conditions

The Northern Paiute are the Indigenous or aboriginal people of the area, with the Western Shoshone adjacent and to the east of the Project Area as well. The Northern Paiute refer to themselves as "Nuwu" and the Western Shoshone refer to themselves as the "Newe," with both terms translating to "the people" (Bengston 2003). Their hunter-gatherer ancestors occupied a vast territory in autonomous, highly mobile groups associated with specific home districts, united by a common language and culture. For additional ethnographic information regarding the Northern Paiute and Western Shoshone, refer to Section 2.3 of the Native American Religious Concerns SER (BLM 2025i).

3.10.2 Environmental Consequences

3.10.2.1 Analysis Method

EFFECTS ASSESSMENT METHODOLOGY

The analysis of potential impacts to Native American traditional values from the Project is focused on six primary issues: 1) disturbance to pre-contact cultural resource sites, 2) limitations to access to important Native American cultural sites, 3) visual changes to the landscape from important Native American cultural sites, 4) changes to yield of plants of importance, including pine nut harvesting or wood harvesting, or wildlife harvest, 5) changes in the use of spring sites due to changes in water quantity or quality, and 6) changes to spiritual or religious use of the Native American Religious Concerns Analysis Area.

Effects on Native American traditional values are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.10.2.2 Proposed Action

The Proposed Action is a federal undertaking, with the BLM serving as the lead federal agency for NEPA review and cultural resource compliance.

Should pre-contact sites or resources of concern not previously identified be discovered during reconciliation or construction activities, the preferred impact resolution measure would be avoidance of impacts to the resource. If avoidance would not be reasonably feasible, the BLM would consult with the appropriate Native American Tribe(s) and individuals to obtain

information about the identified concerns and determine the preferred mitigation measures. After discussions with the appropriate Native American Tribe(s), the BLM could determine the appropriate course of action. Albemarle would continue to implement the Applicant-committed EPMs as well. Impacts to pre-contact cultural resources would be minor to moderate, long-term, and localized.

Tribal Consultation

The BLM provided Tribes with an invitation to the Project NEPA kickoff meeting in December 2023 (Table 3-3). The BLM will continue to coordinate and consult with Tribes with ancestral connections to the Project Area.

Table 3-3. BLM and Tribal Consultation

Date	Tribe	Consultation Type
12/21/2023	Duckwater Shoshone Tribe, Ely Shoshone Tribe, Moapa Band of Paiutes, Timbisha Shoshone Tribe, Yomba Shoshone Tribe	Tribal consultation initiation letter and Invitation to Project NEPA kickoff meeting
2/28/2025	Duckwater Shoshone Tribe, Ely Shoshone Tribe, Moapa Band of Paiutes, Timbisha Shoshone Tribe, Yomba Shoshone Tribe	Scoping initiation letter and invitation to participate in the public scoping period
3/31/2025	Western Bands of the Shoshone Nation of Indians	Scoping comment letter submitted

3.10.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Concerns have not been raised by consulted Tribes regarding this Project, and no sites eligible for the NRHP exist within the Project Area, hence no irretrievable and irreversible commitment of resources are anticipated for Native American Religious Concerns with the Proposed Action. For detailed information on cultural resources, access, visual effects, springs sites, spiritual and religious use areas, plants, and wildlife within the Project Area, as well as regional environmental impacts, see Sections 4.2.2 through 4.2.9 in the Native American Religious Concerns SER (BLM 2025i).

3.10.2.4 Reasonably Foreseeable Future Impacts

The Native American Religious Concerns RFFEAA includes the APO boundary. There are two RFFAs: the Grid Battery Metals: Clayton Valley Lithium Project and the Rockwood Lithium (Goat Island) Mineral Material Sale, totaling 45.58 acres. Past and present actions include lithium mining. The sparsely vegetated basin and largely barren playa have no existing sites eligible for NHPA or Native American Religious Concerns. No reasonably foreseeable future impacts are anticipated from the Project for Native American Religious Concerns when considered with past, present, and reasonably foreseeable future actions. In the event that cultural resources and/or human remains are inadvertently discovered during construction, Applicant-committed EPMs CR-1 and/or CR-2 (Appendix B) will be implemented, with reasonably foreseeable future effects anticipated to be permanent, adverse, and localized.

3.10.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts to Native American religious concerns would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and existing conditions in the Native American Religious Concerns Analysis Area would continue.

3.11 HAZARDOUS AND SOLID WASTES

More information on hazardous and solid wastes is provided in the Hazardous and Solid Waste SER for the SPLO (BLM 2025j).

3.11.1 Affected Environment

3.11.1.1 Analysis Area and Regulatory Framework

The Analysis Area for hazardous and solid waste impacts encompasses the SPLO APO boundary, and includes the air, water, soil, and biological resources in and adjacent to the Project Area as these resources could be affected by an accidental release of hazardous materials during transport to and from the Project Area, during storage and use within the SPLO, or during mining operations and mineral processing (Appendix A, Figure 3-17).

"Hazardous materials" are defined and regulated under a number of regulatory programs, including the Occupational Safety and Health Administration, the Mine Safety and Health Administration (MSHA), the Nuclear Regulatory Commission, the U.S. Department of Transportation, the Comprehensive Environmental Response, Compensation, and Liability Act, the Resource Conservation and Recovery Act (RCRA), the Superfund Amendments and Reauthorization Act, the Oil Pollution Act of 1990, the State of Nevada Water Pollution Control Permit program, and the Nevada Division of Public and Behavioral Health.

The regulatory definition of solid waste consists of a broad range of materials that include garbage, refuse, wastewater treatment plant sludge, nonhazardous industrial waste, and other materials (e.g., solid, liquid, or contained gaseous substances) resulting from industrial, commercial, mining, agricultural, and community activities (USEPA 2014). Solid wastes are regulated under different subtitles of RCRA, which is an amendment to the Solid Waste Disposal Act of 1965, and include hazardous waste (discussed in the previous section) and nonhazardous waste. Nonhazardous waste is regulated under RCRA Subtitle D.

More details regarding the regulatory environment for hazardous and solid waste is available in the Hazardous and Solid Waste SER (BLM 2025j).

3.11.1.2 Existing Conditions

The affected environment for hazardous materials includes air, water, soil, and biological resources in and adjacent to the Project Area. These resources could be affected by an accidental release of hazardous materials during transport to and from the Project Area, during storage and

use within the Project Area boundary, and during typical mining operations and minerals processing. A description of baseline conditions for air, water, soil, and biological resources in the Project Area is provided in Section 3.2, Air Quality; Section 3.5, Water Resources; Section 3.7, Migratory Birds and Raptors; Section 3.8, Special Status Species; Section 3.14, Soils; and Section 3.15, Vegetation.

The SPLO is in a rural community in the southeastern portion of Nevada, near the town of Silver Peak in Esmeralda County. Existing infrastructure within the Hazardous and Solid Waste Analysis Area, including the existing SPLO facility, transmission lines, and major roads, may have used, stored, transported, and disposed of potentially hazardous materials. According to the SPLO Spill Contingency Plan (Albemarle 2022, Appendix D), there are no reports or indications that materials from previous activities within the Hazardous and Solid Waste Analysis Area have been released to the environment. This was corroborated by a BLM records search on May 26, 2025, of the following online databases: USEPA National Priorities List online map, USEPA Envirofacts Database, Underground Tank Finder, and USGS Mineral Resources Data System (USEPA 2025a, 2025b, 2025c; USGS 2025b). The closest hazardous waste sites are more than 15 miles outside of the Project Area and have been effectively responded to or remediated, as appropriate (USEPA 2019).

3.11.2 Environmental Consequences

3.11.2.1 Analysis Method

The analysis of impacts on or from hazardous and solid wastes is focused on the potential for accidental spills during the transport, handling, storage, or disposal of hazardous materials, including potential spills of hazardous materials resulting from mining operations or minerals processing, or for the potential discovery of non-Project-related sources of contamination. Effects related to hazardous materials and solid waste are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.11.2.2 Direct and Indirect Impacts

Within the Hazardous and Solid Waste Analysis Area, there are no RCRA sites, Superfund sites, or other potential locations of hazardous substances, pollutants, or contaminants. Construction of all facilities would be within the APO boundary, and therefore, the potential release of existing hazardous substances during construction would be unlikely. Although there are no reported hazardous waste sites within or near the Hazardous and Solid Waste Analysis Area, there is a potential for discovery of non-Project-related sources of contamination during ground-disturbing activities and the potential for the nearby release of hazardous materials or wastes that could reach the Project Area through runoff, groundwater migration, or other environmental transport methods. If non-Project-related contamination is identified during construction, operations, or reclamation, it would be managed appropriately through similar transport, storage, handling, and disposal methods used for Project-related hazardous materials and wastes in accordance with applicable regulations and SPLO Spill Contingency Plan (Albemarle 2022:Appendix D).

Important issues related to the use of hazardous materials for the Project include potential impacts on the environment from an accidental release of hazardous materials or fuels during

use, storage, or transportation within the Project Area boundary (including amended rights-of-way) or along transportation routes to and from the Project. The criterion for evaluating hazardous materials impacts is the risk of a potential spill and the associated impacts on receptors along transportation routes or exposure pathways.

Some hazardous materials would be used during construction, such as fuels, oils, and lubricants, and during mining and processing operations, such as hydrochloric acid, lithium metal, pebble lime, soda ash, and lithium carbonate. As an operating facility, the SPLO has developed plans and procedures for the safe identification, receipt, storage, transportation, and disposal of all hazardous materials, which minimize risk to staff, the public, and the environment in compliance with regulatory permits and agencies that govern the handling and disposal of hazardous materials. In the event of a spill, whether minor or major, the SPLO's Spill Contingency Plan would be implemented. This would include following all emergency response procedures, and all procedures specific to the hazardous material in question (Albemarle 2022:Appendix D). Any activities completed as part of the Proposed Action would be in compliance with these plans and procedures.

All chemicals would be stored and handled in accordance with manufacturers' recommendations and applicable regulations. The Safety Data Sheets for chemicals would be kept at locations that are accessible to the working personnel in accordance with the MSHA Hazard Communication Standard.

Transportation of all petroleum products (gasoline and diesel fuels) and other hazardous chemicals to the site would be by an approved transport company on a regular schedule using a predetermined route and pilot guide vehicles (according to applicable U.S. Department of Transportation regulations). Solid and hazardous wastes would be appropriately managed following the Project's Solid and Hazardous Waste Management Plan (SHWMP).

Overall, based on the small quantities of hazardous waste that would be generated by the Proposed Action, an accident resulting in a release to the environment during transportation from the Proposed Action area is not anticipated. Additionally, implementation of Albemarle's SHWMP, Emergency Response Plan, and Applicant-committed EPMs HAZ-1, HAZ-2, and HAZ-3 (Appendix B) would further minimize the risk of impacts should a spill or release occur. The safety and containment measures that would be implemented during the handling and transport of hazardous materials would minimize the potential for transport-related spills and any spill-related effects, which would likely be minor, short-term, and localized. As a result, there would not be an adverse impact from the management of non-Project-related hazardous materials and wastes.

3.11.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Albemarle's existing plans and procedures in compliance with current federal laws would continue to be implemented at the SPLO. Due to the small quantities of hazardous waste that would be generated by the Proposed Action, it is anticipated there would not be irretrievable and irreversible commitment of resources concerning hazardous and solid wastes.

3.11.2.4 Reasonably Foreseeable Future Impacts

The Hazardous and Solid Waste RFFEAA includes the APO boundary. Past actions, present actions, and RFFAs that could contribute to reasonably foreseeable future impacts related to hazardous and solid waste include existing transmission infrastructure and highway improvement and maintenance projects. There are currently two known RFFAs with a total of approximately 45 acres overlapping the Hazardous and Solid Waste RFFEAA: a lithium mine and use of a mineral materials site. These projects cover less than 1% of the Hazardous and Solid Wastes RFFEAA.

The lithium mine would likely be using or producing similar hazardous materials as the Proposed Action and the extraction of minerals from the materials site would likely use fuels, oils, and lubricants for vehicles and heavy machinery. Both projects would have the potential to contribute to hazardous waste and safety impacts during both construction and typical operations and maintenance activities. However, projects on state and federal land would be required to incorporate measures to minimize impacts related to hazardous and solid waste. Overall, it is expected past actions, present actions, and RFFAs would result in long-term, minor, and localized collective impacts from hazardous and solid waste.

3.11.2.5 No Action

Under the No Action Alternative, the APO would not be accepted by the BLM, and the activities described in the Proposed Action would not occur. The SPLO would continue to operate as it is currently authorized, and existing authorized activities involving the use and management of hazardous wastes would continue. Any existing, unidentified sites of contamination would remain and would not likely be encountered or managed unless future proposed development activities performed site assessments or surface-disturbing activities that revealed sources of contamination.

3.12 VISUAL RESOURCES

More information on visual resources is provided in the Visual Resources SER for the SPLO (BLM 2025k).

3.12.1 Affected Environment

3.12.1.1 Analysis Area and Regulatory Framework

The Visual Resources Analysis Area comprises a 1-mile radius around the Project Area. Visual resources consist of the physical features that make up the visible landscape (natural features such as land, water, vegetation, and topography and human-made features such as buildings, roads, utilities, and structures) as well as the response of viewers to those features. The Analysis Area represents where in the surrounding landscape potential visual effects from the Project may be discerned by the casual observer. The Analysis Area was determined based on the scale of the proposed Project components and the similarity of those features to the existing landscape (Appendix A, Figure 3-18).

Several applicable regulations and policies pertain to visual resources, including FLPMA, NEPA, and BLM-specific guidance. Section 102(a)(8) of the FLPMA emphasizes the protection of the quality of scenic resources on public lands, and Section 101(b) of the NEPA requires that measures be taken to ensure that aesthetically pleasing surroundings be retained for all Americans. To ensure that these objectives are met, the BLM devised the Visual Resource Management (VRM) system, which provides a way to inventory and analyze scenic values in order to determine appropriate levels of management (BLM 1984). The system involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). These classes represent the relative value of the existing visual landscape as well as establish a baseline from which to measure impacts that a proposed project may have on these values. Table 3-4 provides the VRM classes and their associated management objectives (BLM 1986a).

Table 3-4. VRM Class Descriptions

VRM Class	Description
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and should not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of the landscape.

The Visual Resources Analysis Area is managed under the TFO RMP (see Section 1.5 and Table 1-2) wherein it established a VRM objective to "designate VRM classes and maintain existing scenic qualities" for lands within their administered areas (BLM 1997). The RMP also included an objective to manage scenic quality along five highways as VRM Class III, including SR 265 between Blair Junction and Silver Peak, which is near (within 0.5 mile of) the Project Area.

3.12.1.2 Existing Conditions

Existing conditions of the Visual Resources Analysis Area for visual resources are discussed in terms of the existing scenery and the existing visual conditions or values (BLM 1986a). More information and definitions of the visual conditions are provided in the Visual Resources SER for the SPLO (BLM 2025k).

The landscape around the Visual Resources Analysis Area is characterized by typical Basin and Range topography in a relatively undeveloped area. The SPLO consists of existing brine ponds and processing facilities centralized in a broad, flat playa surrounded by hills and mountains.

Vegetation is sparse, and the bright white playa attracts attention amid the brown and tan hues of the desert setting. The town of Silver Peak is centered along SR 265, and the natural landscape has visual disruptions from the existing roadway, utility corridors, and residential structures. Silver Peak is at the end of SR 265 and may receive through traffic from residents or people seeking dispersed recreation opportunities in areas such as the Clayton Valley Dunes and the Silver Peak Range.

As for VRM Class, the Project Area is entirely within a VRM Class IV area. The objective of VRM Class IV allows for major modifications of the existing landscape and activities that may dominate view attention (see Table 3-4 above). Although VRM Class IV areas allow for a high level of change, mitigation to minimize impacts to visual resources should be included in the Project design. Potential views of the Project on BLM-administered lands may occur from the community of Silver Peak, travelers on SR 265, and users of dispersed recreation areas near the Project Area.

3.12.2 Environmental Consequences

3.12.2.1 Analysis Method

A desktop-based qualitative analysis of visual dominance, scale, and contrast was used in determining to what degree the Project would attract attention from viewers and to assess the relative change in character as compared to the existing landscape and its inherent scenic quality (Table 3-5). The analysis takes into account the existing landscape in the Visual Resources Analysis Area (including the existing facilities and structures) and the perceived visual contrast from sensitive viewers (i.e., residents of Silver Peak, travelers on SR 265, and recreationists). This analysis was then used to determine the Project's conformance with the VRM Class objectives for the Proposed Action and No Action Alternative.

Table 3-5. Criteria for Assessing Level of Impacts to Visual Resources

Level of Impacts	Contrast Perceived by Sensitive Viewers	Change to Landscape Character
None	The element contrast is not visible or perceived.	Landscape character is intact with only minor, if any, modifications. Project elements repeat the form, line, color, texture, or scale common in the landscape.
Low	The element contrast can be seen but does not attract attention.	Modifications may be present but repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such scale that they are not evident. Project elements would introduce the form, line, color, texture, or scale common in the landscape and would be visually subordinate.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.	Modifications remain visually subordinate to the landscape character being viewed. Project elements would introduce form, line, color, texture, or scale not common in the landscape and would be visually prominent in the landscape.
High	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	Modifications strongly dominate the landscape character being viewed. Project elements would be out of scale or contain detail that is out of character with natural landscape as viewed in the foreground or middleground.

Source: BLM (1986b).

The effects assessment analyzes direct and indirect effects on visual resources anticipated by the Proposed Action. Effects are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.12.2.2 Direct and Indirect Impacts

The Proposed Action would expand the SPLO by approximately 1,596 acres, which would increase its disturbance footprint by approximately 25%. The Project includes the expansion and reconciliation of pond areas (1,557 acres), wells (<1 acre), a pump system with piping infrastructure (5 acres), a lined conveyance trench (<1 acre), and a salt stockpile (34 acres). The proposed facilities would be visually similar to the existing SPLO infrastructure. The facilities would be low in stature and of relatively small scale, as compared to the existing condition, and would be compatible with the current visual disturbance created by the SPLO.

The Proposed Action would likely not attract attention from sensitive viewers due to visual screening by distance and topography. The proposed facilities are approximately 2 to 4 miles from the community of Silver Peak and approximately 2 miles from the nearest public road. During Project construction, temporary visual impacts may occur from the presence of construction staff and equipment on-site. Like the permanent impacts, these temporary impacts are likely to have a minimal effect on visual quality due to existing disturbance and the relatively small scale of the Project.

The Proposed Action would introduce structural elements that already exist in the Visual Resources Analysis Area and that would be visually subordinate in the visual setting. The landscape may appear slightly altered due to the expanded disturbance area. Based on these factors, impacts to visual resources from the Proposed Action are expected to be minor, long-term, and localized.

The Project Area is entirely within a VRM Class IV area where the objective allows for major modifications of the existing landscape and activities that may dominate view attention. Although the Project would conform with VRM class objectives, design measures are included to mitigate visual impacts. The Project footprint and soil disturbance will be minimized to the extent practicable and dust abatement measures will be employed during construction. Once the mine is decommissioned, most of the pond embankments and dikes will remain on-site and permanent built structures (such as pump systems) will be removed. Construction of the expansion area will occur during daytime hours and will not require night lighting. Operation of the expansion and reconciliation areas will not include lighting.

3.12.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Irretrievable or irreversible visual resource changes are those that cannot be fully reversed or recovered because the visual uses are permanently affected or visual resource opportunities are lost. These changes include permanent landscape alterations due to the expansion of mining infrastructure, which create a lasting visual contrast with the natural environment. The scenic quality may diminish as natural landforms and vegetation are removed, and the visual dominance of mining operations can persist even after active mining ends. However, during reclamation, the

visible structures and materials would be removed from the Project Area. Therefore, the Proposed Action is expected to have irretrievable but not irreversible commitment of resources.

3.12.2.4 Reasonably Foreseeable Future Impacts

The Visual Resources RFFEAA includes the SPLO boundary plus a 1-mile buffer. Within this RFFEAA are nine RFFAs: six lithium projects covering 4,294 acres, one geothermal project covering 1,003 acres, one mineral material sale covering, 50 acres, and one transmission project spanning 2.71 miles. These projects cover 16% of the 33,230-acre Visual Resources RFFEAA. Past and present actions include lithium mining, other mineral exploration and development, utilities, livestock grazing, and dispersed recreation.

The combination of these past actions, present actions, and RFFAs can result in a change in the natural characteristic landscape to a more industrialized setting. Reasonably foreseeable future impacts to the existing landscape character, scenic quality, and views from sensitive viewing platforms would vary depending on the setting, presence of existing built features, visibility conditions, and distance to and the contrast created by the components of the actions. The expansion of industrial areas in areas that currently do not contain development or infrastructure results in greater noticeable changes to the landscape and views of the Visual Resources RFFEAA than those that occur within, nearby, or visible from another existing development. The past actions, present actions, and RFFAs are unlikely to introduce structural elements that do not already exist in the Visual Resources RFFEAA, given the extent of lithium mining already occurring in the area. The reasonably foreseeable future effects on visual resources are anticipated to be long-term, minor, and localized.

3.12.2.5 No Action

Under the No Action Alternative, the Project would not be developed and impacts to visual resources discussed under the Proposed Action would not occur.

3.13 PALEONTOLOGICAL RESOURCES

More information on paleontological resources is provided in the Paleontological Resources SER for the SPLO (BLM 2025l).

3.13.1 Affected Environment

3.13.1.1 Analysis Area and Regulatory Framework

The Analysis Area for paleontological resources consists of the area encompassed by the APO boundary where impacts to paleontological resources may occur related to construction, operation, and reclamation activities (Appendix A, Figure 3-19).

Regulations on implementing NEPA require the consideration of important natural aspects of our national heritage during the assessment of environmental consequences of proposed projects with federal land, or in some cases, federal oversight (43 CFR 46.215). With the passage of the Paleontological Resources Preservation Act, paleontological resources are considered significant

resources; therefore, it is standard practice to include paleontological resources in NEPA studies in all instances in which there is a possible impact in order to make a determination of the significance of affected resources and to take into account whether irreversible adverse commitment of resources to such resources can or should be avoided, minimized, or mitigated.

More details regarding the regulatory environment for paleontological resources is available in the Paleontological Resources SER (BLM 2025l).

3.13.1.2 Existing Conditions

The SPLO is located in the Great Basin, part of the Basin and Range physiographic province. The Great Basin's extensive geologic history has resulted in uplifted marine rocks from hundreds of millions of years ago and basins filled with terrestrial sediments from thousands of years ago, and provides valuable insights into global and regional paleoenvironmental changes and evolution, facilitating significant scientific discoveries. Within the larger Great Basin, the Project is located in the Clayton Valley, a closed basin that has accumulated thick clastic and evaporite deposits due to ongoing subsidence and restricted water flow, which has restricted the valley with no outlet. During the Quaternary period, these deposits formed in lacustrine, fluvial, and alluvial environments, influenced by climate and tectonic changes, with thick evaporite and mud layers developing during low-precipitation periods (Davis et al. 1986). Volcanic eruptions to the west contributed pyroclastic material, creating layers of ash interbedded with sedimentary deposits from surrounding Tertiary, Proterozoic, and Paleozoic rocks (SRK 2021). Subsidence and deposition were greater on the east side, leading to thicker Quaternary deposits from west to east (Davis et al. 1986; SRK 2021).

The Paleontological Resources Analysis Area contains nine geologic units, ranging in age from Holocene to Proterozoic and with BLM Potential Fossil Yield Classifications (PFYC) ranging from 2 to 4. From youngest to oldest, these nine geologic units are 1) Playa, Lakebed, and Floodplain Deposits; 2) Younger Alluvium; 3) Older Alluvium; 4) Siebert Tuff; 5) Harkless Formation; 6) Poleta Formation; 7) Campito Formation; 8) Deep Spring Formation; and 9) Wyman Formation. The Quaternary lacustrine, fluvial, and alluvial deposits reach great thickness in the Clayton Valley, and within the Paleontological Resources Analysis Area, these deposits generally extend from the surface to depths of approximately 300 feet in the west to over 1,000 feet thick in the east (SRK 2021). Table 3-6 provides a summary of the paleontological potential of the geologic units in the Paleontological Resources Analysis Area. The Paleontological Resources SER for the SPLO provides summary descriptions of the geology and paleontological potential of these geologic units (BLM 2025l).

Table 3-6. Age and Paleontological Potential of Relevant Geologic Units in the Paleontological Resources Analysis Area

Geologic Unit	Map Abbreviation	Age	Paleontological Potential
Playa, Lakebed, and Flood Plain Deposits*	Qpl*	Holocene and Pleistocene	Low (PFYC 2) to moderate (PFYC 3), increasing with depth†
Younger Alluvium*	Qya*	Holocene and Pleistocene	Low (PFYC 2) to moderate (PFYC 3), increasing with depth†

Geologic Unit	Map Abbreviation	Age	Paleontological Potential
Older Alluvium	Qoa	Pleistocene and Pliocene	Moderate (PFYC 3)†
Siebert Tuff	Ts	Miocene	High (PFYC 4)†
Harkless Formation	Ꞓh	Early Cambrian	Moderate (PFYC 3)
Poleta Formation	Ꞓp	Early Cambrian	High (PFYC 4)
Campito Formation, Montenegro Member	Ꞓcm	Early Cambrian	Moderate (PFYC 3)
Campito Formation, Andrews Mountain Member	Ꞓca	Early Cambrian	Moderate (PFYC 3)
Deep Spring Formation	ds	Precambrian	High (PFYC 4)
Wyman Formation	wy	Precambrian	Moderate (PFYC 3)

Source: Geologic unit names and symbols from Albers and Stewart (1972), except where noted.

* Geologic unit names and symbols from Crafford (2007).

† PFYC values modified in SWCA (2023d) or herein. See BLM (2025l) for modifications.

3.13.2 Environmental Consequences

3.13.2.1 Analysis Method

The methodology for assessing the affected environment and evaluating the Project's potential environmental consequences on paleontological resources includes identifying surface and subsurface geologic units in the Paleontological Resources Analysis Area. Background research assesses the potential of each geologic unit to yield paleontological resources and their scientific significance. The preliminary design plans are analyzed to determine the type, degree, and extent of the Project's impacts on these resources.

The Paleontological Resources Analysis Area was superimposed on relevant digital geologic map data (Albers and Stewart 1972; Crafford 2007) and digital BLM PFYC data (BLM 2025l) to identify geologic units and assess their potential to yield paleontological resources. In the western United States, including Nevada, the BLM assigns a PFYC ranking (1–5 and U for Unknown) to geologic units based on the diversity and abundance of paleontological resources and the potential for future discoveries (Table 3-7) (BLM 2022b). Paleontological resource management concerns and mitigation efforts are related to that potential and PFYC classification. This information was then used to identify areas for further research and provide guidance for the management recommendations included herein. For geologic units for which BLM-defined PFYC values were not available or not appropriate for the Project Area, adjustments were made and noted.

Table 3-7. PFYC Rankings and Management Concerns

PFYC	Description	Management Concerns
Class 1 – Very Low	Geologic units that are not likely to contain recognizable paleontological resources, such as igneous, metamorphic, or Precambrian-age rocks.	Negligible or not applicable
Class 2 – Low	Sedimentary geological units that are not likely to contain paleontological resources, such as those younger than 10,000 years, recent eolian deposits, and those that have undergone physical or chemical changes.	Generally low

PFYC	Description	Management Concerns
Class 3 – Moderate	Sedimentary units with variable fossil content and significance.	Moderate
Class 4 – High	Geological units with high occurrence of paleontological resources but with variable occurrence and predictability. Contained paleontological resources may be at risk from human disturbance.	Moderate to high
Class 5 – Very High	Geological units that consistently and predictably produce paleontological resources of significant scientific value that may be at risk from human disturbance.	High to very high
Class U – Unknown	Geologic units that cannot receive an informed PFYC assignment due to the unit being poorly studied.	Moderate to high until a provisional ranking is assigned
Class W – Water	Most surface water bodies do not contain paleontological resources, but shorelines should be considered for uncovered paleontological resources. Reservoirs, karst area sinkholes, cenotes, and dredged river systems may contain paleontological resources.	Low
Class I – Ice	Includes any area that is mapped as ice or snow. Receding glaciers, including exposed lateral and terminal moraines, should be considered for their potential to reveal recently exposed paleontological resources. Other considerations include melting snow fields that may contain paleontological resources with possible soft-tissue preservation.	Low to moderate

Geological and paleontological literature and technical reports were reviewed to gather additional information on the geologic units in the Paleontological Resources Analysis Area and their potential to yield fossils. Since geologic units can cover large areas with similar lithologies and fossils, the review included regions with the same or similar units beyond the Paleontological Resources Analysis Area. Fossils discovered in similar units elsewhere in Nevada indicate the potential for fossil finds during the development of the Proposed Action.

In November 2023, a records search for known fossil localities within the Paleontological Resources Analysis Area and vicinity was requested from the Las Vegas Natural History Museum but was unfulfilled due to staffing constraints. However, searches were conducted in the online collections database of the University of California Museum of Paleontology and the Paleobiology Database for paleontological localities from relevant geologic units. This research provided insight into the status and extent of previously recorded paleontological resources within the Paleontological Resources Analysis Area and similar deposits.

Once the paleontological potential (i.e., PFYC class) of the geologic units in the Paleontological Resources Analysis Area were determined, an analysis of the type, degree, and extent of ground disturbance was used to evaluate the potential environmental impacts of the Project on paleontological resources. In accordance with BLM guidelines (2022b), paleontological resource management concerns and mitigation efforts are related to the respective PFYC classifications of the geologic units affected by a Project (see Table 3-7 above). Following these guidelines, where impacts are identified in areas with moderate to very high and unknown paleontological potential (PFYC 3, 4, 5, and U), additional mitigation beyond the Applicant-committed EPMs may be required.

The effects assessment analyzes direct and indirect effects on paleontological resources anticipated by the Proposed Action. Effects are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.13.2.2 Direct and Indirect Impacts

The Proposed Action encompasses 1,596 acres, including the reconciliation and expansion areas. These areas are mapped with Playa, Lakebed, and Flood Plain Deposits at the surface, possessing low (PFYC 2) to moderate (PFYC 3) paleontological potential, which increases with depth (Appendix A, Figure 3-20). The ponds and associated trench, the deepest components in the reconciliation areas, reach a maximum depth of less than 5 feet below ground surface (bgs) (SWCA 2023b). Centrally located in the valley at a shallow depth, it is likely that excavation for the ponds and trenching remained within sediments too young to contain significant paleontological resources, having low potential (PFYC 2). It is unlikely that these activities reached older sediments with moderate potential (PFYC 3) or other geologic units with moderate to high potential (PFYC 3 or 4). Therefore, impacts to paleontological resources from previous ground disturbance and construction in the reconciliation areas would have been negligible. Additionally, impacts from continued use of existing ponds and infrastructure, and additional salt stockpiling, would also be negligible.

Ground disturbance in the expansion areas involves excavation, trenching, and drilling for a new strong brine complex, two weak brine ponds, and future production wells. Like the existing brine ponds in the reconciliation areas, the expansion area's ponds and associated piping would have a maximum depth of less than 5 feet bgs (SWCA 2023b). These areas are mapped with Playa, Lakebed, and Flood Plain Deposits and are shallow enough to remain in sediments with low paleontological potential (PFYC 2). It is unlikely that excavation and trenching would reach older sediments with moderate potential (PFYC 3) or other geologic units with moderate to high potential (PFYC 3 or 4). Therefore, impacts to paleontological resources from ground disturbance in the expansion areas would be negligible.

Current production wells have been drilled to depths of up to 1,950 feet bgs, with new wells expected to reach depths between 300 and 1,800 feet bgs, all in the low-lying playa (SRK 2021). Typically, a production well involves drilling a 36-inch-diameter hole to about 20 feet bgs, a 28.75-inch hole to 200 feet bgs, and a 17.5-inch hole to the end (SRK 2021). Though the exact specifications for future wells are undetermined, they are considered to potentially be located anywhere within the SPLO and reach various geologic units. Each well pad's surface disturbance is expected to span 150 × 200 feet, primarily affecting Playa, Lakebed, Flood Plain Deposits, and Younger Alluvium. The depth of each well pad is inferred to be less than 10 feet bgs, remaining in younger sediments. Wells might reach Older Alluvium or equivalent-age sediments depending on specific location and depth, but since lithium brine is sourced from basin infill deposits (SRK 2021), drilling is anticipated not to reach bedrock of Tertiary to Proterozoic units (Siebert Tuff, Harkless Formation, Poleta Formation, Campito Formation, Deep Spring Formation, and Wyman Formation), or drilling would be halted if it did.

Excavation for the well pads is expected to remain within geologic units with low paleontological potential (PFYC 2). Minimal drilling is anticipated in bedrock geologic units (Siebert Tuff, Harkless Formation, Poleta Formation, Campito Formation, Deep Spring Formation, and Wyman Formation), which have moderate to high paleontological potential (PFYC 3 or 4). Drilling may reach older sediments of the Playa, Lakebed, Flood Plain Deposits, Younger Alluvium, or equivalent-age sediments of Older Alluvium, all with moderate potential (PFYC 3). However, the limited diameter of each drilled hole would result in a minor impact

area, making the likelihood of encountering significant paleontological resources low. Applicant-committed EPM CR-1 would further reduce impacts (see Appendix B). Therefore, impacts to paleontological resources from drilling are expected to be permanent, localized, and minor.

3.13.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Irretrievable and irreversible commitment of paleontological resources would be characterized by permanently altering or destroying fossil-bearing geologic formations. The excavation and removal of earth materials can disrupt or obliterate fossil sites, eliminating the potential for future scientific study and discovery. This loss could be particularly significant for fossils that offer unique insights into Earth's history, evolution, and past environmental conditions. Once these resources are disturbed or removed, they cannot be replaced, representing a permanent loss to the scientific community and hindering efforts to understand and preserve the paleontological record. Since impacts to paleontological resources are expected to be minor, irreversible and irretrievable commitment of resources to paleontological resources are low.

3.13.2.4 Reasonably Foreseeable Future Impacts

The Paleontological Resources RFFEAA includes the SPLO boundary. Within this RFFEAA are two RFFAs, a lithium project and a mineral materials sale, totaling 46 acres. These projects cover less than 1% of the 13,743-acre Paleontological Resources RFFEAA. Past and present actions include lithium mining.

Activities related to these past actions, present actions, and RFFAs in the Paleontological Resources RFFEAA have and would continue to create ground disturbance and increases in access that could impact paleontological resources in the RFFEAA. Effects related to paleontological resources include damage to resources caused by mining-related disturbance and surface subsidence and ground deformation that damages sites as a result of the lowering of the groundwater table. Impacts may also result from the construction of infrastructure related to mining exploration or development. The main impacts to paleontological resources often are the result of illegal collecting activities. New or existing roads associated with a Proposed Action may result in easier access to paleontological resources, providing more opportunities for illegal collecting activities.

Given that the Paleontological Resources RFFEAA falls almost entirely in Class 2 – Low PFYC, the potential for affecting significant paleontological resources in the RFFEAA is low and the reasonably foreseeable future effects would be minor, permanent, and localized.

3.13.2.5 No Action

Under the No Action Alternative, the proposed expansion areas would not be constructed, and the reconciliation areas would remain, subject to BLM action. Without construction, there would be no surface disturbance or impacts to paleontological resources in the expansion areas. Previous activities in the reconciliation areas involved ground disturbance unlikely to have affected significant paleontological resources, and no further disturbance would occur. Therefore, the No Action Alternative would result in no impacts to paleontological resources.

3.14 SOILS

More information on soil resources is provided in the Soils SER for the SPLO (BLM 2025m).

3.14.1 Affected Environment

3.14.1.1 Analysis Area and Regulatory Framework

The Analysis Area for soils encompasses the approximate 938 acres of reconciliation area and the 658 acres of proposed expansion impoundment area where impacts on soil resources may occur related to construction, operation, and reclamation activities (Appendix A, Figure 3-21).

Relevant regulations include general BLM mining laws (43 CFR 3809), NRS, and NAC. Under 43 CFR 3809, the BLM is required to prevent UUD of public land by operations authorized by the mining laws. NRS 519A.210(3) requires that a person who desires to engage in a mining operation must agree in writing to assume responsibility for the reclamation of any land damaged as a result of the mining operation. This is enforced by NAC 519A.255, which states that reclamation beyond that approved by a federal agency (e.g., the BLM) is not required, and by NAC 519A.325, which requires that sufficient topsoil, if available, must be removed during the creation of a disturbance and stockpiled for use in future reclamation.

NAC 445.200 further defines best practices as "measures, methods of operation or practices which are reasonably designed to prevent, eliminate or reduce water pollution from diffuse sources, and which are consistent with the best practices in the particular field under the conditions applicable." This term is intended to be equivalent to the term BMPs, as used in federal statutes and regulations. More details regarding the regulatory environment for soil resources is available in the Soils SER (BLM 2025m).

3.14.1.2 Existing Conditions

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2019), approximately 95% of the APO is composed of miscellaneous water (45%), playas (42%), and the Gynelle-Oricto association, warm (8%). For the Soils Analysis Area, playas comprise 99% of the area, with less than 1% being miscellaneous water. Table 3-8 and Figure 3-21 in Appendix A present the NRCS soil map units within the APO boundary and within the Soils Analysis Area.

Table 3-8. Soil Map Units in the APO Boundary and the Soils Analysis Area

Soil Map Unit Name	PoO Boundary		Soils Analysis Area	
	Acres	Percent of Total Acreage	Acres	Percent of Total Acreage
Badland-Belcher-Belted association	152	1	–	–
Blacktop-Rodad-Theriot association	119	1	–	–
Gynelle-Cirac association	7	<1	–	–
Gynelle-Gynelle-Oricto association	195	1	–	–
Gynelle-Oricto association, warm	**1,068**	**8**	–	–

Miscellaneous Water	**6,127**	**45**	<1	<1
Oricto-Roic-Gynelle association	6	<1	–	–
Playas	**5,743**	**42**	1,596	99
Rodad-Theriot-Kyler association	19	<1	–	–
Slaw-Cirac association	83	<1	–	–
Slaw-Kawich-Playas association	214	2	–	–
Water	20	<1	–	–
Total	**13,753**	**100**	**1,596**	**100**

Source: NRCS (2019).

The miscellaneous water map unit is reflective of the SPLO's existing processing ponds. Playas are usually dry and nearly level lake plains that occupy the lowest parts of closed depressions, such as those occurring on intermontane basin floors, in which temporary flooding occurs primarily in response to precipitation and runoff (NRCS 2015). The Gynelle-Oricto association, warm, is composed of the Gynelle and Oricto soil series predominantly found on fan piedmonts or fan remnants in the Project Area. The Gynelle series consists of very deep, somewhat excessively drained soils that formed in alluvium derived from mixed rocks. The Oricto series consists of very deep, well-drained soils that formed in mixed alluvium derived from rhyolite, andesite, and granodiorite. Additional descriptions of the soil map units in the Soils Analysis Area are provided in the Soils SER (BLM 2025m:4–7).

Soil impacts from the Proposed Action would occur largely within the Playas soil map unit (1,596 acres or 99% of the Soils Analysis Area), although the miscellaneous water map unit occurs within a small area of the Soils Analysis Area. In 2020, a soil and vegetation survey was conducted for the Playas map unit within the Soils Analysis Area (SWCA 2020d). The results of the survey found that, within the NRCS Playas soil map unit, barren playa and a sparsely vegetated (<1% cover) playa margin area are present. The playa and playa margin were characterized as having areas of standing water and saline soils (salt deposits observed in salt profile during sampling) with textures ranging from clay to loamy sand. Observed vegetation cover was minimal (less than 1% aerial cover) and included fourwing saltbush, horned seablite, and iodinebush (SWCA 2020d). The Playas soil map unit does not support rangelands, farmlands, or significant wildlife habitat and is not suitable for use as a reclamation medium.

3.14.2 Environmental Consequences

3.14.2.1 Analysis Method

Desktop reviews and baseline studies were used to identify and verify the existing soils in the Soils Analysis Area (NRCS 2019; SWCA 2020d). Potential impacts to soil resources were identified based on the existing conditions and the Proposed Action, and consist of:

- Direct effects on soil health and productivity caused by grading, horizon mixing, erosion, and compaction during construction, operations, and reclamation, which can alter the soil's physiochemical properties.
- The direct removal of soil surfaces caused by the construction of facility components.

- Direct and indirect effects from potential erosion and contamination caused by activities performed during construction, operations, and reclamation.

The effects assessment analyzes direct and indirect effects on soils anticipated by the Proposed Action. Effects are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.14.2.2 Direct and Indirect Impacts

In general, surface disturbance potentially affects soils by modifying their biological, chemical, and/or physical properties. Although the soils within the Project Area would be disturbed through construction and operations, adverse effects, such as soil removal and erosion, horizon mixing, compaction, and impacts to microbial communities, are expected to be minimal due to inherent poor soil quality and productivity of playa soils. Playa soils are generally saline and barren but do provide hydrological value within the playa's watershed. Applicant-committed EPMs would be employed to reduce overall surface disturbance and impacts from erosion and contamination (see Appendix B).

Potential direct impacts on soils could include surface disturbance of approximately 1,596 total acres of playa soils. Approximately 1,562 acres of surface disturbance is associated with the existing ponds within the reconciliation area (904 acres) and the proposed construction of the expansion impoundment area ponds (658 acres); hence, the Proposed Action would create minor, long-term to permanent, and localized impacts to the pond footprint areas. Approximately 34 acres are associated with the salt pile within the reconciliation area; the Proposed Action would create minor, permanent, and localized effects on the salt pile footprint areas. Effects from a portion of the ponds and salt piles are expected to be permanent as the pond precipitates, embankments and dikes, and the salt piles are expected to remain on-site after reclamation. Approximately 5 acres are associated with the pump system, lined trench, and well pads, which would create minor, long-term, and localized effects on soils, as these features would be removed during decommissioning and reclamation.

After mine operations cease and the final precipitation process is complete, each pond would be abandoned by stabilizing its embankments and dikes and creating outflows so that stormwater is not retained after precipitation events. Remaining salt piles would be graded to a stable slope during operations and residual salts would be left to harden in place. Physical equipment (i.e., pump system and piping) would be removed. Disturbed playa surfaces would not be revegetated, and playa soils would not be salvaged or used as topsoil to facilitate other revegetation efforts. These reclamation activities would cause negligible to minor, short-term, and localized effects on the soils within the Soils Analysis Area as impacts would likely be restricted to the operation of equipment used to perform reclamation. Albemarle will prepare a comprehensive reclamation plan in collaboration with the BLM closer to the time of mine closure.

3.14.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Located at the bottom of the Clayton Valley Hydrological Basin, direct effects on soils would include surface disturbance of approximately 1,596 total acres of playa soils. Approximately 1,562 acres of surface disturbance (98%) is associated with the existing ponds within the reconciliation area and the construction of the expansion area ponds; hence, the Proposed Action would create minor, long-term to permanent, and localized effects on the pond footprint areas. Although the soils within the Project Area would be disturbed through construction and operations, adverse effects such as soil removal and erosion, horizon mixing, compaction, and impacts to microbial communities, are expected to be minimal due to inherent poor soil quality and productivity of playa soils. Playa soils are generally saline and barren but do provide hydrological value within the playa's watershed. Irretrievable or irreversible commitment of resources are not anticipated for soil resources.

3.14.2.4 Reasonably Foreseeable Future Impacts

The Soils RFFEAA includes the APO boundary. Within this RFFEAA, there is one RFFA, a lithium project, totaling 6.5 acres. This project covers less than 1% of the 1,600-acre Soils RFFEAA. Past and present actions include lithium mining.

Past actions, present actions, and RFFAs in the Soils RFFEAA can impact soil resources through soil compaction from heavy equipment, hindering vegetation growth and ecosystem support. Disturbance of soil and biocrusts increases susceptibility to wind and water erosion, while paved roads limit water infiltration and concentrate erosion along embankments. Disturbed fine particulates can contaminate air and water, and natural soil profiles are disrupted during ground disturbance. Contamination risks arise from exposed geochemical processes or accidental pollutant releases.

The Proposed Action would slightly increase soil disturbance in the Soils RFFEAA, contributing to reasonably foreseeable future impacts. However, soils in the SPLO are generally of poor quality and productivity. Implementing Applicant-committed EPMs and successful reclamation efforts will mitigate additional soil impacts from the Proposed Action. Collectively, soil impacts from the Proposed Action and RFFAs in the Soils RFFEAA are expected to be minor, long-term to permanent, and localized.

3.14.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward and the proposed expansion impoundment area would not be developed; therefore, any associated impacts to soil resources would not occur. The reconciliation area would remain in place but would be subject to BLM action, and existing conditions in the Soils Analysis Area would continue.

3.15 VEGETATION

More information on vegetation is provided in the Vegetation SER for the SPLO (BLM 2025n).

3.15.1 Affected Environment

3.15.1.1 Analysis Area and Regulatory Framework

The Analysis Area for Project-related vegetation resource impacts is the APO boundary and a 1-mile buffer. This area is inclusive of the locations where construction, operation, and reclamation activities would occur and where there would be potential impacts to vegetation (Appendix A, Figure 3-22).

There are numerous federal and state regulations with the purpose of preventing UUD of the environment through performing reclamation and invasive species control. The federal regulations pertaining to these issues include EO 13112 Prevention and Control of Invasive Species (signed February 3, 1999), BLM Manual 9015, and 43 CFR 3809. State regulations include NRS 519A.100 et seq.

More details regarding the regulatory environment for vegetation are available in the Vegetation SER (BLM 2025n).

3.15.1.2 Existing Conditions

The Project Area is located in Clayton Valley, an internally drained valley west of the town of Goldfield. Clayton Valley is east of the White Mountains and Boundary Peak, the highest peak in Nevada at an altitude of 13,140 feet amsl, but Clayton Valley is topographically lower than the surrounding basins, with an elevation of 4,260 feet amsl (SWCA 2023a). The SPLO and Vegetation Analysis Area, specifically, are located on the playa floor, entirely within the Inter-Mountains Basins Playa vegetation community. This community is described by the Southwest Regional Gap Analysis Project (SWReGAP) as barren or sparsely (less than 10%) vegetated playas, having salt crusts throughout and shrubs occurring in playa margins, and identifies the potential natural vegetation as salt grass (*Distichlis spicata*), greasewood (*Sarcobatus vermiculatus*), and saltbush (*Atriplex* spp.) (USGS 2005).

Vegetation community, plant species, and ecological site description data were collected for the Project between 2018 and 2020 using SWReGAP land cover data (USGS 2005), Soil Survey Geographic Database soils data (NRCS 2019), and Nevada Division of Natural Heritage (2020) species data. Field surveys identified a total of three common plant species (iodinebush, horned seablite, and fourwing saltbush), two weed species (tamarisk and halogeton), and no special status species. In general, the playa is unvegetated and vegetation occurred only on the playa margins. The intermittent shrub cover on the playa margins was generally intermittent shrub cover with average spacing of 10 meters apart.

Two delineated soil-vegetation map units characterize the Project Area: Playa and Playa Margin (SWCA 2020b) (Appendix A, Figure 3-23). The majority of the Project Area is within the Playa soil-vegetation map unit, characterized by a lack of vegetation and loamy sand-textured soils. The Playa Margin soil-vegetation map unit is located on the boundaries of the playa and is characterized by iodinebush, fourwing saltbush, and horned seablite shrubs occurring with shrub coppice dunes. Shrub cover is intermittent with average spacing between individuals of 33 feet (10 meters).

3.15.2 Environmental Consequences

3.15.2.1 Analysis Method

Desktop reviews and field studies were completed to identify the vegetation communities, species, and vegetation density common to the Vegetation Analysis Area (SWCA 2020c). The primary issues considered in the vegetation analysis include removal of plants due to surface disturbance, dust generation, changes in surface hydrology, habitat fragmentation, and the increased likelihood for the spread of noxious weeds.

Effects on vegetation are discussed in terms of intensity, duration, and context, based on the impact definitions outlined in Appendix C.

3.15.2.2 Direct and Indirect Impacts

During construction of the Proposed Action, there would be direct impacts to vegetation communities through the removal of plants and physical impacts to soils where the land is cleared for mine components. Vegetation within the reconciliation and expansion areas would be cleared and grubbed, resulting in long-term impacts to existing vegetation communities. However, due to the barren nature of the playa landscape, the scale of vegetation loss is expected to be minor. It is expected that the sparse vegetation would remain lost through operations while mine facilities are present on the landscape. At the end of mine life, reclamation activities would influence the future vegetative species assemblage within the Project Area.

Long-term impacts would persist beyond the mine's anticipated end of life in areas where soil disturbance is required for site preparation and where revegetation/reclamation will be performed, such as roads on the playa margins. Because the playa surface supports minimal vegetation, it is not expected that revegetation would be necessary except on the playa margins. If the BLM or NDEP recommends revegetation for certain areas, Albemarle would coordinate to ensure stable vegetation growth and ground cover for all reclaimed areas, complete annual revegetation monitoring, maintenance, and reporting for a period of time agreed upon with the BLM and NDEP. Overall, it is anticipated the Proposed Action would have minimal direct impacts to localized vegetation communities with the Project Area.

During construction, operations, and reclamation activities, there is potential for indirect impacts to vegetation communities. With an increase in exposed soils, dust created by operating machinery could accumulate on the remaining plants within the Vegetation Analysis Area, reducing photosynthesis, hindering growth and reproduction, and suppressing plants' ability to compete with non-native invasive plant species (Farmer 1991). The Project's setting on a playa with fine-grained sediment and lack of vegetation could result in exacerbated fugitive dust impacts. These dust impacts are compounded along roadways as vehicles are common vectors for invasive plant species transmission. Dust-related effects would be short-term and would cease following the completion of mine reclamation. Implementation of Applicant-committed EPMs, including soil stabilization, noxious weed monitoring and control, and revegetation, would reduce the effects from these impacts.

Impacts related to the introduction and increased spread of noxious and invasive weeds due to the Proposed Action are discussed in detail in Section 3.6. The spread of noxious weeds and

invasive species could hinder reclamation efforts. However, implementation of Applicant-committed EPM VEG-1 would reduce the effects of noxious and invasive weeds on native plants in the Project Area. As vegetation in the Project Area is sparse, indirect impacts on vegetation resources would be short-term, minimal, and localized.

3.15.2.3 Irretrievable and Irreversible Commitment of Federal Resources

Due to the barren landscape of the playa in Clayton Valley, irretrievable and irreversible commitment of resources to vegetation communities are expected to be minimal. These impacts are most likely to present along the playa margins, where there are slightly higher occurrences of native plant communities that may be impacted by the Proposed Action. Impacts to these areas could extend well into reclamation due to the slow recovery rate of playa and desert ecosystems.

3.15.2.4 Reasonably Foreseeable Future Impacts

The past actions, present actions, and reasonably foreseeable future actions that could contribute to reasonably foreseeable future impacts to vegetation primarily include lithium mines and solar facilities. Nine RFFAs were identified within the Vegetation RFFEAA (the APO boundary plus a 1-mile buffer), consisting of lithium mining projects, a transmission line, a geothermal project, and the use of a mineral material site. These nine projects cover approximately 5,346 acres, approximately 16%, of the Vegetation RFFEAA.

The primary risks to vegetation communities are associated with actions that result in the removal and/or crushing of vegetation, the removal and/or compaction of soils, and the introduction of noxious weeds and invasive non-native species. The past actions, present actions, and RFFAs have and would result in permanent and temporary disturbance; however, due to the barren nature of the Vegetation RFFEAA (<5% vegetation cover), the scale of reasonably foreseeable future vegetation loss would be negligible.

3.15.2.5 No Action

Under the No Action Alternative, the Proposed Action would not move forward, the expansion areas would not be developed, and any associated impacts to vegetation would not occur. The reconciliation areas would remain in place but would be subject to BLM action, and existing conditions in the Vegetation Analysis Area would continue.

CHAPTER 4. CONSULTATION, COORDINATION, AND PUBLIC INVOLVEMENT

The purpose of consultation, coordination, and public involvement is to encourage interaction between the BLM and other federal, state, and local agencies and Native American Tribes. The BLM's role is to inform the public about the Project and solicit input to assist in analysis and decision making. The BLM has made formal and informal efforts to involve, consult with, and coordinate with these entities to ensure that the most appropriate data have been gathered and analyzed, and that agency policy and public sentiment and values are considered and incorporated. The BLM began conducting consultation, coordination, and public participation in preparation for drafting the EIS prior to the start of the official NEPA process (i.e., publishing of the Notice of Intent [NOI]) and continued throughout the EIS process.

4.1 PUBLIC SCOPING AND OUTREACH

The formal public scoping process for the Project began on February 28, 2025, when the NOI was published in the Federal Register and announced the BLM's plan to prepare an EIS. The scoping period ended on April 1, 2025. The NOI explained how to participate by submitting comments via the BLM NEPA Register, email, or mail, and directed readers to the Project's webpage for details on two virtual scoping meetings.

The BLM prepared scoping letters that detailed the APO and Proposed Action, as well as how to participate during the scoping process were mailed to landowners near the Project and the BLM's Interested Party list, including individuals, businesses, government agencies, nongovernmental organizations, and other stakeholders.

The BLM held two virtual public scoping meetings on March 18, 2025, with 13 people in attendance. These meetings featured a PowerPoint presentation covering the Project and NEPA process, comment submission methods, and a live Q&A session.

The BLM received 15 letter submissions during the public scoping period, submitted by 15 separate senders. Most letter submissions received were from individuals, followed by organizations, then government agencies, and one Tribe. The comments received during scoping were used to help identify issues and resource conflicts for analysis in the Draft EIS. More information on the specific concerns raised in public scoping comments can be found in the Silver Peak Final Scoping Report (BLM 2025o), which is available online via BLM's National NEPA Register.

4.2 COOPERATING AGENCY INVOLVEMENT

BLM regulations (43 CFR 46.225) require a lead agency to request participation in preparing NEPA analyses and documentation in cooperation with state, local, and other agencies with jurisdiction by law or special expertise.

Multiple agencies were invited by the BLM to participate in pre-planning and preparation of the Draft EIS (Table 4-1). For those cooperating agencies that accepted the invites, memorandums of

understanding (MOUs) were established to formalize the relationship and provide a framework for cooperation and coordination to successfully complete the EIS in a timely, efficient, and thorough manner, and to describe the respective roles, responsibilities, and expertise of each entity in the planning process. For some cooperating agencies, existing MOUs are already in place at a state or regional level. This information is also included in Table 4-1.

Table 4-1. Agencies Invited to Join as Cooperating Agencies and MOU Status

Agency	Letter Invite Date	Acceptance Status
USEPA	9/28/2023	Participating as a cooperating agency under existing MOU, BLM-MOU-NV920-3809-2018-005.
Esmeralda County Commissioners	9/28/2023	Invite not accepted and no cooperating agency MOU in place for this Project.
Nevada Division of Forestry	9/28/2023	Invite not accepted and no cooperating agency MOU in place for this Project.
NDWR	9/28/2023	Invite not accepted and no cooperating agency MOU in place for this Project.
NDOW	9/28/2023	Participating as a cooperating agency under existing MOU among the BLM's Nevada and California State Offices and the State of Nevada's Department of Conservation and Natural Resources and Department of Wildlife from August 2019.
Nye County Commissioners	9/28/2023	Invite not accepted and no cooperating agency MOU in place for this Project.
USFWS	9/28/2023	Participating as a cooperating agency under existing MOU from IM 2018-065.

4.3 TRIBAL CONSULTATION AND COORDINATION

The BLM consulted with the following Tribal governments during the EIS NEPA process:

- Duckwater Shoshone Tribe
- Ely Shoshone Tribe
- Moapa Band of Paiutes
- Timbisha Shoshone Tribe
- Yomba Shoshone Tribe

The BLM began government-to-government consultation by sending initial consultation letters in September 2019, and follow-up invites were sent in December 2023 to attend the NEPA kickoff meeting. The BLM provided additional information regarding cultural resources in January 2024; these emails provided information on the potential impacts to cultural resources and the NHPA process and also requested that Tribes provided any knowledge, concerns, and perspectives related to the Project Area. The BLM has received no information or feedback from the Tribes. The Timbisha Shoshone Tribe submitted a scoping comment that included several comments related to the Proposed Action and criticized the involvement of federal agencies, such as the Department of the Interior and Department of Energy for their historical ongoing practices of systemic racism, exploitation of indigenous lands, and failure to recognize the rights and laws protecting the Shoshone people as outlined in the Treaty of Ruby Valley.

APPENDIX A: FIGURES

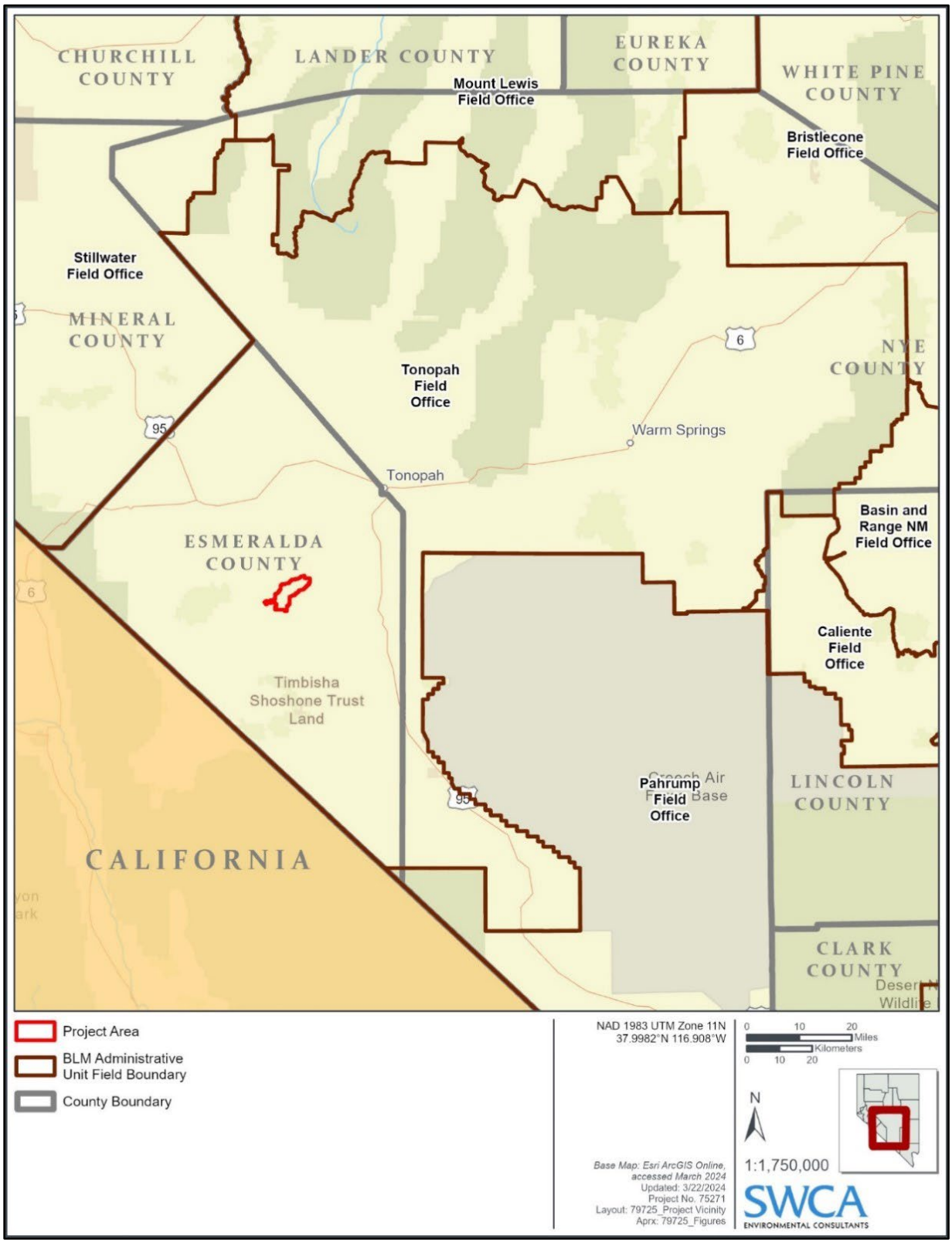

Figure 1-1. Project location map.

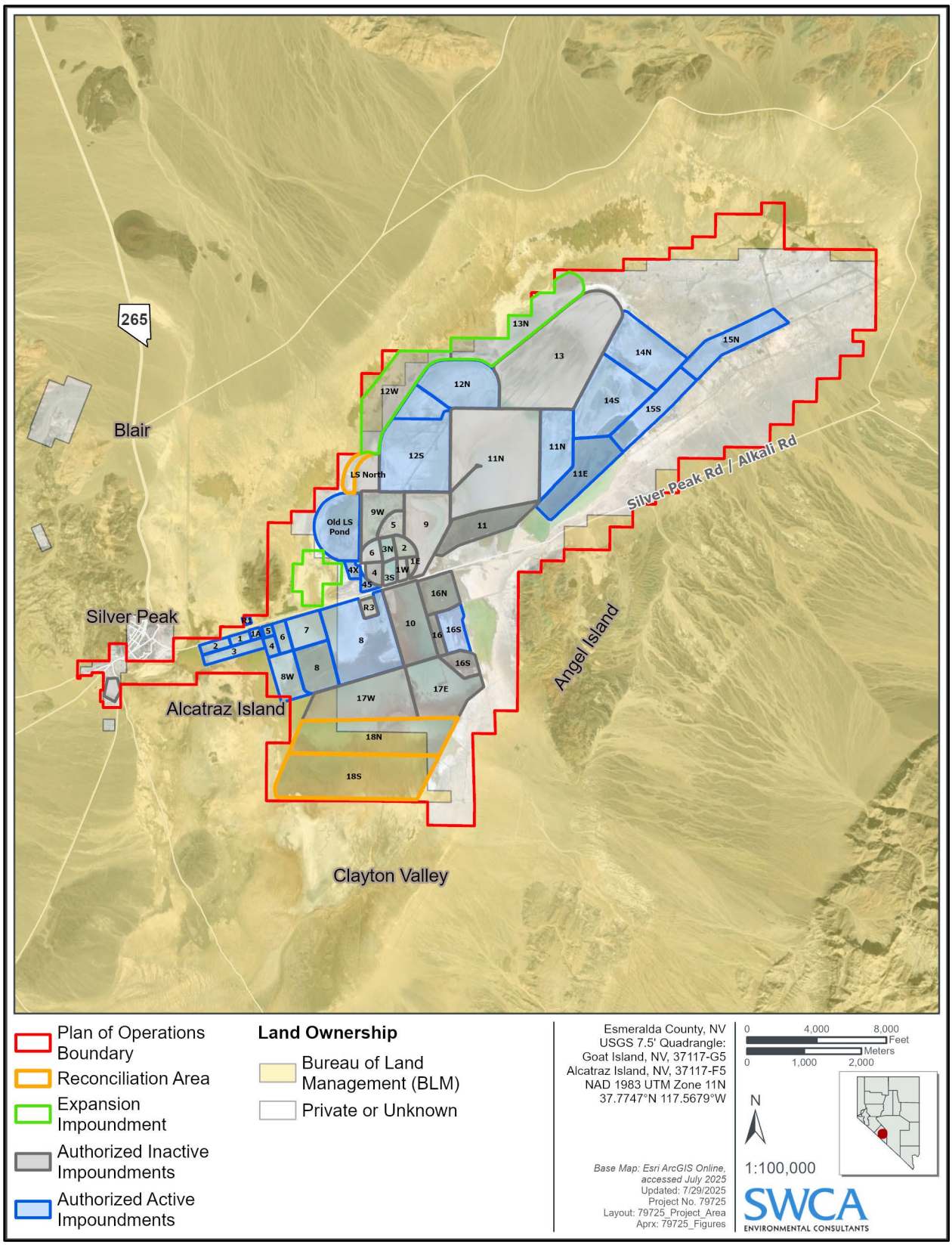

Figure 1-2. Proposed Action.

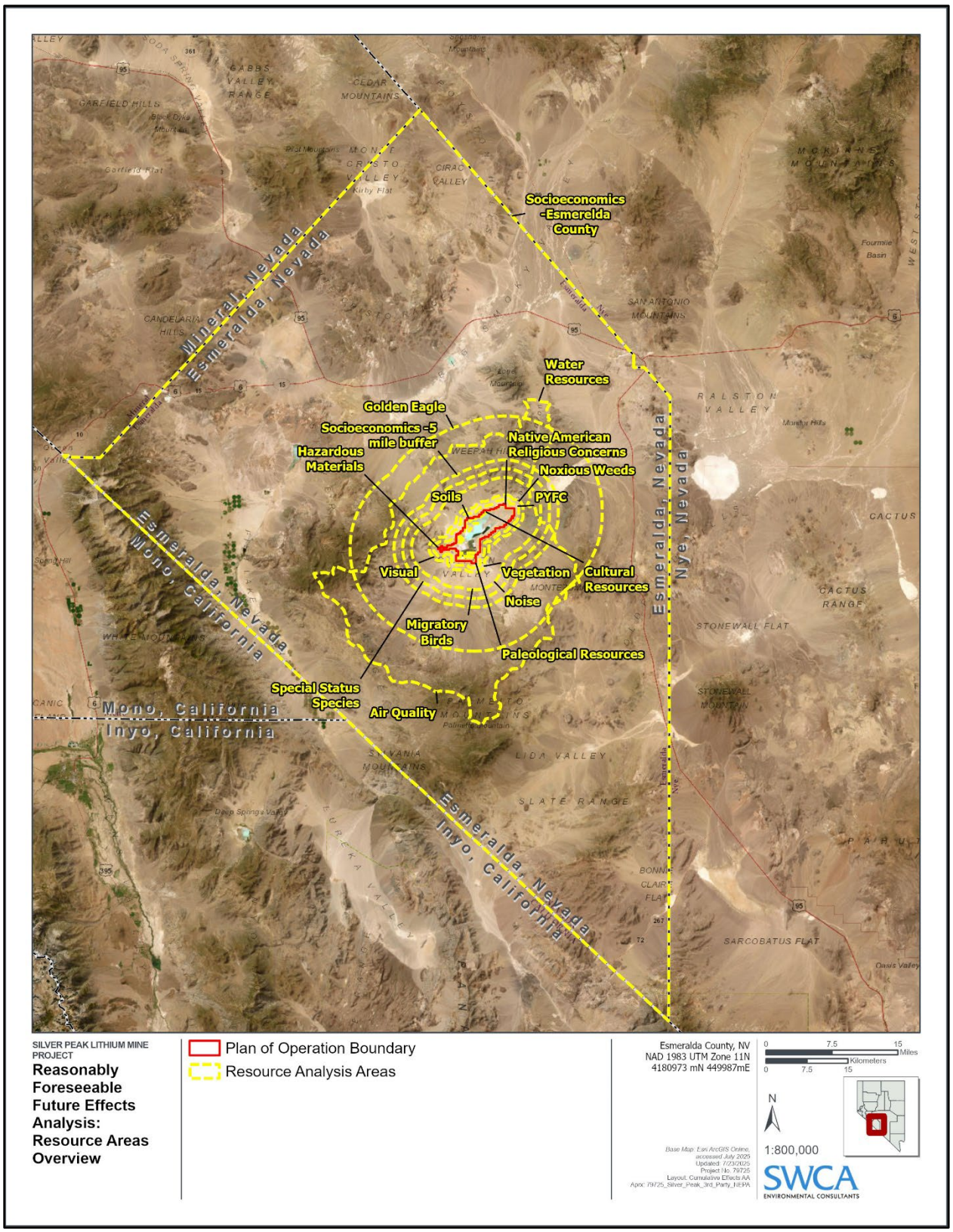

Figure 3-1. Reasonably Foreseeable Future Effects Analysis Areas (RFFEAA).

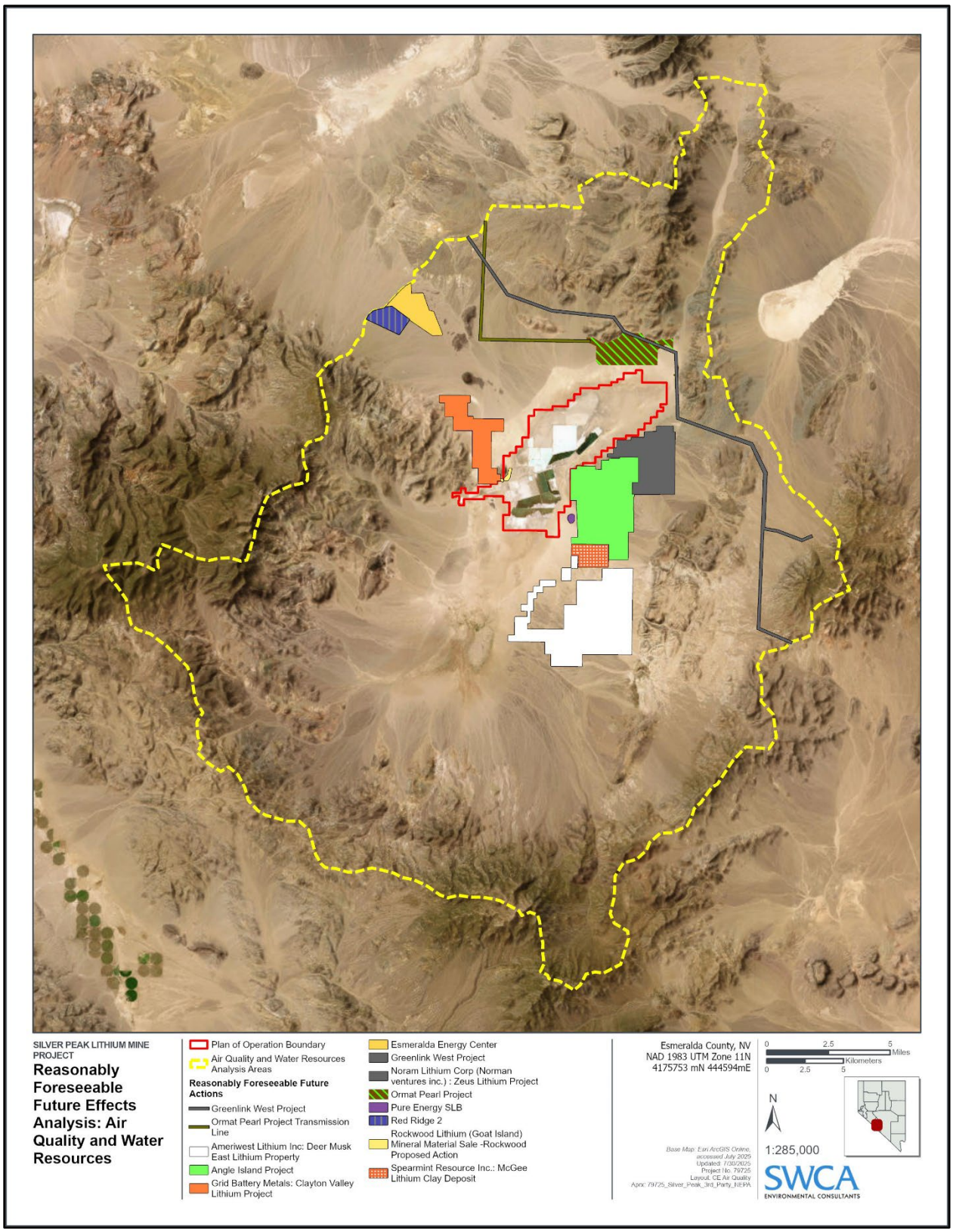

Figure 3-2. RFFAs and RFFEAA boundaries for air quality and water resources.

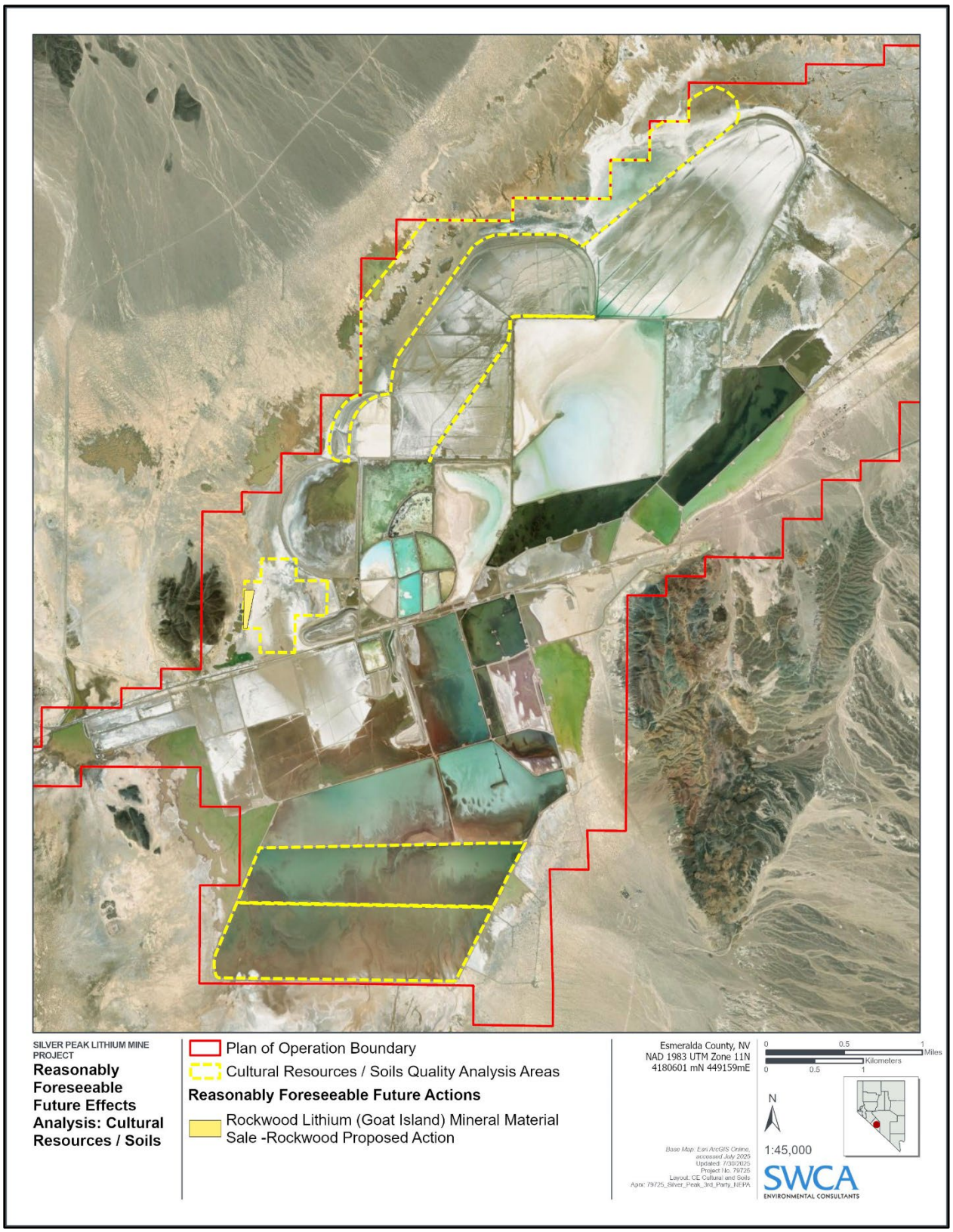

Figure 3-3. RFFAs and RFFEAA boundaries for cultural resources and soils.

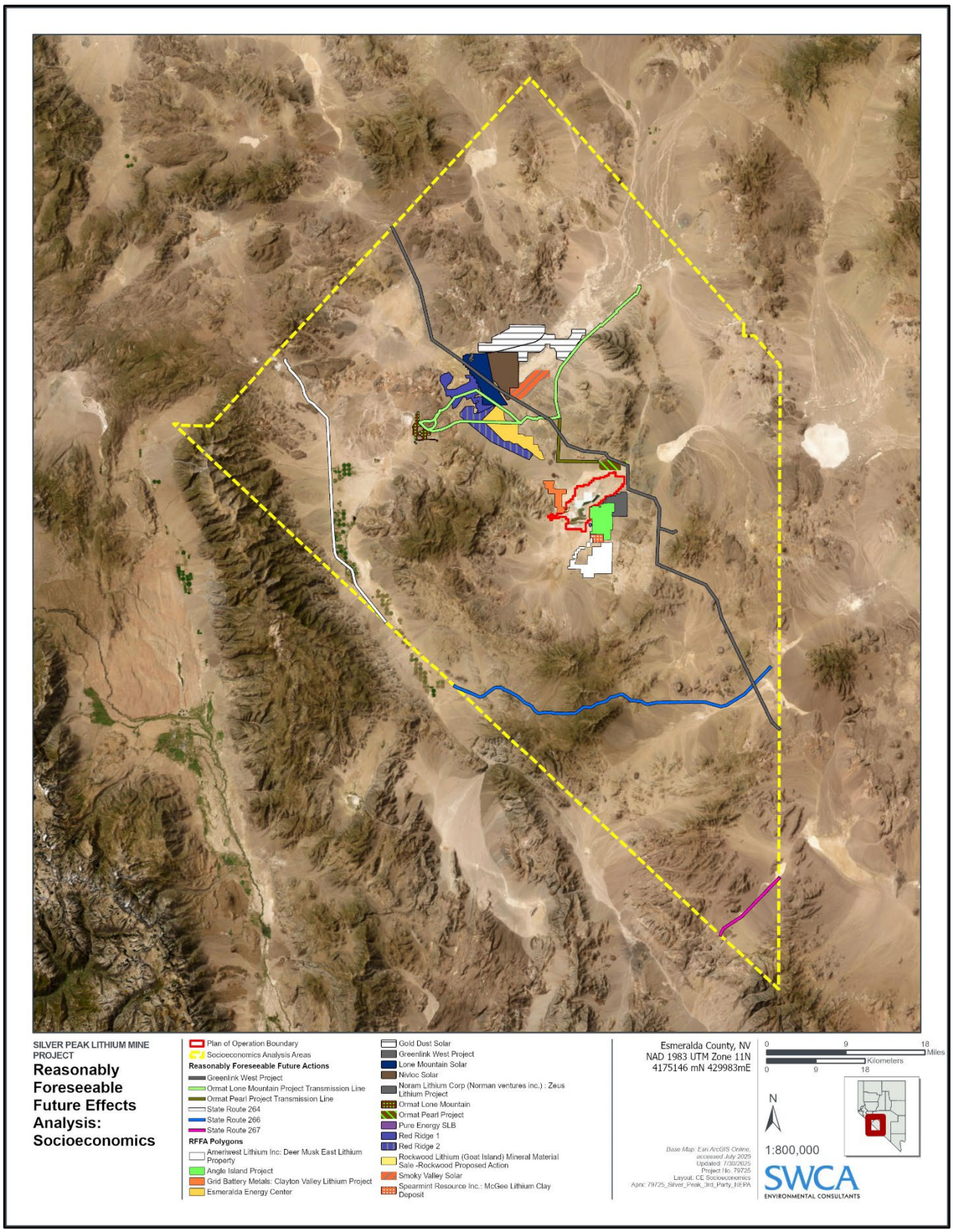

Figure 3-4. RFFAs and RFFEAA boundaries for socioeconomics.

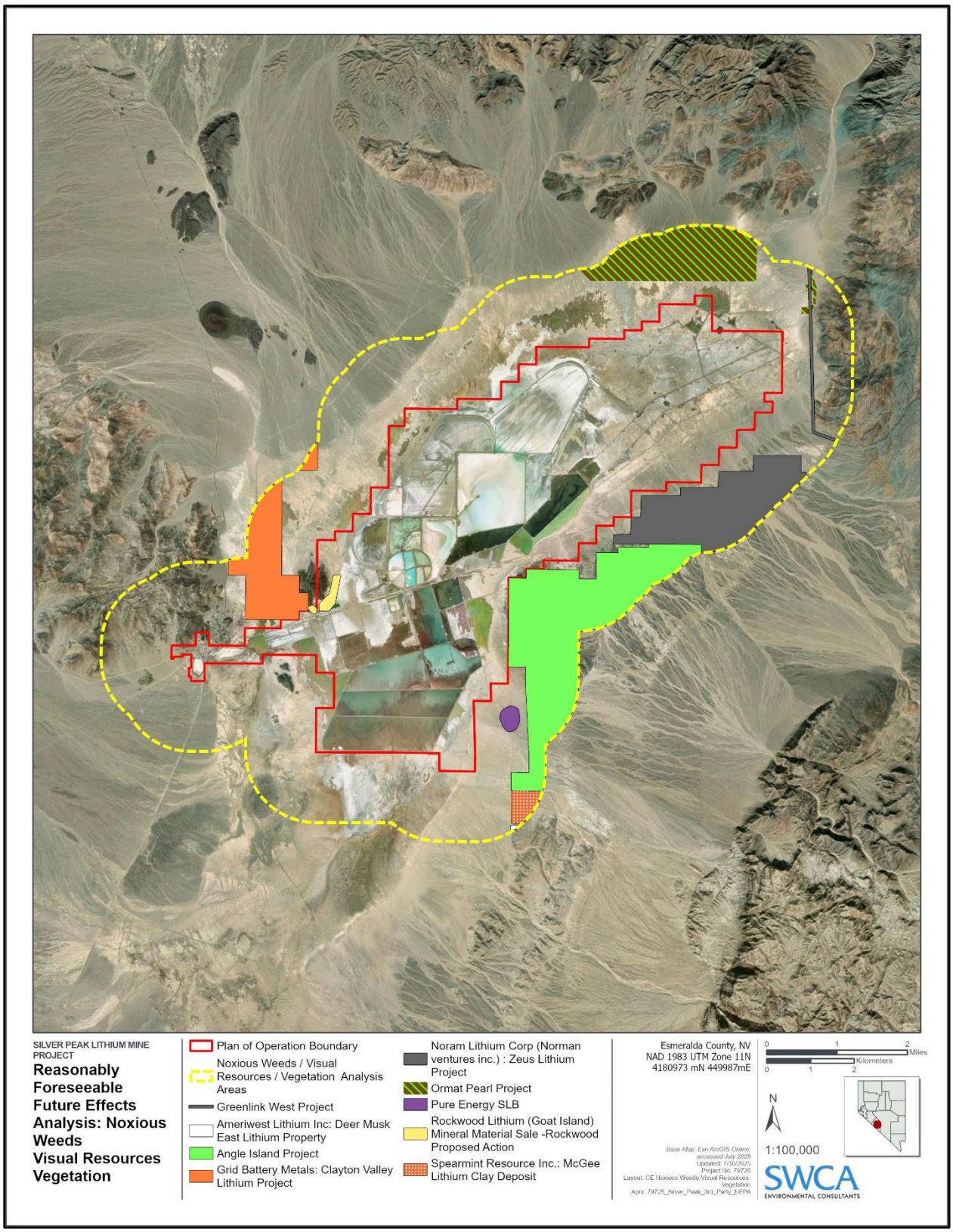

Figure 3-5. RFFAs and RFFEAA boundaries for noxious weeds, visual resources, and vegetation.

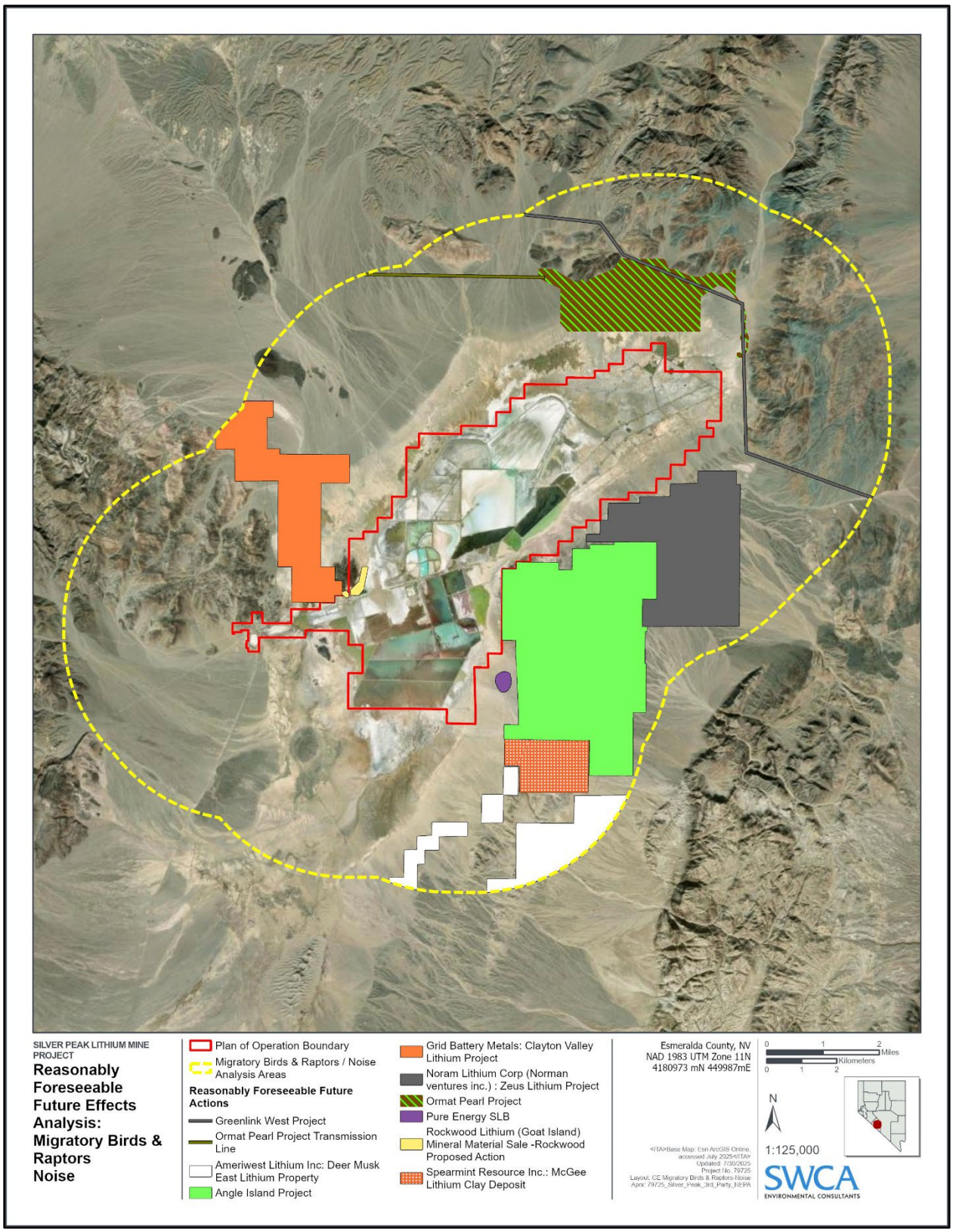

Figure 3-6. RFFAs and RFFEAA boundaries for migratory birds and raptors and noise.

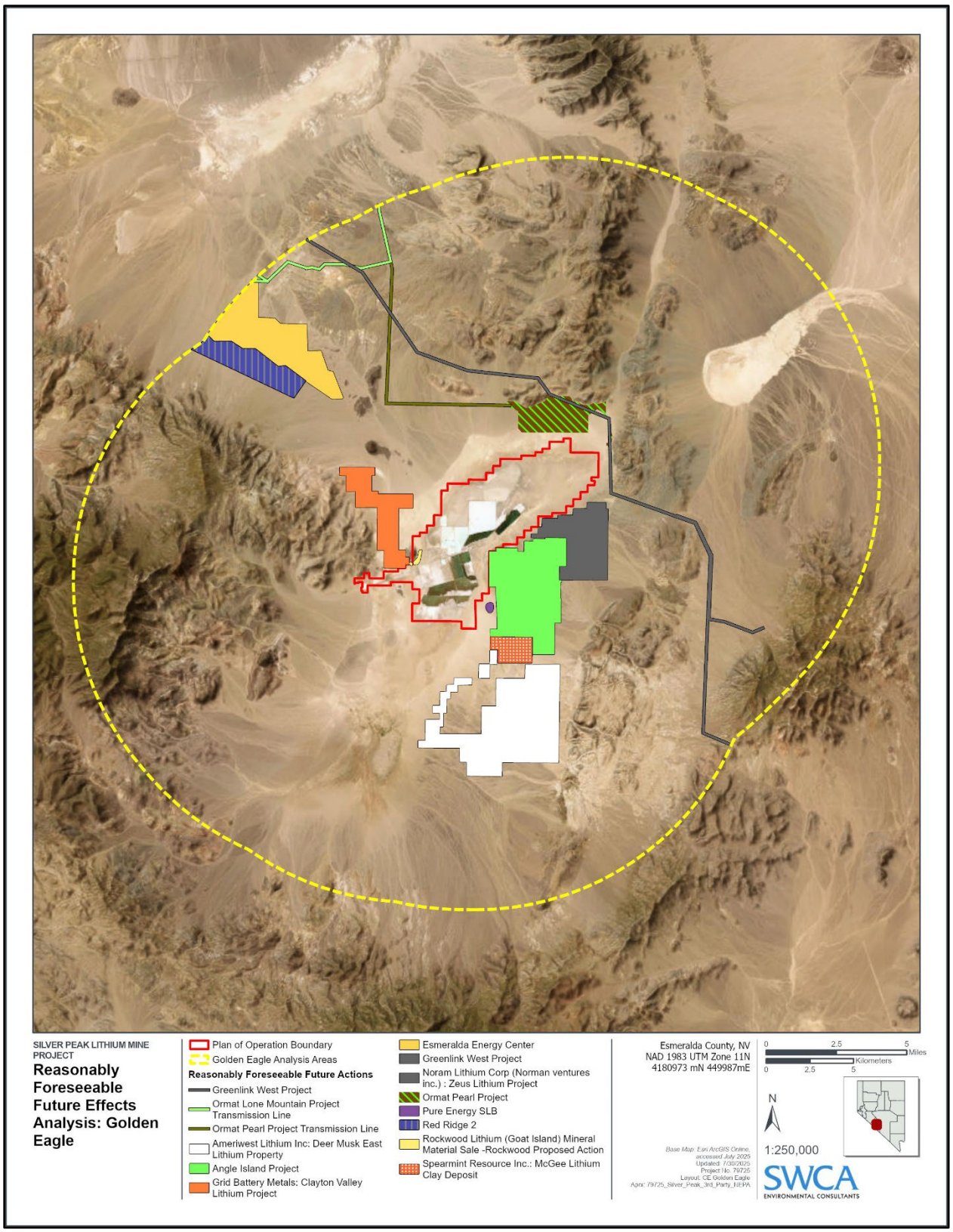

Figure 3-7. RFFAs and RFFEAA boundaries for golden eagles.

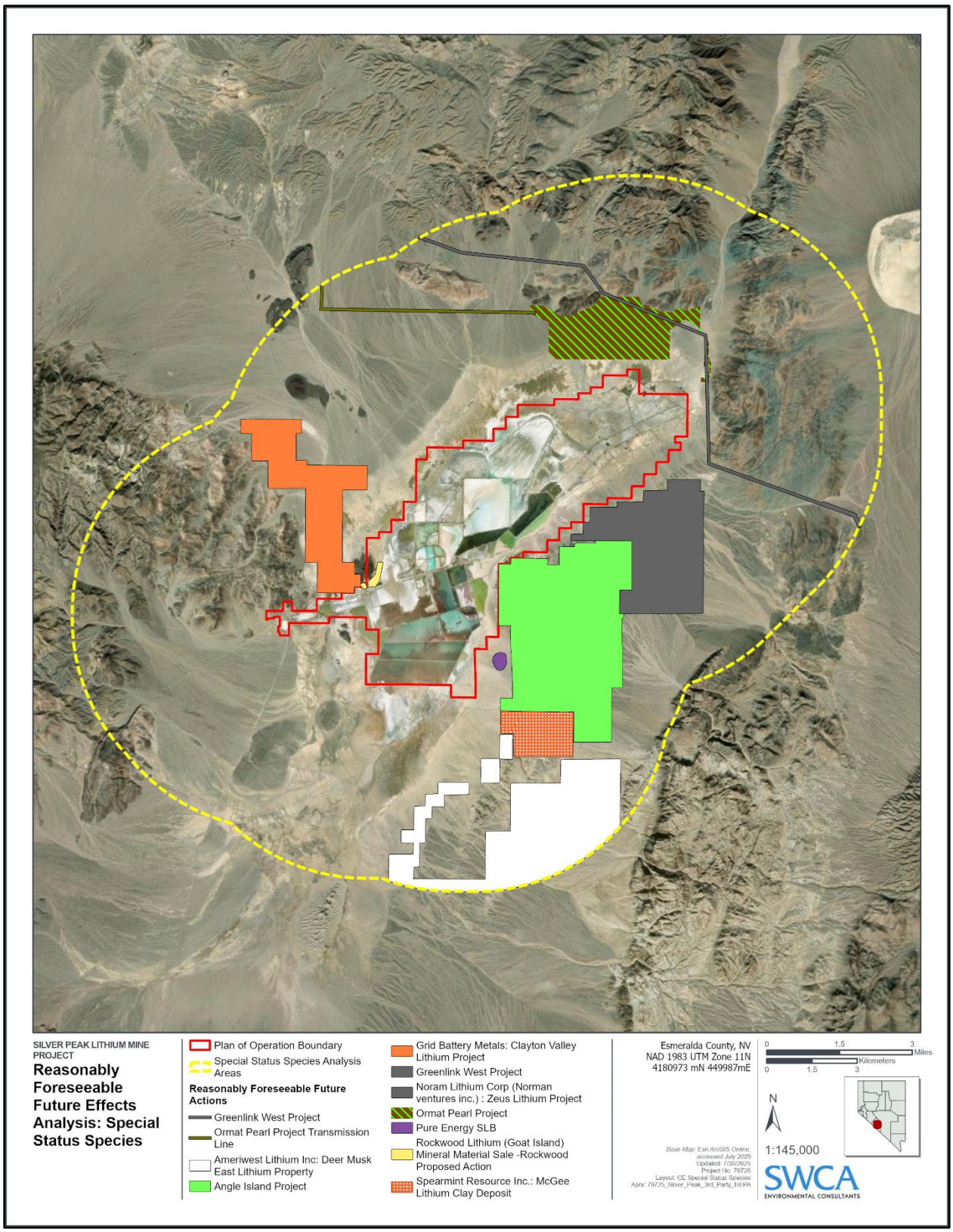

Figure 3-8. RFFAs and RFFEAA boundaries for special status species.

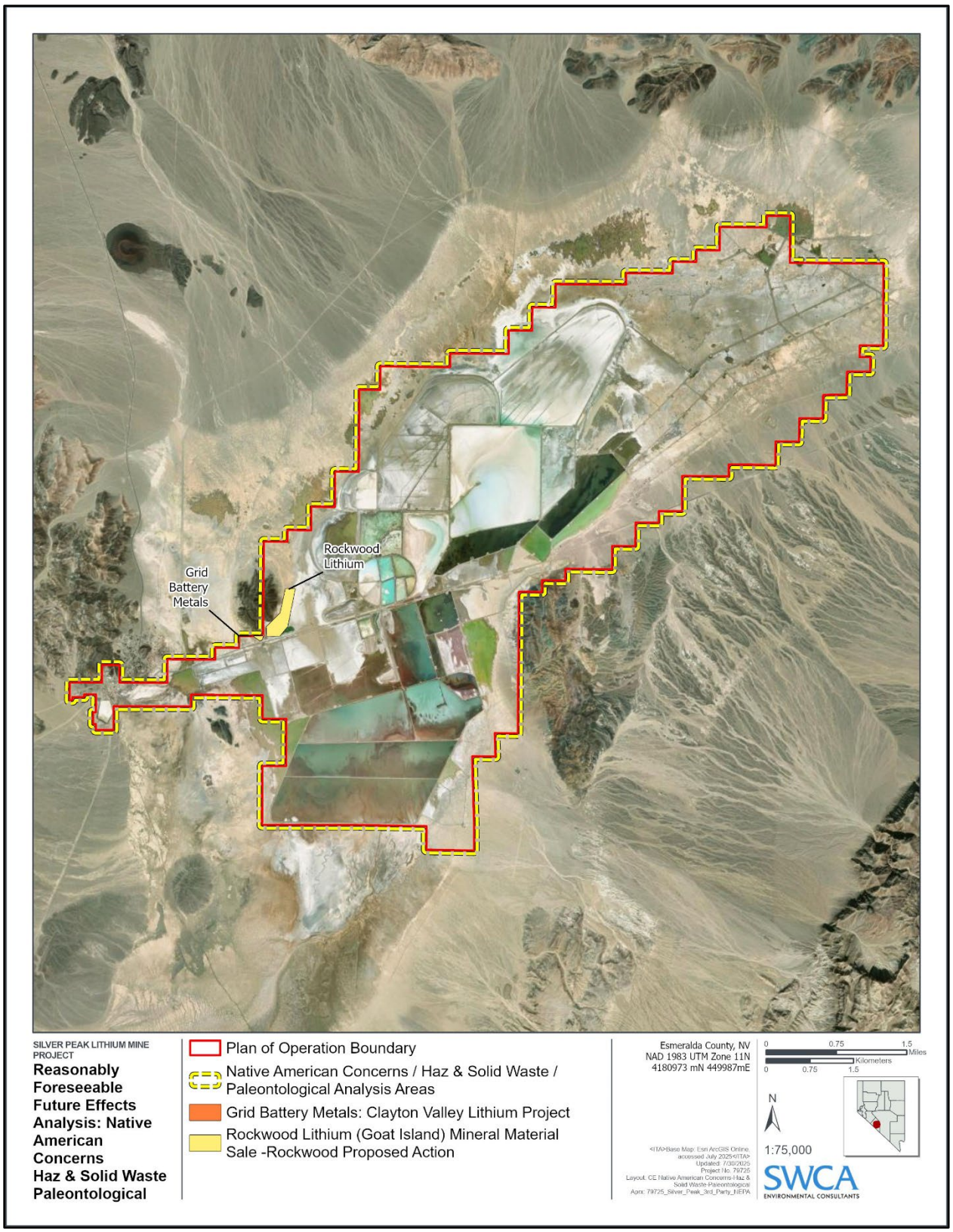

Figure 3-9. RFFAs and RFFEAA boundaries for Native American religious concerns, paleontological resources, and hazardous materials and solid wastes.

Figure 3-10. Air Quality Analysis Area.

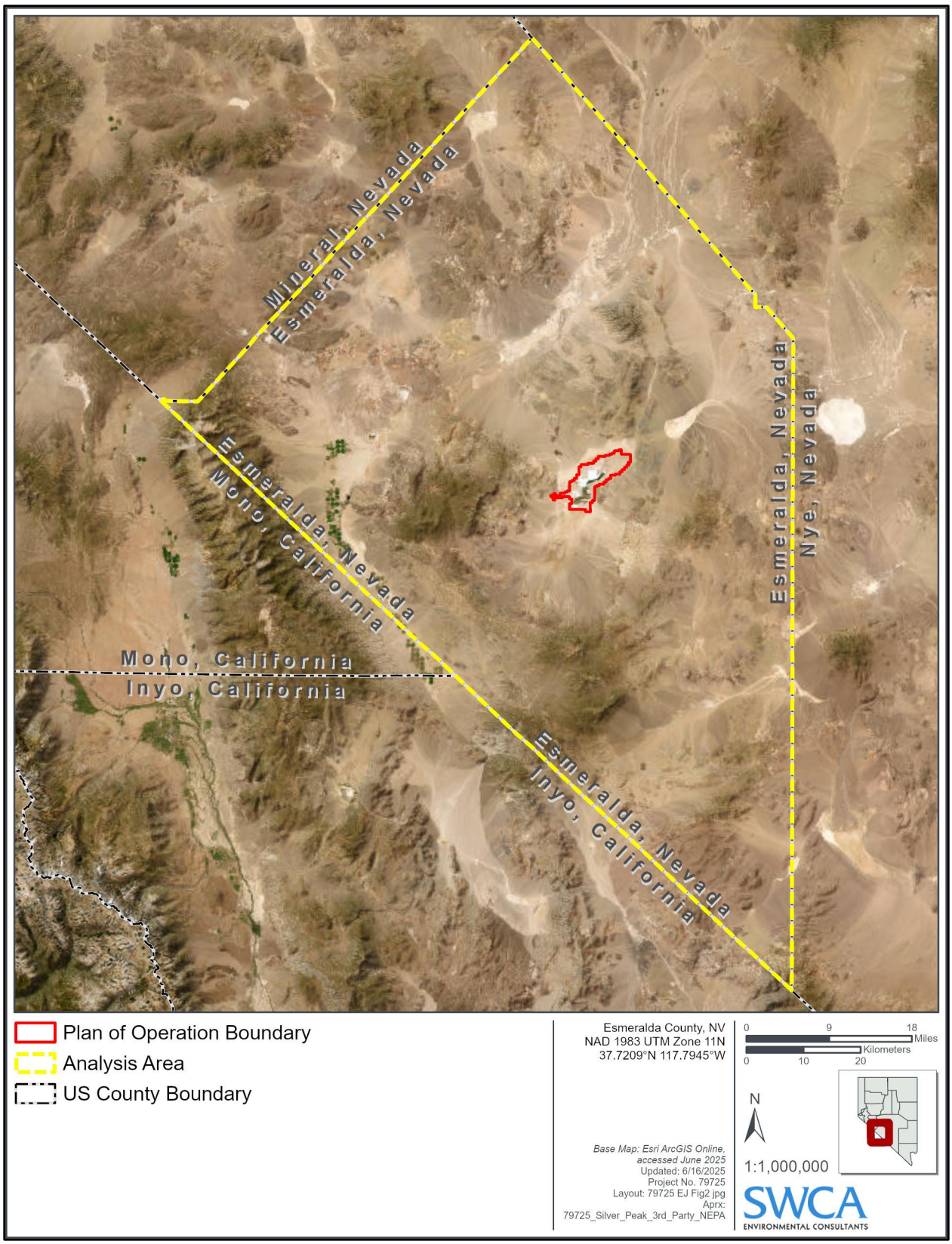

Figure 3-11. Socioeconomics Analysis Area.

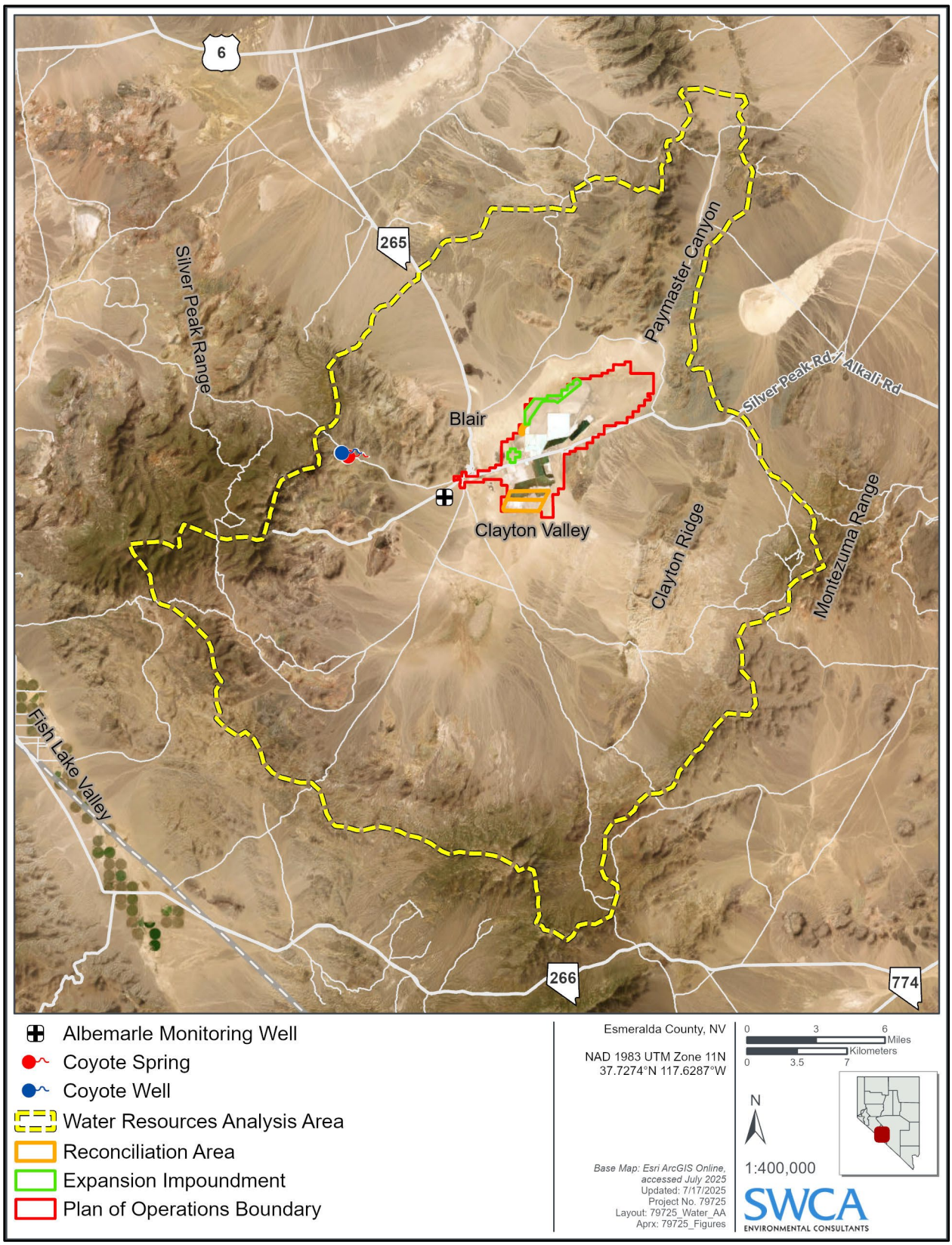

Figure 3-12. Water Resources Analysis Area.

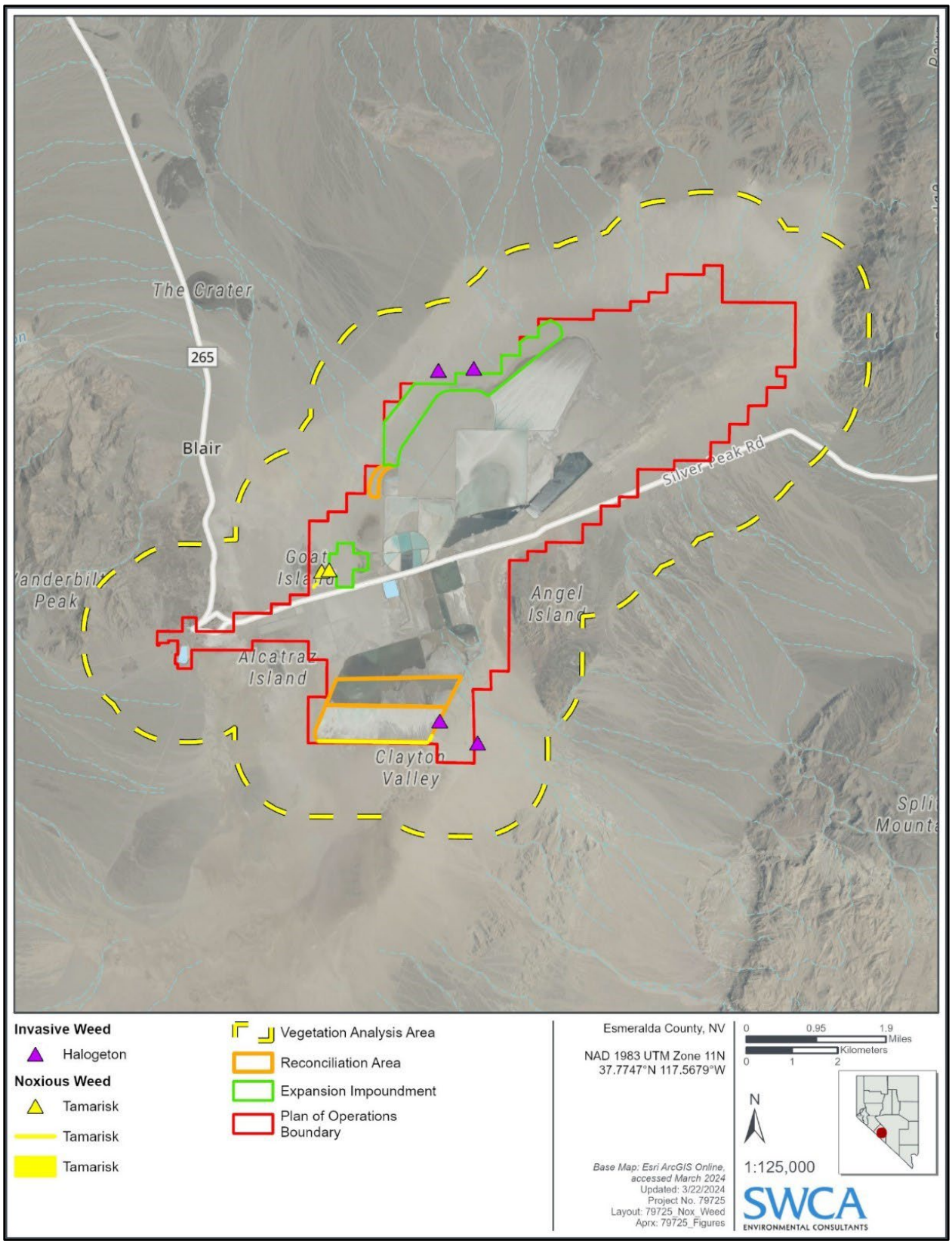

Figure 3-13. Noxious Weeds Analysis Area.

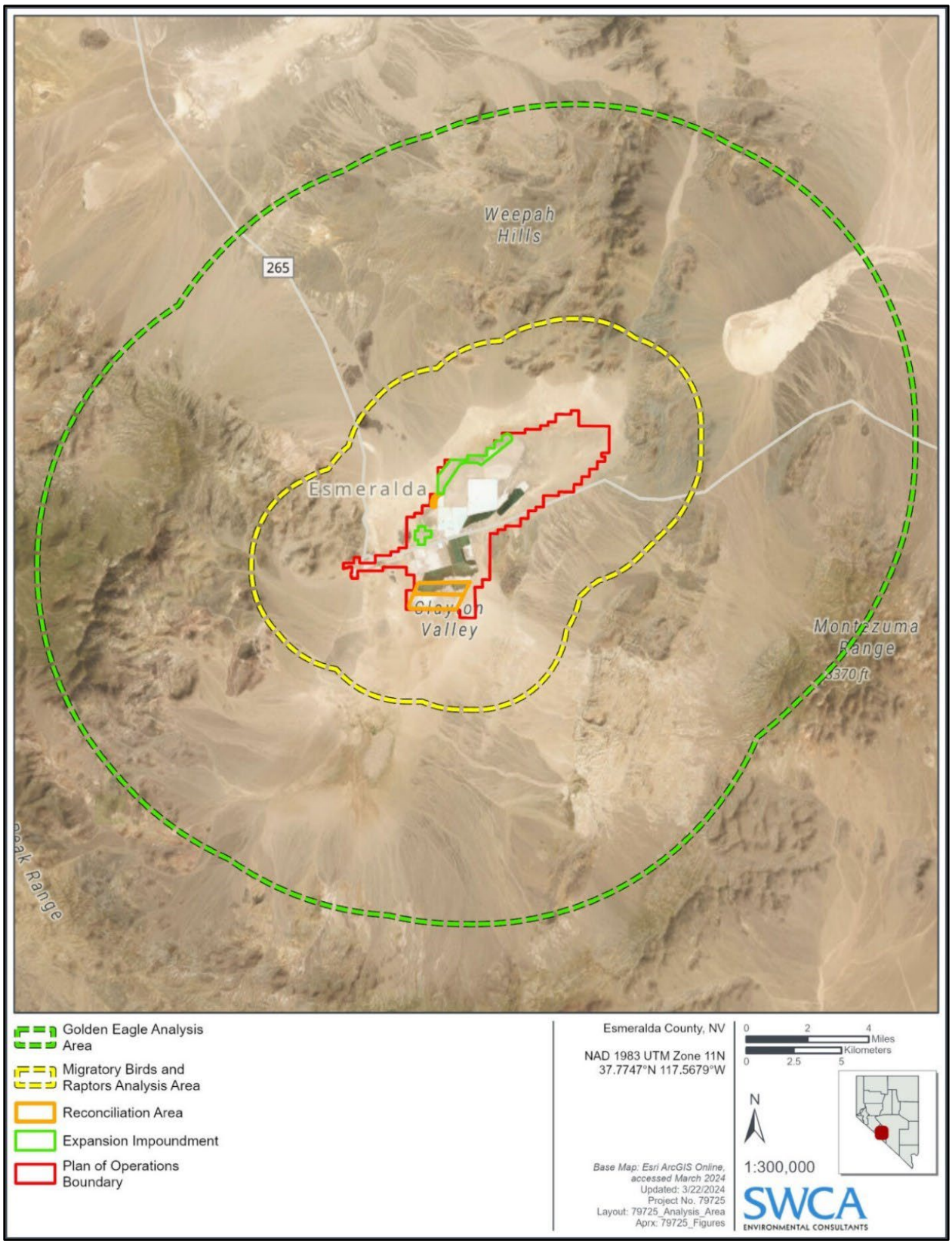

Figure 3-14. Migratory Birds and Raptors Analysis Area.

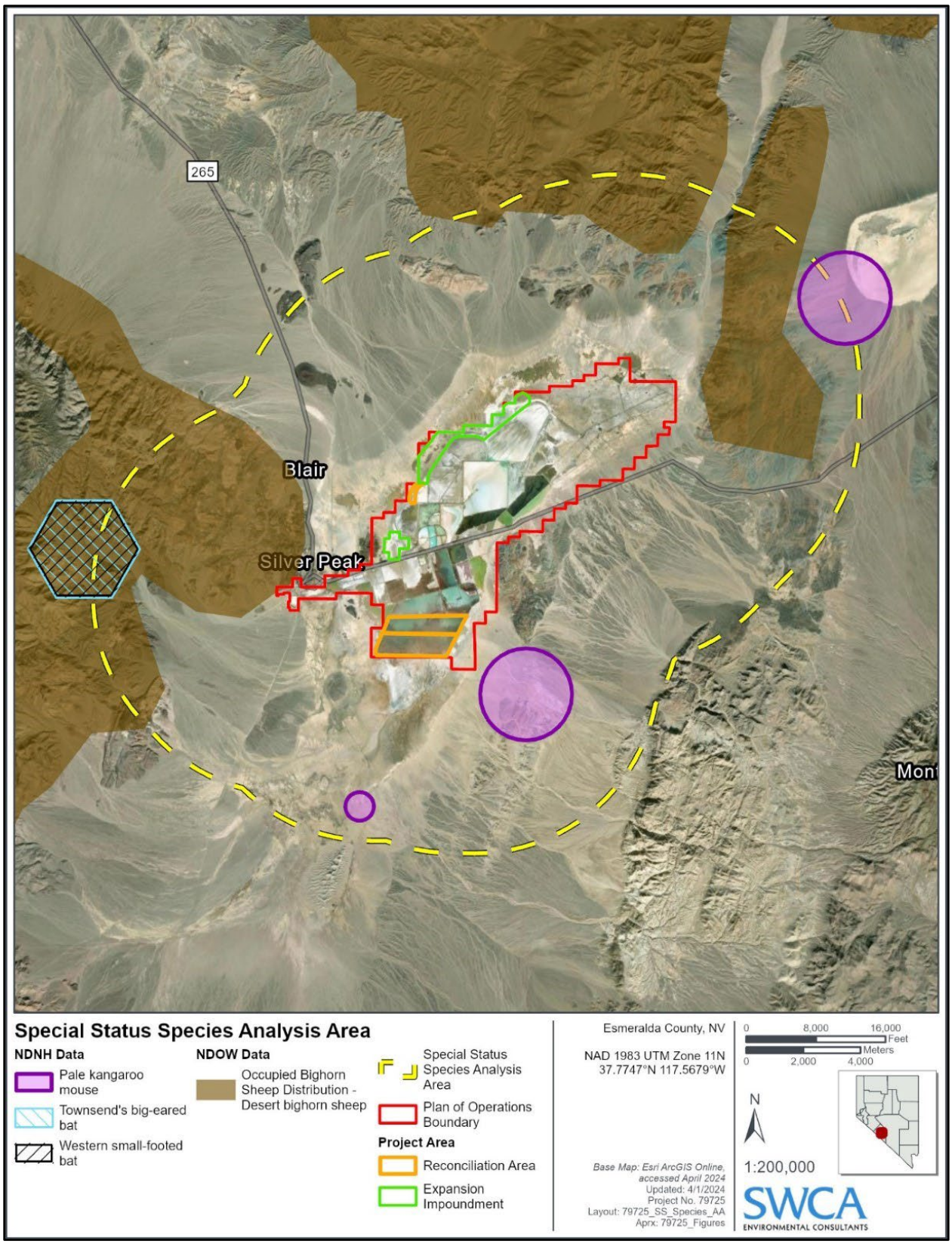

Figure 3-15. Special Status Species Analysis Area.

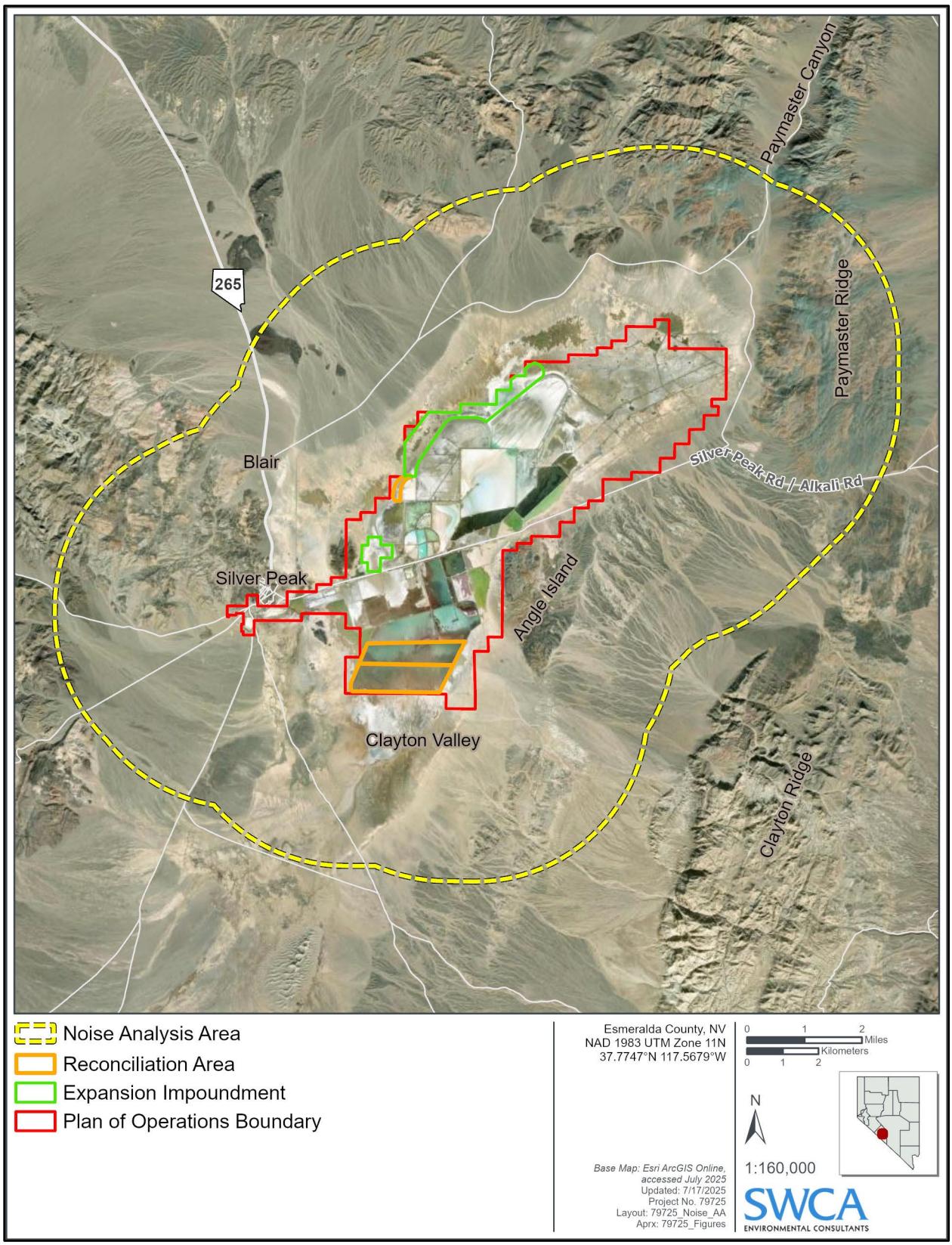

Figure 3-16. Noise Analysis Area.

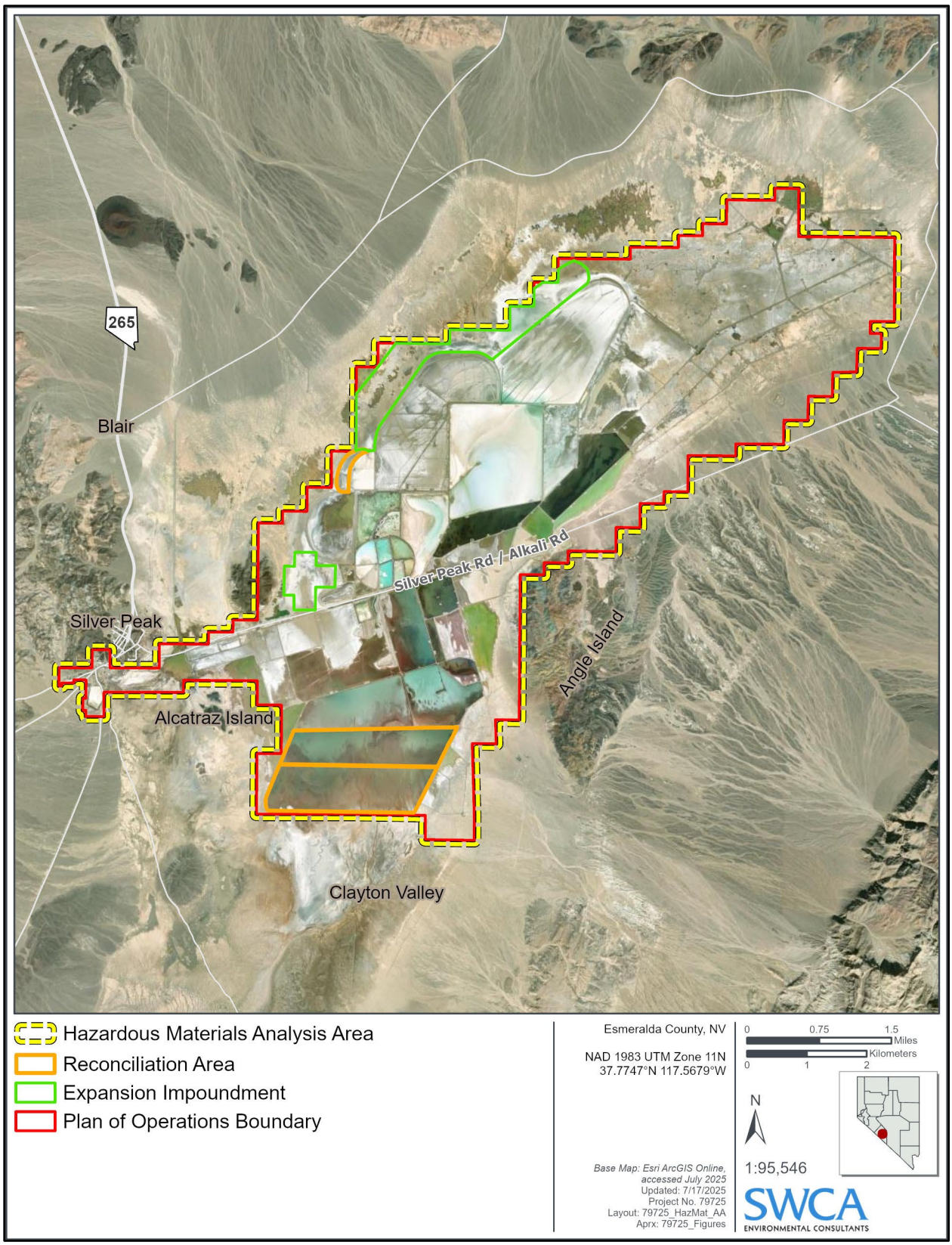

Figure 3-17. Hazardous and Solid Wastes Analysis Area.

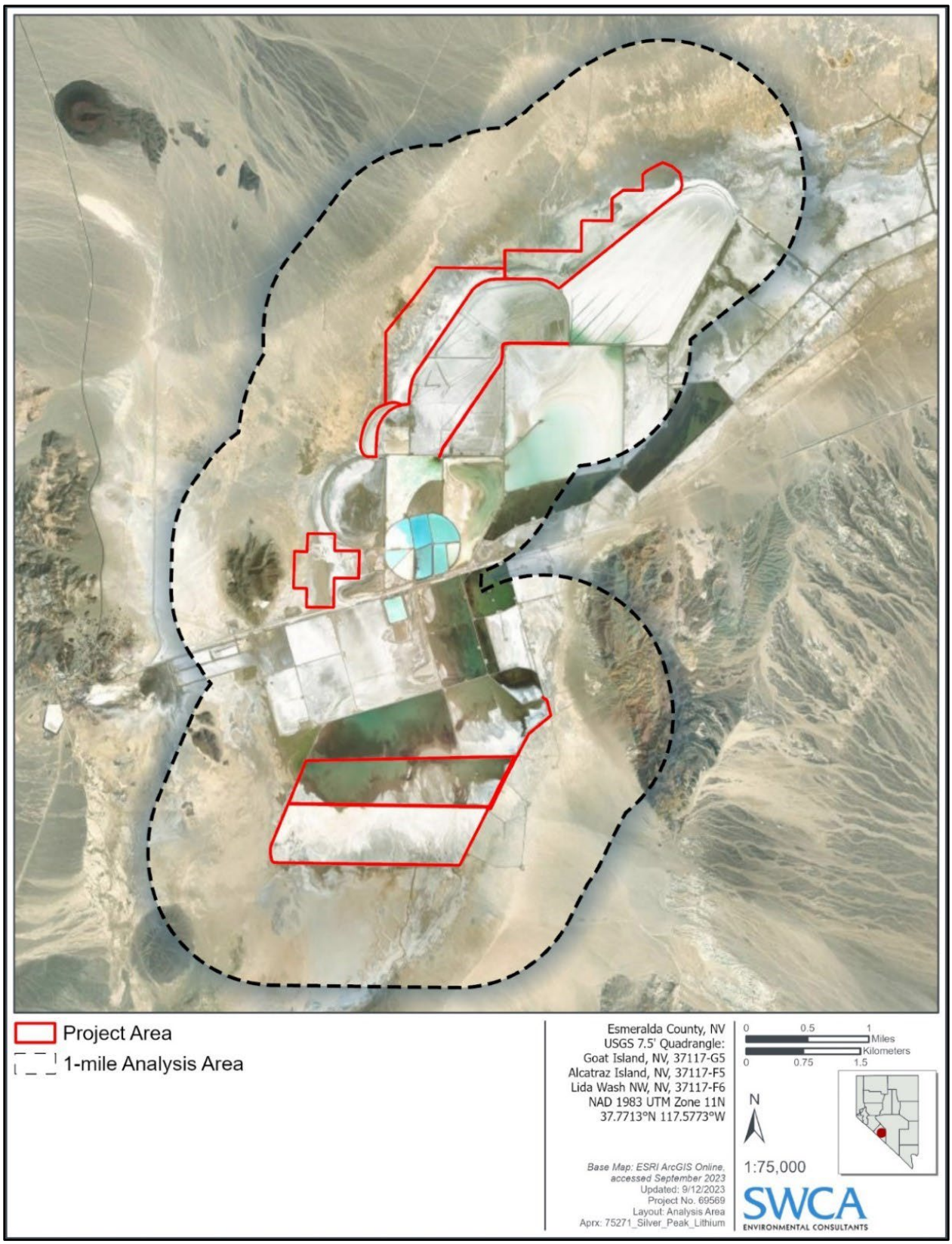

Figure 3-18. Visual Resources Analysis Area.

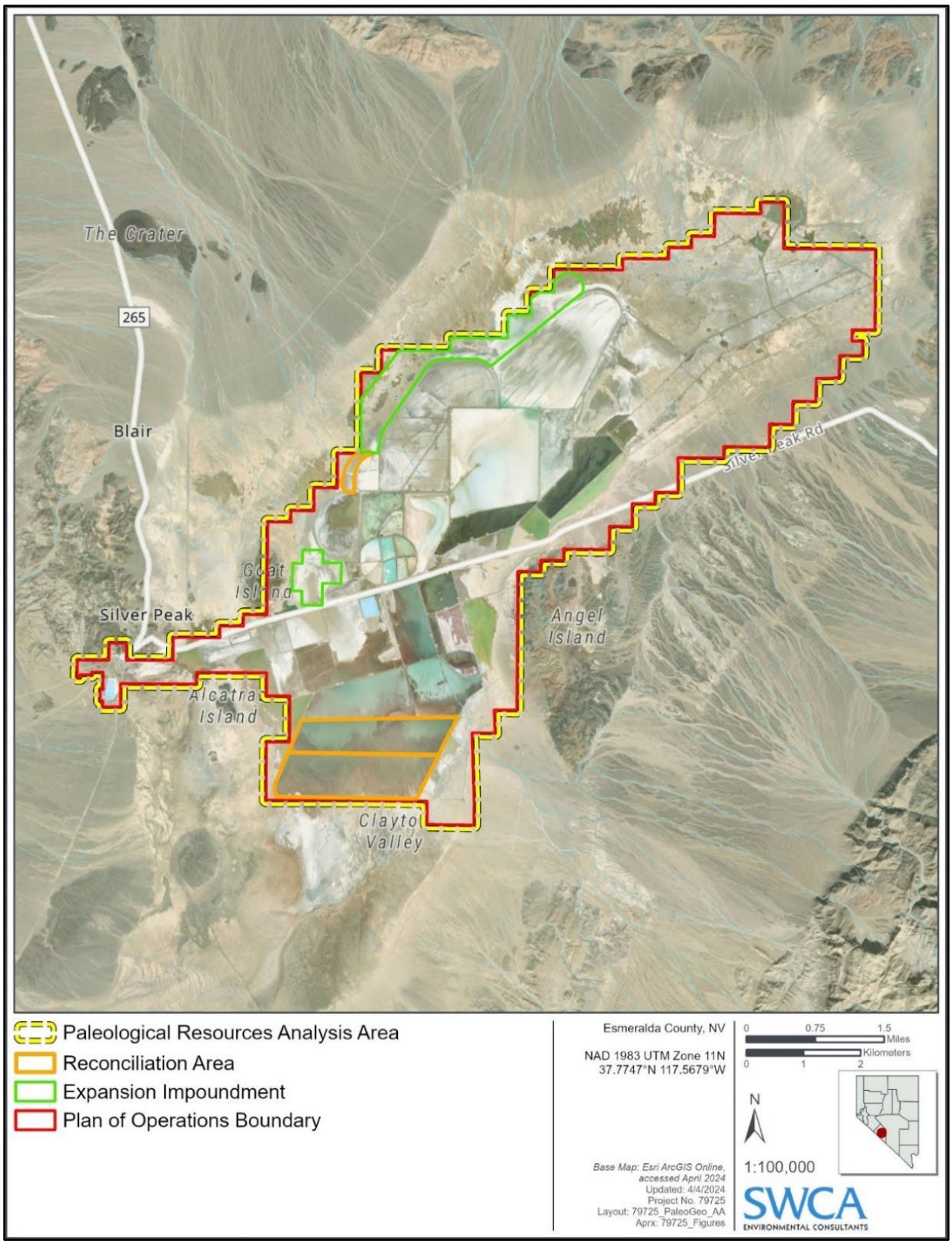

Figure 3-19. Paleontological Resources Analysis Area.

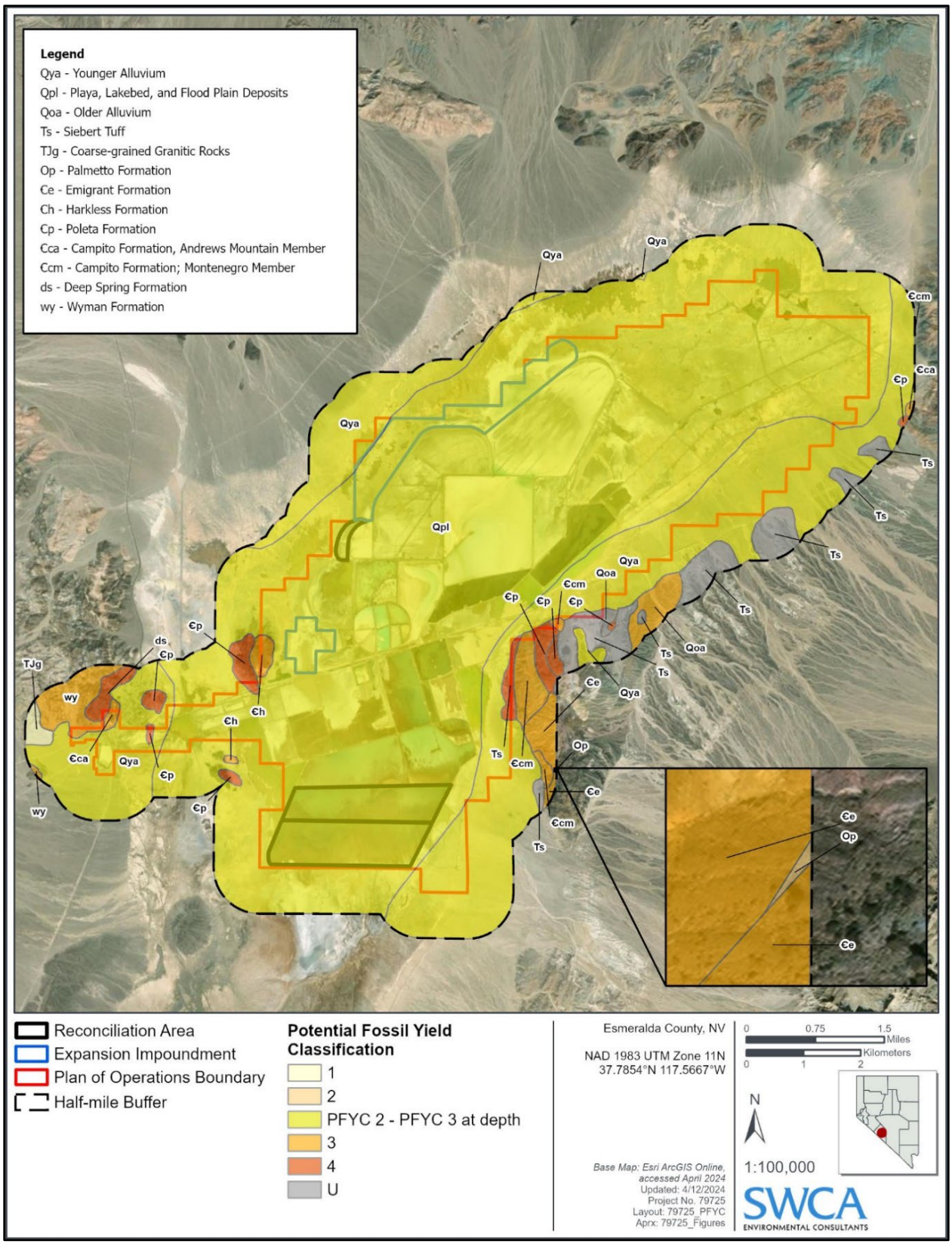

Figure 3-20. PFYC within the Analysis Area and 0.5-mile buffer.

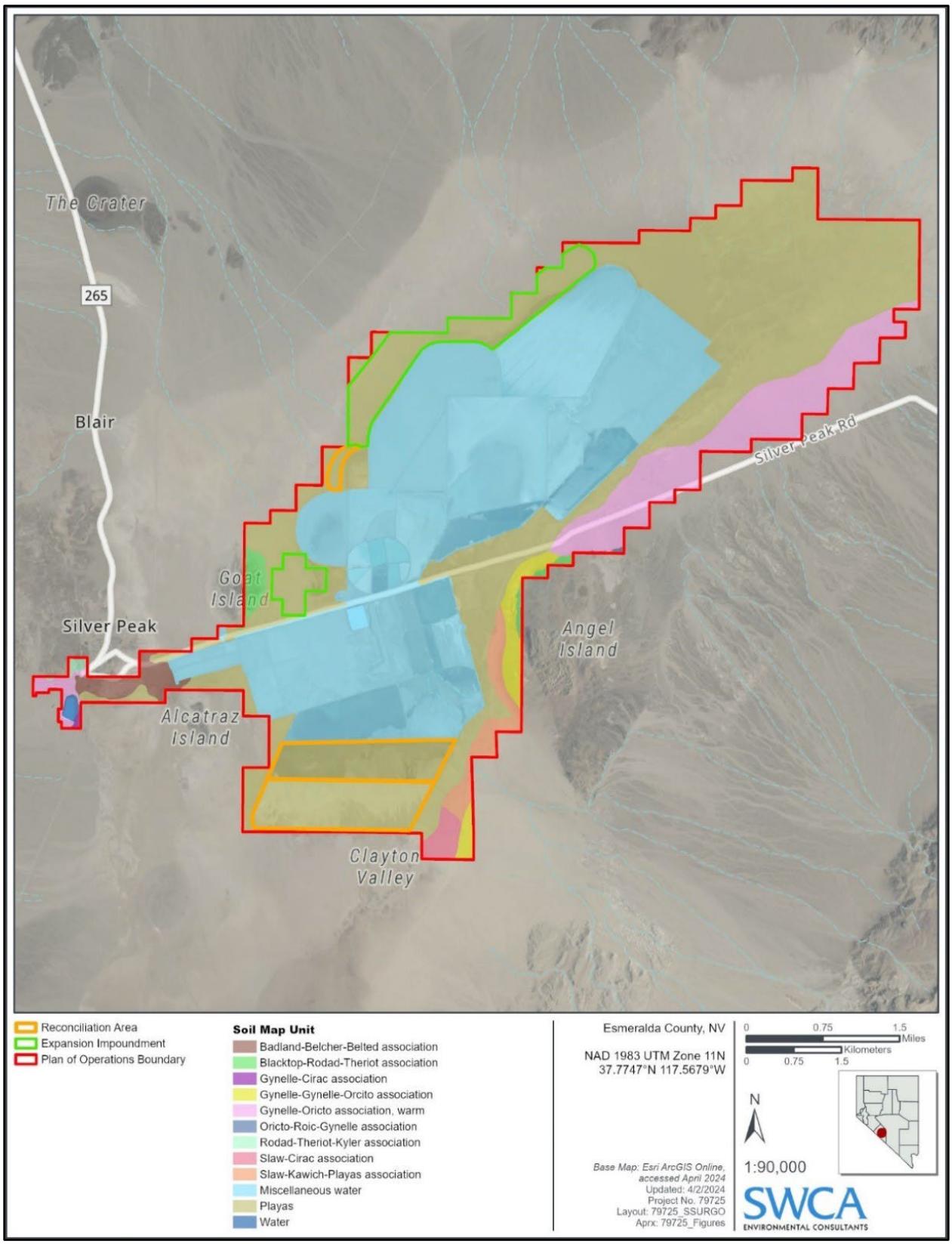

Figure 3-21. Soils Analysis Area.

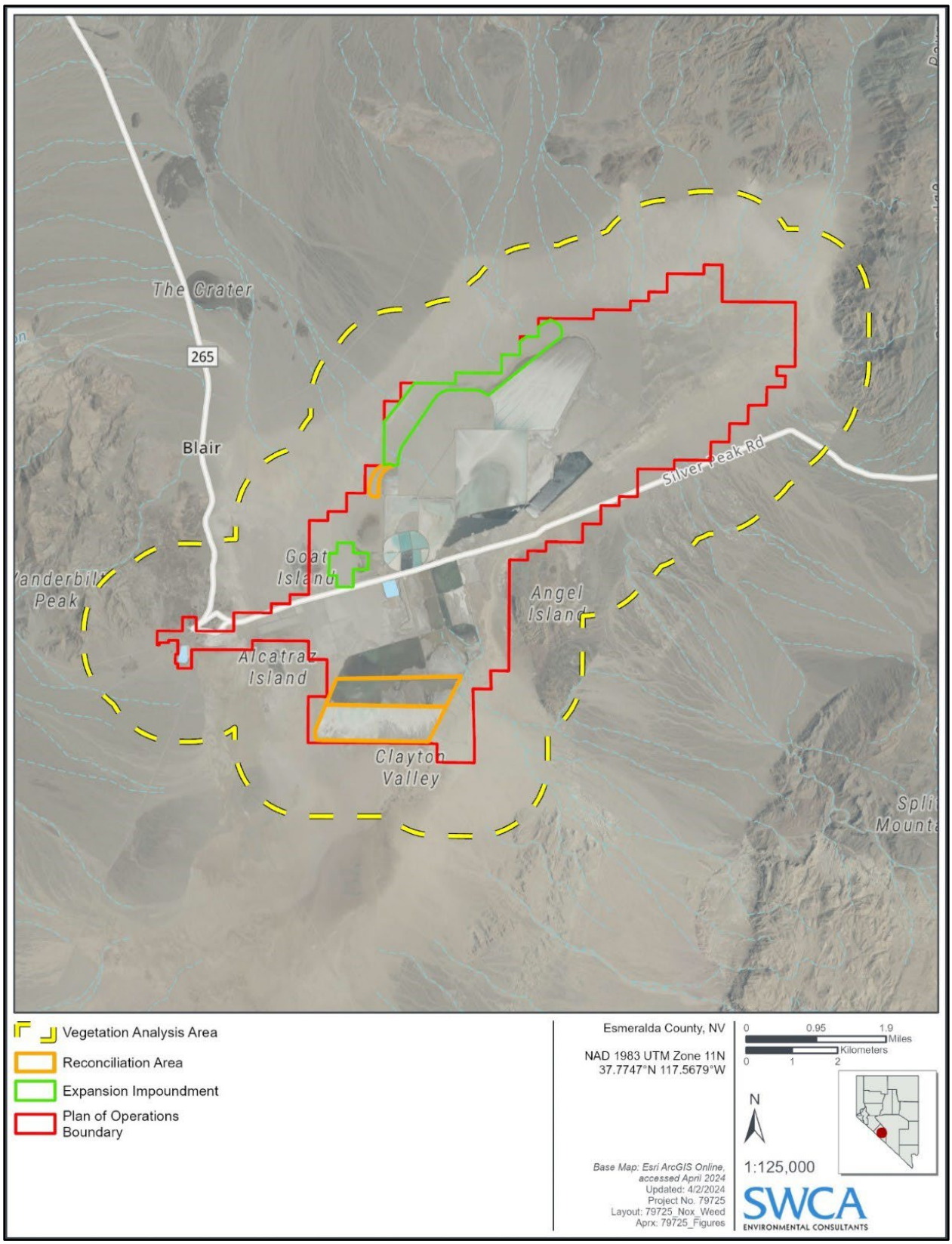

Figure 3-22. Vegetation Analysis Area.

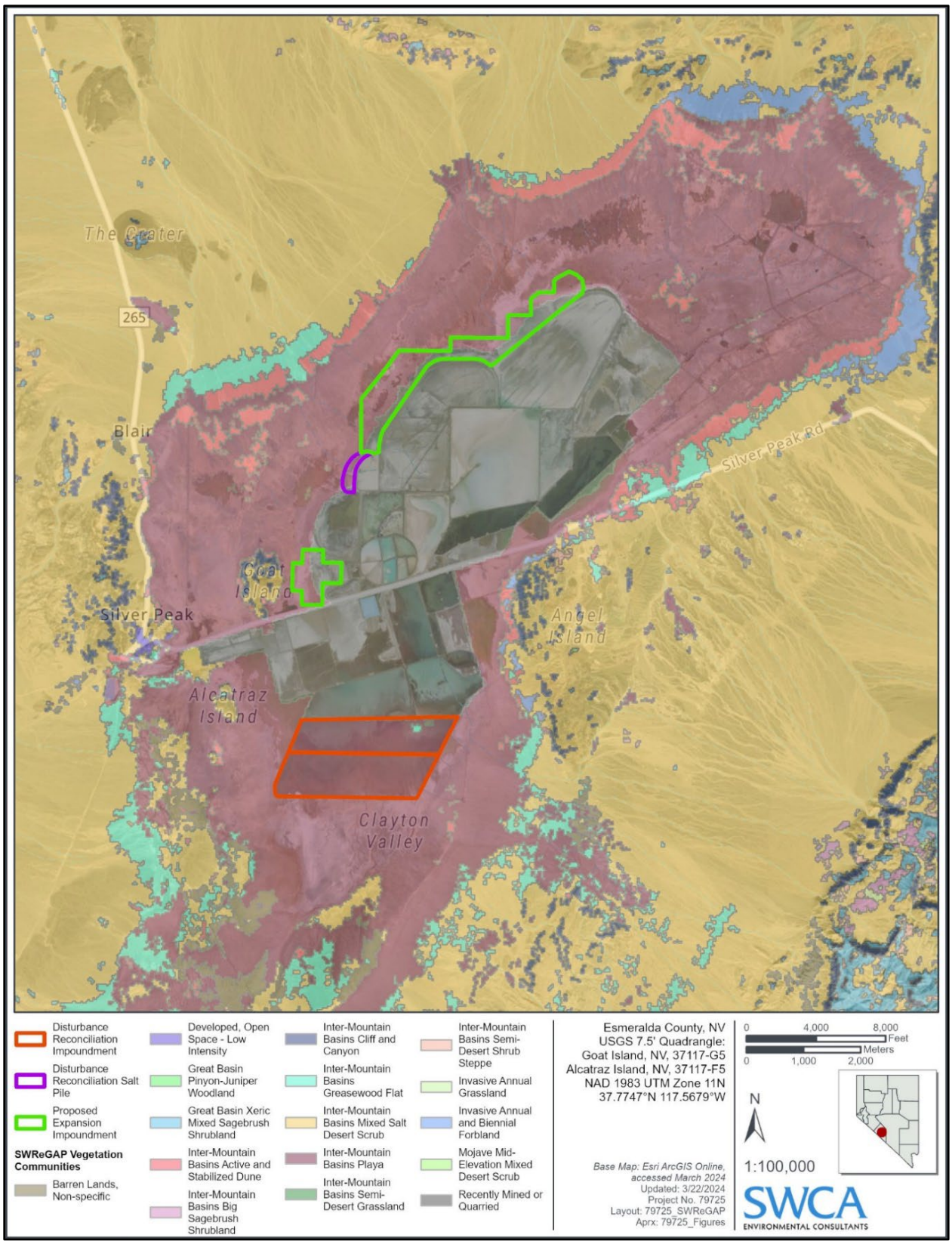

Figure 3-23. SWReGAP vegetation communities in the Project Area.

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APPENDIX B: APPLICANT-COMMITTED ENVIRONMENTAL PROTECTION MEASURES

Albemarle U.S., Inc. (Albemarle) has committed to implementing the following environmental protection measures (EPMs) to prevent UUD during the life of the Silver Peak Lithium Operation (SPLO) Mine Plan Amendment (the Project). These practices were derived from the general requirements established in the Federal Land Policy and Management Act (FLPMA), the Bureau of Land Management's (BLM's) surface management regulations at 43 Code of Federal Regulations (CFR) 3809, and the Nevada Division of Environmental Protection (NDEP) Bureau of Mine Regulation and Reclamation (BMRR), as well as other water regulations and BLM guidance documents, including BLM Handbook H-3809-1. These measures are informed by the baseline reports that identified potential resource conflicts and measures that could be taken to avoid or minimize those resources and conflicts and are to be considered part of the operating plan and procedures. Albemarle employees working at the Project site, as well as any contractors, would be trained to comply with the following environmental responsibilities, as well as state and federal law.

Air Quality

The Project would be operated to control both gaseous and particulate emissions and to meet all state and federal regulatory standards. Appropriate air quality permits have been obtained from the NDEP Bureau of Air Pollution Control. Specific air quality EPMs are listed below.

- **AQ-1**: A Fugitive Dust Control Plan would be implemented for all mine operations and Project access roads. In general, the fugitive dust control program would provide for water application on haul roads and other disturbed areas, chemical dust suppressant application (such as lignin sulfate or magnesium chloride), where appropriate, and other dust control measures, in accordance with accepted and reasonable industry practice.
- **AQ-2**: During construction of the additional ponds, dust created from loading, hauling, and placing soil and gravel material would be suppressed by frequent watering.
- **AQ-3**: There would be no construction, repair, demolition, or use of unpaved or untreated areas without first using the best practical methods to prevent particulate matter from becoming airborne. These methods could include, but are not limited to, paving, chemical stabilization, watering, phased construction, and revegetation.

Dam Safety

- **DAM-1**: Due to the size, dam heights, lack of proximity to the public, and location of the existing evaporation ponds used on site, the Nevada Division of Water Resources (NDWR) Dam Safety Division classifies the Project's solar evaporation impoundments as low hazard dams. Monitoring of these embankments would be in accordance with the site's Dam Safety Permits J-735, J-789, and J-794. Prior to construction of the new ponds, Albemarle would acquire the appropriate permit(s), maintain the ponds in the conditions outlined within the applicable permit(s), and design the ponds according to 43 CFR 3809 and the BLM Surface Management Handbook.

Public Safety

Silver Peak Road runs directly through the Project site and is regularly accessed by public traffic. The measures listed below would be taken to ensure public safety.

- **PHS-1**: Appropriate signage has been posted at existing access points leading to the pond system to restrict unauthorized access. The proposed new strong brine complex would include one additional access point from Silver Peak Road; this access point would also have appropriate signage posted to restrict unauthorized access.
- **PHS-2**: Any roadwork or excavation during the expansions or operations would be properly flagged or barricaded during the work.
- **PHS-3**: Security personnel actively patrol the site to advise access restrictions.

Water Quality

The SPLO maintains NDEP Water Pollution Control Permit (WPCP) No. NEV0070005 to prevent degradation of waters of the state from mining. The permit establishes the minimum facility design and containment requirements. The measures listed below would be taken to prevent degradation of waters.

- **WATER-1**: The fluid management system (process plants, evaporation ponds, liming facility, and all conveyances) either have been or would be designed such that all process fluids are contained according to 43 CFR 3809.420(b)(12)(iii).
- **WATER-2**: Flow through the solar evaporation pond system would be regularly monitored for pond levels and analysis of the concentrated brines.
- **WATER-3**: Quarterly reports would be produced documenting water quality monitoring and analysis results, and a record of releases and remedial actions. Annual reports would include a summary of site operations, total monthly precipitation, and an updated evaluation of the closure plans.
- **WATER-4**: To ensure there is no interaction between the facility operations and the freshwater aquifer, a groundwater monitoring well has been installed between the wells used to access the saturated lithium brine aquifer and the potable groundwater. This well is monitored quarterly to identify any changes in groundwater level that could indicate interaction. As part of the water level sampling analysis plan for the SPLO, a water monitoring memorandum will be filed with the BLM once per year by March 31.
- **WATER-5**: All dikes in the Project Area are designed and constructed with an impervious clay core to minimize leakage. The clay surfaces of the ponds also act as a liner.
- **WATER-6**: In October 2018, Albemarle entered an Administrative Order on Consent with the NDWR establishing a plan to align the Project water rights with existing active wells through an appropriate permitting process. This order also established a schedule for plugging and abandoning inactive wells drilled by Albemarle's predecessors over the last 50 years. Albemarle has plugged and would continue to plug 20 wells annually on a 3-year rolling average until all inactive wells are plugged.

Petroleum-Contaminated Soil

- **PCS-1**: The Project site currently maintains a valid Petroleum-Contaminated Soil (PCS) Management Plan under WPCP NEV0070005. In the case of a petroleum spill, the soil would be excavated and placed on the on-site temporary holding pad and the temporary holding pad would be used during the screening process. Once an adequate quantity of material has been accumulated and the material has been deemed nonhazardous, the materials would be disposed of in an appropriate permitted location.

Wildlife

The Project site holds both federal and state wildlife permits pertaining to the protection of avian species. These permits include:

- U.S. Fish and Wildlife Service (USFWS) Rehabilitation Permit MB93535B-3
- USFWS Special Purpose Utility Permit MB38854B-0
- Nevada Department of Wildlife (NDOW) Industrial Artificial Pond Permit S37036
- NDOW Rehabilitation Permit 427565

The measures listed below would be taken to protect wildlife.

- **WILD-1**: The Integrated Avian Management Program would be updated, including the employment of eight persons during the spring and fall migration season to haze or rescue birds from high saline ponds. All rescued birds would be taken to Albemarle's avian rehabilitation center, where they would be further evaluated and cared for.
- **WILD-2**: Bird surveys are conducted by qualified Albemarle employees trained to identify bird species, site use, and carcass removal and reporting. Data are collected during specific bird surveys, and documentation is completed for each injured or dead bord found on the site. These data are compiled and prepared as a report for the USFWS and NDOW. Albemarle reports issues to the USFWS and NDOW through the methods described in the permits.
- **WILD-3**: A bird and bat conservation strategy will be developed for the Project.

Fire Prevention and Control

Albemarle would comply with federal and state fire laws, and reasonable measures would be taken to prevent any uncontrolled fires in the Project Area. The measures listed below would be implemented for fire prevention and control.

- **FIRE-1**: Smoking areas would be designated only where no flammable materials are present.
- **FIRE-2**: In accordance with the site's Emergency Response Plan and as required by the Mine Safety and Health Administration, all buildings and vehicles would be equipped with a fire extinguisher.

- **FIRE-3**: If any hot work (welding, cutting, grinding, etc.) is being conducted on the mine sure and is not in a designated hot work area, the company's policy for utilizing a "hot work permit" would be followed. This process requires supervisor approval and evaluates all potential hazards. If the work cannot be performed safely or without the potential of starting a fire, it would be conducted elsewhere, if possible. If not practical, various measures would be implemented to mitigate all potential hazards. This includes the use of fire hoses, fire extinguishers, and fire blankets. In all cases, a fire watch would be present.
- **FIRE-4**: Albemarle would immediately report wildfires to the BLM Central Nevada Interagency Dispatch Center as well as the local Esmeralda County Emergency Services. Information reported would include the location, materials involved, time started, and the direction the fire is spreading.

Noxious Weeds and Invasive Non-Native Species

- **VEG-1**: In order to reduce or avoid impacts associated with noxious weeds, invasive species, and non-native species, a noxious weed plan has been developed in conjunction with the BLM.

Hazardous Materials and Solid Wastes

- **HAZ-1**: Hazardous materials used in the process facilities or stored on-site include hydrochloric acid, lithium metal, and petroleum products. The transportation, storage, and disposal of these materials are conducted in accordance with applicable local, state, and federal regulations. Furthermore, a hazardous materials baseline plan has been prepared to minimize impacts associated with storing and transporting hazardous waste.
- **HAZ-2**: Nonhazardous refuse generated by the Project would be collected and stored in appropriate trash bins and then placed in the on-site permitted landfill or contracted roll off containers to be hauled to an appropriate municipal landfill. All bins or containers would be equipped with lids to prevent the spread of debris. Albemarle has one Class III–waivered landfill located approximately 5 miles east of the town of Silver Peak. The construction of the landfill is in accordance with the appropriate local and state requirements.
- **HAZ-3**: Recyclable materials would be stored in a separate laydown area and removed periodically from the site by an approved recycler. Universal waste, such as fluorescent lamps and bulbs, batteries, and electronics, would also be sent off-site to an approved recycler.

Survey Monuments

- **SURVEY-1**: There are very few survey monuments located within the Project Area; however, any monuments present would not be disturbed. If further expansion is considered that has the potential to disturb a monument, Albemarle would ensure that a licensed professional land surveyor oversees and executes the relocation in accordance with applicable laws.

Cultural and Paleontological Resources

- **CR-1**: Any cultural or paleontological resource (historic or prehistoric site or object) or Native American human remains, funerary item, sacred object, or objects of cultural patrimony discovered by Albemarle, or any person working on Albemarle's behalf during the course of construction shall be immediately reported to the Authorized Officer (AO) by telephone, with written confirmation. Albemarle shall suspend all operations within 328 feet (100 meters) of the discovery and protect it until an evaluation of the discovery is made by the AO.
- **CR-2**: For cultural resources other than Native American human remains, funerary items, sacred objects, or objects of cultural patrimony, an evaluation would determine the significance of the discovery and the EPMs necessary to allow activities to proceed. Albemarle is responsible for the cost of evaluation and mitigation. Any decision on treatment and/or mitigation would be made by the AO after consulting with Albemarle. Operations may resume only upon written authorization to proceed from the AO.

Access Roads

- **ACCESS-1**: There would be no new permanent road disturbance outside of the pond disturbance. The "roads" would be part of the pond structure, atop dikes. Temporary roads may be needed during construction, and these roads would be removed upon completion of construction and reclaimed to their original condition.
- **ACCESS-2**: Access roads would be built to a minimum width of 14 feet for one-way traffic and 20-feet for two-way traffic. The recommended minimum shoulder width is 2 feet on each side of the tread width. Widths less than recommended minimums may be used where topography or other natural conditions restrict the width. Roads would be constructed with berms on both sides of the road of half-axle height requirements. A speed limit of 25 miles per hour would be implemented on all access roads.

Preventing Unnecessary and Undue Degradation

- **UUD-1**: All activities would be conducted in a manner that would reduce unnecessary disturbance to previously disturbed and undisturbed areas. Travel would be restricted to existing roads. Excavation activities would be conducted in a manner that restricts the activities to the smallest area possible.

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APPENDIX C: IMPACT DEFINITIONS

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Air Quality	No Substantial Adverse Effects: Air pollutant emissions would increase as a result of the Proposed Action, and are unavoidable; however, impacts fall within all applicable air quality standards and would not exceed NAAQS or NSAAQS.		Substantial Adverse Effects: Air pollutant emissions would increase significantly as a result of the Proposed Action, and impacts would exceed applicable NAAQS and NSAAQS. Applicant-committed EPMs would have to be carefully coordinated and planned with local, state, and federal agencies if a permit to proceed were to be issued.		Changes in ambient air quality occur at a site associated with a specific activity for the duration of that activity.	Changes in ambient air quality would remain beyond the end of a specific activity.	Changes are perceived at the location of the activity but dissipate within a specified extent.	Changes are perceived throughout the hydrographic basin and/or county.
Cultural Resources	No Historic Properties Affected: A "no historic properties affected" determination indicates that no historic properties are in the APE or that there are historic properties in the APE but the undertaking would not alter the characteristics that qualify them for NRHP eligibility.		No Adverse Effect: A "no adverse effect" determination indicates that there would be an impact on the historic property by the undertaking, but the impact does not meet the criteria of adverse impact in 36 CFR 800.5(a)(1) and would not alter any of the characteristics that make it eligible for the NRHP in a manner that would diminish the integrity of the historic property.	Adverse Effect: An adverse effect indicates that the undertaking would alter, directly or indirectly, any of the characteristics that make it eligible for the NRHP in a manner that would diminish the integrity of the property.	Effects would last for the duration of the Project.	Effects would last after active mining for the Project is completed.	Effects would be limited to eligible or unevaluated sites within the Analysis Area.	Effects would occur to eligible or unevaluated sites outside of the Analysis Area.
Socioeconomics	The consequences of the action would have little to no measurable impact on the social or economic environment.	There would be a small but noticeable impact on the socioeconomic environment.	There would be a measurable impact on the socioeconomic environment.	There would be a substantial impact on the socioeconomic environment. Effects would significantly alter existing conditions in beneficial or adverse ways.	Effects would occur during construction activities or during occasional maintenance activities in the operations period. OR Effects would last for the duration of the Project.	Effects would last after active mining for the Project is completed.	Effects would occur at a locally focused scale, including the town of Silver Peak.	Effects would occur across a broader area, including all of Esmeralda County, or more.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Water Resources	Impacts on water resources could occur, but they would be so slight as to not be measurable or distinguishable from natural fluctuations.	Impacts on water resources would occur, but would be small and just measurable using normal methods. Impacts are unlikely to affect beneficial uses of the receiving water.	Impacts on water resources would occur and would be readily detectable and could affect the beneficial uses of the surface or groundwater resources.	Impacts on water resources would be large, measurable, and easily detected and would substantially change beneficial uses of surface or groundwater resources or hydrologic regime over the area.	1 year or less.	More than 1 year.	Impacts would occur at the specific site(s) or within the Project boundary.	Impacts would extend beyond the Project Area.
Noxious Weeds	No Substantial Adverse Effects: Effects from noxious weeds would be so small they would not be measurable or perceptible. Vegetation would not be extensively altered, and there would be no effect on the biological value or distribution of plant communities.		Substantial Adverse Effects: Effects from noxious weed, invasive species, and non-native species would be readily apparent and would substantially change the biological value of the native plant community within and outside the Project Area. Mitigation beyond the Applicant-committed EPMs and best management practices (BMPs) may be necessary, and these measures would need to be monitored to determine their effectiveness.		Effects would last 3 years or less as related to noxious weed, invasive species, and non-native species establishment.	Effects would last longer than 3 years as related to noxious weed, invasive species, and non-native species establishment.	Affecting the Analysis Area.	Affecting an area beyond the Analysis Area.
Migratory Birds and Raptors	No Substantial Adverse Effects: Migratory birds and raptors would not be affected or effects would not result in a loss of individuals or habitat.		Substantial Adverse Effects: Effects would be substantial and highly noticeable, and could be permanent in their effect on population or subpopulation survival without active management. Extensive Applicant-committed EPMs likely would be necessary to reduce or rectify adverse effects, and success could not be guaranteed.		1 year or less for an individual or habitat; 5 years or less for a population.	Greater than 1 year for an individual or habitat; greater than 5 years for a population.	Effects are confined to a small part of the population, habitat, or range.	Effects would alter a widespread area of suitable habitat or the range of the population or species.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Special Status Species	Special status species would not be substantially affected, or effects would not result in a loss of individuals or habitat.	Effects on a special status species population would be measurable or perceptible and local; however, the overall viability of the population or subpopulation would not be affected and, without further adverse effects, the population would recover. Effects on wildlife, such as displacement of nests or dens or obstruction of corridors, would be detectable. If Applicant-committed EPMs are needed to reduce or rectify adverse effects, they would be relatively simple to implement.	Effects on special status species would be sufficient to cause a change in the population or subpopulation (e.g., abundance, distribution, quantity, viability); however, the effect would remain local. The change would be measurable and perceptible, but the negative effects could be reversed. Applicant-committed EPMs likely would be necessary to reduce or rectify adverse effects.	Effects on special status species would be substantial, highly noticeable, and could be permanent in their effect on population or subpopulation survival without active management. Extensive Applicant-committed EPMs likely would be necessary to reduce or rectify adverse effects, and success could not be guaranteed.	1 year or less for individual or habitat; 5 years or less for a population.	Greater than 1 year for individual or habitat; greater than 5 years for a population. OR Effects on special status species habitat would be permanent.	Effects on special status species are confined to a small part of the population, habitat, or range.	Effects on special status species would alter a widespread area of suitable habitat or the range of the population or species.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Noise	Noise levels would be below or only slightly above perceptible thresholds at sensitive receptor sites and would not conflict with noise thresholds set forth in federal, state, or local laws and management plans. Vibration would be at or below perceptible thresholds at sensitive or historic land uses.	Changes in background noise levels from activities associated with the Proposed Action would be perceptible but would not conflict with noise thresholds set forth in federal, state, or local laws and management plans. Applicant-committed EPMs would minimize impacts on sensitive receptor sites.	Changes in background noise levels from activities associated with the Proposed Action would be perceptible and may result in elevated noise levels at sensitive receptor sites. Mitigation measures beyond the Applicant-committed EPMs may be required to be in compliance with noise thresholds set forth in federal, state, or local laws and management plans, but they would most likely be effective applicable standards.	Changes in noise levels from activities associated with the Proposed Action would be readily perceptible within and outside of the Analysis Area. The Proposed Action would result in conflicts with existing noise thresholds set forth in federal, state, or local laws and management plans. Mitigation measures beyond Applicant-committed EPMs may be required to be in compliance with noise thresholds set forth in federal, state, or local laws and management plans, but they would most likely be effective at reducing noise levels to be within applicable standards.	Effects would occur during Project construction activities or during Project maintenance activities. OR Effects would last for the duration of the Project.	Effects would last after active mining for the Project is completed. OR Effects to structures from vibration that would be permanent.	Noise levels at or above statutory or USEPA guidelines at noise sensitive receptors within the Analysis Area.	Noise and vibration impacts are limited to the local area of the Project; regional impacts are not applicable.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Native American Religious Concerns	Impacts would result in a change in current conditions that would be too small to be physically measured using normal methods or would not be perceptible. There is no noticeable effect on the natural or baseline setting.	Impacts would result in a change in current conditions of areas of Native American concern that would be just measurable with normal methods or barely perceptible. While the qualities of individual cultural resources, properties of cultural and religious importance (PCRIs), and traditional cultural properties (TCPs) may be affected, they would not be negatively affected to a measurable degree. Resources of concern (i.e., plants, wildlife, water) would not be impacted to a measurable degree.	Some impacts on the current condition of areas of Native American concern would occur. Changes to existing access would occur that would require some form of mitigation measure to minimize impacts. The qualities of individual cultural resources, PCRIs, and TCPs would be affected to a measurable degree; however, they would still maintain their integrity. Resources of concern (i.e., plants, wildlife, water) would be impacted, requiring changes in management or use of the resource.	There would be significant impacts on areas of Native American concern. Changes to existing access would occur and would require specific mitigation measures to minimize impacts. The qualities of individual cultural resources, PCRIs, and TCPs would be substantially altered. Resources of concern (i.e., plants, wildlife, water) would be impacted by changing the value or productivity of the resource. This impact may not be in compliance with applicable regulatory standards or impact thresholds, thereby requiring large changes in management or use of the resource.	Effects would last no longer than 1 year. OR Effects would last for the duration of the SPLO (approximately 30 years).	Effects would last after active mining is completed. OR Impacts that would remain after reclamation is completed.	Effects would occur to pre-contact sites or properties of Tribal importance within the Analysis Area.	Effects would occur to pre-contact sites or properties of Tribal importance outside of the Analysis Area.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Hazardous and Solid Wastes	A negligible spill of hazardous materials or fuels would be one that is quite small, is easily and quickly contained, and has no measurable impact on any natural resource. A diesel fuel leak from a hose during refueling would be an example.	A minor spill of hazardous material or fuels would be one that has a measurable impact on soil or water resources but is quickly contained and remediated so that the duration and the extent of the spill are limited and there is no residual impact.	A moderate spill of hazardous material or fuels would be one that has a measurable impact over a large area or involves a spill into a water resource. Depending on the type and quantity of material spilled, this type of spill could require state and federal agency oversight. A moderate spill would have residual long-term impacts even after containment and remediation.	A major spill of hazardous material or fuels would be one that has extensive measurable impacts on water resources and requires the involvement of state and federal agencies to assess the impact and supervise the containment and remediation. This type of spill would have long-term impacts on natural resources and would require state and federal agency oversight for an extended period of time to ensure proper protection of critical resources and habitats. An example would be a large spill of sulfuric acid into a lake or an extensive fuel spill into a river.	A spill that can be contained and remediated in less than 1 year.	A spill that results in impacts on water, soil, or aquatic resources that lasts more than 1 year.	A spill affecting an area the size of a small park, a parking lot, or an area consisting of less than 10 acres.	A spill affecting an area greater than 10 acres or affecting a flowing water body or a lake.
Visual Resources	The element contrast is not visible or perceived.	The element contrast can be seen but does not attract attention.	The element contrast begins to attract attention and begins to dominate the characteristic landscape.	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	Effects would occur during construction and last for the duration of active mining.	Effects would last after active mining. or effects to the viewshed would be permanent.	Activities would affect the viewshed within the area of analysis but would not be visible outside of the area of analysis.	Activities would affect the viewshed within the area of analysis, as well as outside of the area of analysis.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Paleontological Resources	Either the probability of encountering paleontological resources (or geologic units with potential to produce paleontological resources) is unlikely or the Project activities are unlikely to impact paleontological resources (or geologic units that may produce paleontological resources). Effects on paleontological resources are possible but unlikely and would be so small as to not be scientifically important.	Effects would occur to geologic units that have paleontological potential, but the effects on paleontological resources would be minimized with Applicant-committed EPMs or BMPs.	Effects on paleontological resources would occur and may occur over a relatively large area. Some paleontological resources would likely be lost.	Effects on paleontological resources would occur and would substantially change the geologic characteristics over a large area. There is a high probability of encountering fossils during ground-disturbing activities, and many fossils would likely be lost.	Effects would last through the duration of the Project.	Effects would extend after completion of the Project. OR Effects would extend in perpetuity and are irreversible. Because paleontological resources (rock formations, fossil-bearing strata, and fossils) are essentially nonrenewable, ground disturbance that directly affects paleontological resources would be permanent.	Effects would be limited to the Analysis Area for the Project.	Effects would extend beyond the Analysis Area for the Project and would affect overall paleontological resources in the region.

Resource or Supplemental Authority	Intensity				Duration		Context	
	Negligible	Minor	Moderate	Major	Short-Term	Long-Term	Localized	Regional
Soils	Effects on soils would be so small they would not be measurable or perceptible. Soils would not be extensively altered and there would be no effect on the ecological value of the resource.	Effects on soils would be detectable, measurable, and perceptible, but would occur within the Soils Analysis Area and would not affect the overall ecological value of the resource. Effects would be minimized with implementation of Applicant-committed EPMs, BMPs, and reclamation of the Project.	Effects on soils would be readily apparent, measurable, large, and of consequence and would occur within the Soils Analysis Area. Effects may occur to the overall ecological value of the soils. Substantial Applicant-committed EPMs and BMPs may be necessary, and these measures would most likely be effective.	Effects would occur and would substantially change the ecological value of the resource. Substantial Applicant-committed EPMs and BMPs may be necessary, and these measures would need to be monitored to determine their effectiveness.	Effects would last for the duration of the Project.	Effects would last through the decades following mine closure until soil health and productivity is reestablished. OR Effects on the ecological values of the soils would be permanent.	Affecting the Soils Analysis Area.	Affecting an area beyond the Soils Analysis Area.
Vegetation	Effects on vegetation would be so small they would not be measurable or perceptible. Plant communities would not be extensively altered, and there would be no effect on the biological value or distribution of plant communities.	Effects on vegetation would be detectable, measurable, and perceptible, but would occur within the Analysis Area and would not affect the overall biological value or distribution of plant communities. Effects would be minimized with implementation of Applicant-committed EPMs, BMPs, and reclamation of the Project.	Effects on vegetation would be readily apparent, measurable, large, and of consequence and would occur within the Analysis Area. Effects may occur to the overall biological value or distribution of plant communities. Substantial Applicant-committed EPMs and BMPs may be necessary, and these measures would most likely be effective.	Effects would occur and would substantially change the biological value or distribution of plant communities. Substantial Applicant-committed EPMs and BMPs may be necessary, and these measures would need to be monitored to determine their effectiveness.	Effects would last for the duration of the Project.	Effects would last until 25 years following mine closure (the estimated time for mature shrubs to become reestablished in the Analysis Area). OR Effects on vegetation productivity would be permanent.	Affecting the Analysis Area.	Affecting an area beyond the Analysis Area.

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APPENDIX D: LIST OF PREPARERS

The EIS and supporting documents were prepared under the supervision of a team from the BLM by contractor SWCA Environmental Consultants (SWCA). The individuals who contributed to the preparation of this document are listed here by organization, along with their title, agency and office (Tables D.1-1 and D.1-2).

Table D.1-1. BLM Personnel Participating in the EIS

Name	Title	Agency	Office
Scott Distel	Program Manager	BLM	Nevada State Office
Erik Bray	Project Manager	BLM	Tonopah Field Office
Daltry Balmer	Assistant Field Manager	BLM	Tonopah Field Office
Randy Martin	Public Affairs Officer	BLM	Tonopah Field Office

Table D.1-2 SWCA Personnel Participating in the EIS

Name	Title	Agency	Office
Donna Morey	Project Manager	SWCA	Las Vegas Office
Sophie Butler	Assistant Project Manager	SWCA	Reno Office
Kristin Buskirk	Project Coordinator	SWCA	Chicago Office
Jim Stobaugh	Agency Advisor	SWCA	Reno Office
Matt Villaneva	Natural Resources Director	SWCA	Reno Office
Sarah Epstein	Planner	SWCA	Reno Office
Lucinda Dockstader	Planner	SWCA	Las Vegas Office
Shelbey Isi	Planner	SWCA	Reno Office

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APPENDIX E: LITERATURE CITED

Albemarle U.S., Inc. (Albemarle). 2022. Silver Peak Lithium Project (NVN-072542/Reclamation Permit #0092) Plan of Operations Amendment. Accessed May 27, 2025.———. 2023. Silver Peak Lithium Project Fact Sheet (Permit No. NEV0070005). Available at: https://ndep.nv.gov/uploads/documents/NEV0070005dfsFY23.pdf. Accessed May 27, 2025.

Albers, J.P., and J.H. Stewart. 1972. Geology and Mineral Deposits of Esmeralda County, Nevada. Nevada Bureau of Mines and Geology, Bulletin 78. 80 pp., 2 pl.

Bengston, G. 2003. Northern Paiute and Western Shoshone Land Use in Northern Nevada: A Class I Ethnographic/Ethnohistoric Overview. U.S. Department of the Interior. Cultural Resource Series No. 12. In: Bureau of Land Management (BLM). 2008. Cortez Hills Expansion Project Final Environmental Impact Statement. Battle Mountain District Office, Battle Mountain, Nevada. September 2008.

Britannica, The Editors of Encyclopedia. 2020. "Basin and Range Province." Encyclopedia Britannica, 22 Jan. 2020. Available at: https://www.britannica.com/place/Basin-and-Range-Province. Accessed May 27, 2025.

Bureau of Land Management (BLM). 1984. Manual 8400 – Visual Resource Management. Available at: https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual8400.pdf. Accessed June 5, 2025.

———. 1986a. Manual H-8410-1 - Visual Resource Inventory. Available at: https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_H-8410.pdf. Accessed June 5, 2025.

———. 1986b. Manual H-8431 – Visual Resource Contrast Rating. Available at: https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_H8431.pdf. Accessed June 5, 2025.

———. 1992. Integrated Weed Management. BLM Manual 9015.

———. 1997. Tonopah Resource Management Plan and Record of Decision. Available at: https://eplanning.blm.gov/eplanning-ui/project/77957/510. Accessed May 27, 2025.

———. 2007. Standard Operating Procedures from the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS and ROD. Proposed for use in the Vegetation Treatments Using Herbicides on BLM Lands in Oregon EIS. Available at: https://eplanning.blm.gov/eplanning-ui/project/70300/510 . Accessed May 27, 2025.

———. 2014. BLM Nevada Statewide Wildlife Survey Protocols. Reno, Nevada.

———. 2022a. Nevada Statewide Visual Resource Inventory Update. Prepared for the U.S. Bureau of Land Management, Nevada State Office.

———. 2022b. Implementing the Paleontological Resources Preservation Act of 2009 (PRPA). Permanent Instruction Memorandum PIM2022-009. Posted August 1, 2022. Available at: https://www.blm.gov/policy/pim2022-009. Accessed May 27, 2025.

———. 2023. Nevada Special Status Species List. Available at: https://www.blm.gov/sites/default/files/docs/2023-11/NV-IM-2024-003%20att%201%20BLM%20Nevada%20Special%20Status%20Species%20List_0.pdf . Accessed June 9, 2025.

———. 2024a. BLM National Data. Available at: https://experience.arcgis.com/experience/9a89ee80c604431e8f8d939a186fbdbb. Accessed May 27, 2025.

———. 2024b. Desk Guide: Socioeconomic Aspects of Planning and NEPA. Available at: https://muleapi.blm.gov/sites/default/files/docs/2024-08/IM2024-040%20Att1.pdf. Accessed on May 23, 2025.

———. 2025a. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 1 Air Quality. Accessed May 2025.

———. 2025b. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 2 Cultural Resources. Accessed May 2025.

———. 2025c. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 3 Socioeconomics. Accessed May 2025.

———. 2025d. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 4 Water Resources. Accessed May 2025.

———. 2025e. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 5 Noxious Weeds, Invasive, and Non-Native Species. Accessed May 2025.

———. 2025f. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 6 Migratory Birds and Raptors. Accessed May 2025.

———. 2025g. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 7 Special Status Species. Accessed May 2025.

———. 2025h. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 8 Noise. Accessed May 2025.

———. 2025i. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 9 Native American Religious Concerns. Accessed May 2025.

———. 2025j. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 10 Hazardous and Solid Waste. Accessed May 2025.

———. 2025k. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 11 Visual Resources. Accessed May 2025.

———. 2025l. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 12 Paleontological Resources. Accessed May 2025.

———. 2025m. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 13 Soils. Accessed May 2025.

———. 2025n. Silver Peak Lithium Operation Project Supplemental Environmental Report No. 14 Vegetation. Accessed May 2025.

———. 2025o. Silver Peak Lithium Operation Expansion Project Environmental Impact Statement Scoping Report. Accessed June 2025.

Countess Environmental. 2006. WRAP Fugitive Dust Handbook. Available at: https://www.env.nm.gov/wp-content/uploads/sites/2/2017/02/WRAP_FDHandbook_Rev_06.pdf .Accessed June 6, 2025.

Cowan, J.P. 1994. Handbook of Environmental Acoustics. New York, NY: Van Nostrand Reinhold.

Crafford, A.E.J. 2007. Geologic map of Nevada. U.S. Geological Survey, Data Series 249. 1 CD-ROM, 46 pp., 1 pl. Map scale 1:500,000.

Davis, J.R., I. Friedman, and J.D. Gleason. 1986. Chapter L. Origin of the lithium-rich brine, Clayton Valley, Nevada. In: Shorter Contributions to Isotope Research, edited by Z.E. Peterman and D.C. Schnabel, pp 13–138. U.S. Geological Survey Bulletin 1622. Washington, D.C.:

EDM International, Inc. (EDM). 2019. *Silver Peak Avian Protection Plan*. Fort Collins, Colorado: Albemarle U.S., Inc.

Esmeralda County. 2011. Master Plan. Esmeralda County, Nevada. Available at: http://cms2.revize.com/revize/esmeraldanew/document_center/Es__Co___Master_Plan_adopted_Dec__7__2011.pdf. Accessed May 27, 2025.

———. 2013. Esmeralda County Public Lands Policy Plan. Available at: http://cms2.revize.com/revize/esmeraldanew/document_center/Es__Co__Public_Land_Policy_Plan_2013.pdf. Accessed May 27, 2025.

———. 2023. Silver Peak, Nevada. Available at: https://www.accessesmeralda.com/communities/silver_peak.php. Accessed: Accessed May 27, 2025.

Farmer, A.M. 1991. *The effects of dust on vegetation – a review*. Environmental Pollution 79(1): 63–75. https://doi.org/10.1016/0269-7491(93)90179-r.

Federal Highway Administration (FHWA). 2011. Roadway Construction Noise Model (RCNM). Software Version 1.1. Federal Highway Administration.

Graeme, S., M. F. McKenna, L. M. Angeloni, K. R. Crooks, K. M. Fristrup, E. Brown, K. A. Warner, M. D. Nelson, C. White, J. Briggs, S. McFarland, and G. Wittmyer. 2015. A synthesis of two decades of research documenting the effects of noise on wildlife. *Biological Reviews* 91(4):982–1005.

Great Basin Bird Observatory. 2010. Nevada comprehensive bird conservation plan, ver. 1.0. Great Basin Bird Observatory, Reno, NV. Available at: https://www.gbbo.org/bird-conservation-plan . Accessed May 27, 2025.

Headwaters Economics. 2024a. Economic Profile System: A Profile of Land Use. Available at: https://headwaterseconomics.org/apps/economic-profile-system/32009. Accessed May 27, 2025.

———. 2024b. Economic Profile System: A Demographic Profile. Available at: https://headwaterseconomics.org/apps/economic-profile-system/32009. Accessed May 27, 2025.

———. 2024c. Economic Profile System: Bureau of Land Management (BLM) Socioeconomic Profile. Available at: https://headwaterseconomics.org/apps/economic-profile-system/32009. Accessed May 27, 2025.

National Parks Service. 2025. National Scenic and National Historic Trail Webmap. Available at: https://nps.maps.arcgis.com/apps/webappviewer/index.html?id=d89951079a374f28ab4a3b9fc41025dd. Accessed July 24, 2025.

National Wild and Scenic Rivers System. 2024. Find a River. Available at: https://www.rivers.gov/map. Accessed May 27, 2025.

Natural Resources Conservation Service (NRCS). 2015. Glossary of Soil Science Terms. Available at: https://www.crops.org/publications/soils-glossary/browse/p?q=publications/soils-glossary/browse/p/. Accessed June 18, 2025.

———. 2019. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov/. Accessed May 27, 2025.

———. 2024. Soil Data Access (SDA) Prime and other Important Farmlands. Available at: https://www.nrcs.usda.gov/publications/Legend%20and%20Prime%20Farmland%20-%20Query%20by%20Soil%20Survey%20Area.html#reportref. Accessed May 27, 2025.

NatureServe. 2025. Merriam's Shrew (*Sorex marriami*). Available at: https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.108245/Danaus_plexippus. Accessed June 9, 2025.

Nevada Department of Wildlife (NDOW). 2023. Project letter regarding species tracked by NDOW, Silver Peak Lithium Expansion Areas.

———. 2025. Desert Kangaroo Rat. Available at: https://www.ndow.org/species/desert-kangaroo-rat/. Accessed June 9, 2025.

Nevada Division of Environmental Protection (NDEP). 1992. Letter of Determination for Cyprus Foote Mineral Company's Silver Peak Operations Stormwater Permit. June 23, 1992.

Nevada Division of Water Resources (NDWR). 1999. Nevada State Water Plan. March 1999. Available at: https://water.nv.gov/library/water-planning-reports. Accessed: May 27, 2025.

———. 2016. Order #1275 Designating and Describing the Clayton Valley Hydrographic Basin (10-143) Within Esmeralda County, Nevada. Available at: http://images.water.nv.gov/images/Orders/1275o.pdf. Accessed May 27, 2025.

———. 2025. Hydrographic Area Summary. Available at: https://tools.water.nv.gov/DisplayHydrographicGeneralReport.aspx?basin=143 . Accessed May 27, 2025.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle Inventory and Monitoring Protocols and Other Recommendations. Available at: https://tethys.pnnl.gov/sites/default/files/publications/Pagel-2010.pdf. Accessed June 6, 2025.

Rush, F.E. 1968. Water-Resources Appraisal of Clayton Valley-Stonewall Flat Area, Nevada and California. Water Resources – U.S. Geological Survey Reconnaissance Series Report 45. May 1968.

SRK Consulting, Inc. (SRK). 2021. SEC Technical Report Summary Pre-Feasibility Study Silver Peak Lithium Operation Nevada, USA. Accessed August 23, 2024.

Steward, J.H. 1938. Grouse Creek. In Basin-Plateau Aboriginal Sociopolitical Groups, pp. 173–177. Washington, D.C. Reprinted by University of Utah Press, Salt Lake City.

Stoffle, R.W., K.A. Van Vlack, H.Z. Johnson, P.T. Dukes, S.C. De Sola, and K.L. Simmons. 2011. Tribally Approved American Indian Ethnographic Analysis of the Proposed Millers Solar Energy Zone. Ethnography and Ethnographic Synthesis for the Solar Programmatic Environmental Impact Statement and Solar Energy Study Areas in Portions of Arizona, California, Nevada and Utah. Bureau of Applied Research in Anthropology, University of Arizona, Tucson.

SWCA Environmental Consultants (SWCA). 2019. Draft Screening Report for Silver Peak Lithium Operations.

———. 2020a. Silver Peak Lithium Operation General Wildlife Report. 2020. Accessed May 27, 2025.

———. 2020b. Silver Peak Lithium Operation Avian Baseline Report. Las Vegas, Nevada.

———. 2020c. Silver Peak Lithium Operation Botanical Survey Report.

———. 2020d. Silver Peak Lithium Facility Expansion Area: Ecological Site Descriptions. Reno, Nevada: Albemarle U.S., Inc. and Bureau of Land Management, Tonopah Field Office.

———. 2023a. Silver Peak Lithium Operation, Water Resource Records Review Baseline Summary Report. Accessed May 27, 2025.

———. 2023b. Silver Peak Lithium Operation Seeps and Springs Baseline Survey Report. Accessed May 27, 2025.

———. 2023c. Albemarle Silver Peak Lithium Operation Weed Management Plan. SWCA Inc. August 2023. Accessed May 27, 2025.

———. 2023d. Paleontological Resources Assessment for the Silver Peak Lithium Mine Project, Esmeralda County, Nevada. Prepared for Bureau of Land Management Battle Mountain District Office, Tonopah Field Office. August 22, 2023.

———. 2023e. Albemarle Silver Peak Lithium Operation Weed Management Plan. SWCA Inc. August 2023.

———. SWCA 2024b. Silver Peak Sampling and Analysis Plan for the Silver Peak Lithium Operation, Nevada. Accessed July 16, 2025.

U.S. Department of Agriculture (USDA). 2017. State Noxious-Weed Seed Requirements Recognized in the Administration of the Federal Seed Act. Available at: https://www.ams.usda.gov/sites/default/files/media/2017NWSList.pdf. Accessed May 27, 2025.

———. 2018. Halogeton (Halogeton glomeratus): USDA ARS. www.ars.usda.gov. USDA. 2018. Available at: https://www.ars.usda.gov/pacific-west-area/logan-ut/poisonous-plant-research/docs/halogeton-halogeton-glomeratus/. Accessed May 27, 2025.

U.S. Environmental Protection Agency (USEPA). 1972. Federal Noise Control Act of 1972.

———. 2014. Criteria for the Definition of Solid Waste and Solid and Hazardous Waste Exclusions. Available: https://www.epa.gov/hw/criteria-definition-solid-waste-and-solid-and-hazardous-waste-exclusions. Accessed June 9, 2025.

———. 2019. Cleanups in My Community. Available: https://www.epa.gov/cleanups/cleanups-my-community. Accessed May 27, 2025.

———. 2022. U.S. Environmental Protection Agency (USEPA). 2022. Latest Version of Motor Vehicle Emission Simulator (MOVES). Available at: https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves. Accessed June 6, 2025.

———. 2023a. 2020 National Emissions Inventory (NEI) Data. Available at: https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data. Accessed May 27, 2025.

———. 2023b. EPA Nonroad Diesel Engines. Available at: https://dieselnet.com/standards/us/nonroad.php. Accessed March 2024.

———. 2023c. 2023. AP-42: Compilation of Air Emissions Factors. Available at: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors. Accessed March 2024.

———. 2024. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. U.S. Environmental Protection Agency, EPA 430R-24004. Available at: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022, Accessed June 7, 2025.

———. 2025a. National Priorities List (NPL) Sites – by State. Available at: https://www.epa.gov/superfund/national-priorities-list-npl-sites-state. Accessed June 9, 2025.

———. 2025b. Envirofacts. Available at: https://enviro.epa.gov/. Accessed June 9, 2025.

———. 2025c. Underground Storage Tanks (USTs) Finder. Available at: https://www.epa.gov/ust/ust-finder. Accessed June 9, 2025.

U.S. Fish and Wildlife Service (USFWS). 2019. "Saltcedar (Tamarix Ramosissima) Ecological Risk Screening Summary." Ecological Risk Screening Summary - Saltcedar (Tamarix Ramosissima) - High Risk. U.S. Fish and Wildlife Service. May 2019. Available at: https://www.fws.gov/media/ecological-risk-screening-summary-saltcedar-tamarix-ramosissima-high-risk. Accessed May 27, 2025.

———. 2025a. Endangered and Threatened Wildlife and Plants; Reopening Comment Periods for Three Proposed Rules; Announcement of a Public Hearing for One Proposed Rule. *Federal Register* 90(52):12694–12695.

———. 2025b. Information for Planning and Consultation. Available at: https://ipac.ecosphere.fws.gov/location/AI5WCWEM5JF4TCWTLSU4HS2M2U/resources. Accessed July 23, 2025.

U.S. Geological Survey (USGS). 2005. *Southwest Regional GAP Analysis – Land Cover Descriptions*. RS/GIS Laboratory, College of Natural Resources, Utah State University.

———. 2021. Methodology and Technical Input for the 2021 Review and Revision of the U.S. Critical Minerals List. Available at: https://pubs.usgs.gov/of/2021/1045/ofr20211045.pdf. Accessed: Accessed May 27, 2025.

———. 2022. Federal Register Volume 87, Number 37. 2022 Final List of Critical Minerals. Available at: https://www.govinfo.gov/content/pkg/FR-2022-02-24/pdf/2022-04027.pdf. Accessed: Accessed May 27, 2025.

———. 2025a. The National Map Viewer. Available at: https://apps.nationalmap.gov/viewer/. Accessed May 27, 2025.

———. 2025b. Mineral Resources Data System. Available at: https://mrdata.usgs.gov/mrds/map-graded.html#home. Accessed June 9, 2025.

———. 2025c. TopoView Maps. Available at https://ngmdb.usgs.gov/topoview/viewer/#12/39.4314/-119.3388. Accessed June 19, 2025.

Zampirro, D. 2004. Hydrogeology of Clayton Valley Brine Deposits, Esmeralda County, Nevada. Nevada Bureau of Mines and Geology Special Publication 33:271–280.

Zouhar, K. 2003. *Tamarix* spp. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available at: https://www.fs.usda.gov/database/feis/plants/tree/tamspp/all.html. Accessed May 27, 2025.