ENVIRONMENTAL ASSESSMENT
DOI-BLM-CA-D050-2019-007-EA

Battery Minerals Resources California, Inc.
Panamint Valley Lithium Exploration Project
Inyo County, California
Plan of Operations CACA-57756

February 2019

U.S Department of the Interior
Bureau of Land Management
California Desert District Office
Ridgecrest Field Office
300 S. Richmond Road
Ridgecrest, California 93555

It is the mission of the Bureau of Land Management to sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
APE	Area of Potential Effect
BCC	Birds of Conservation Concern
BLM	Bureau of Land Management
BMP	best management practice
BMR	Battery Mineral Resources, Incorporated
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
CIPC	California Invasive Plant Council
CMA	conservation management action
CNDDB	CDFW Natural Diversity Database
DRECP	Desert Renewable Energy Conservation Plan
EA	environmental assessment
EIC	Eastern Information Center
EO	Executive Order
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act of 1976
FP	Fully Protected
GLO	General Land Office
HFRA	Healthy Forests Restoration Act
HMA	herd management area
IUCN	International Union for Conservation of Nature
LUPA	Land Use Plan Amendment
LWC	Land with Wilderness Characteristics
MBTA	Migratory Bird Treaty Act
msl	mean sea level
NEMO	Northern and Eastern Mojave Management Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NI	present, but not affected to a degree that detailed analysis is required
NLCS	National Land Conservation System
NP	not present in the area impacted by the proposed or alternative actions
NRHP	National Register of Historic Places
PI	present with potential for significant impact and analyzed in the EA
PVC	polyvinyl chloride
RFO	Ridgecrest Field Office
S	Sensitive
SRMA	Special Recreation Management Area
SSC	Species of Special Concern
USC	U.S. Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UTM	Universal Transverse Mercator
VRI	Visual Resource Inventory
VRM	Visual Resource Management
VSL	visual sensitivity level
VU	Vulnerable
WIU	Wilderness Inventory Unit
WL	Watch List

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Chapter 1 Introduction

On November 15, 2017, Battery Mineral Resources California, Incorporated (BMR) submitted a plan of operations for the Panamint Valley Lithium Exploration Project (Project). The Project is located on four unpatented placer mining claims on public lands in Inyo County, California, administered by the U.S. Department of the Interior, Bureau of Land Management (BLM), Ridgecrest Field Office (RFO). The proposed project locations as shown on Figure 1-1 are in:

- Section 6, Township 21 south, range 44 east; and
- Sections 4, 8, 10, and 27, Township 22 south, range 44 east,

These sections are located in Mount Diablo Meridian, California. The project locations are accessed by Ballarat, Wingate, and Indian Ranch roads.

This Environmental Assessment (EA) has been prepared in conformance with the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] § 1500-1508) and the BLM NEPA Handbook H-1790-1. This document further describes the applicant's committed environmental protection measures specifically designed to eliminate or reduce potential environmental impacts and summarizes the conservation management actions (CMAs) relevant to the proposed activities and locations.

1.1 Purpose and Need for the Proposed Action

BLM has a need set by Section 302(b) of the Federal Land Policy and Management Act (FLPMA) to respond to an application to enter, drill, and gather samples from certain placer claims in conformance with 43 CFR 3809.400. The purpose of the present assessment is to complete BLM's environmental review of this proposal as required by NEPA and 43 CFR 3809.411(a) (3) (ii).

Surface Management regulations 43 CFR §3809 implement the goals of FLPMA by establishing procedures and standards for operations on public land authorized by the mining laws. The stated objectives of these directives are to provide for mineral entry, exploration, location, operations, and purchases pursuant to mining laws, "in a manner that will not unduly hinder such activities" but "will assure that such activities are conducted in a manner that will prevent unnecessary or undue degradation" and that will protect other non-mineral resources on federal lands. Objectives include setting reclamation standards for disturbed areas and requiring coordination with appropriate State agencies. The regulations establish when activities must have an authorized plan of operations as opposed to a notice, and whether BLM's authorization of such plans and plan modifications is subject to review under NEPA.

1.2 Decision to be Made

BLM will decide whether to approve, approve with modification, or deny the proposal for mineral exploration as presented by BMR per 43 CFR 3809.411(d).

Figure 1-1: Panamint Valley, CA Project Location

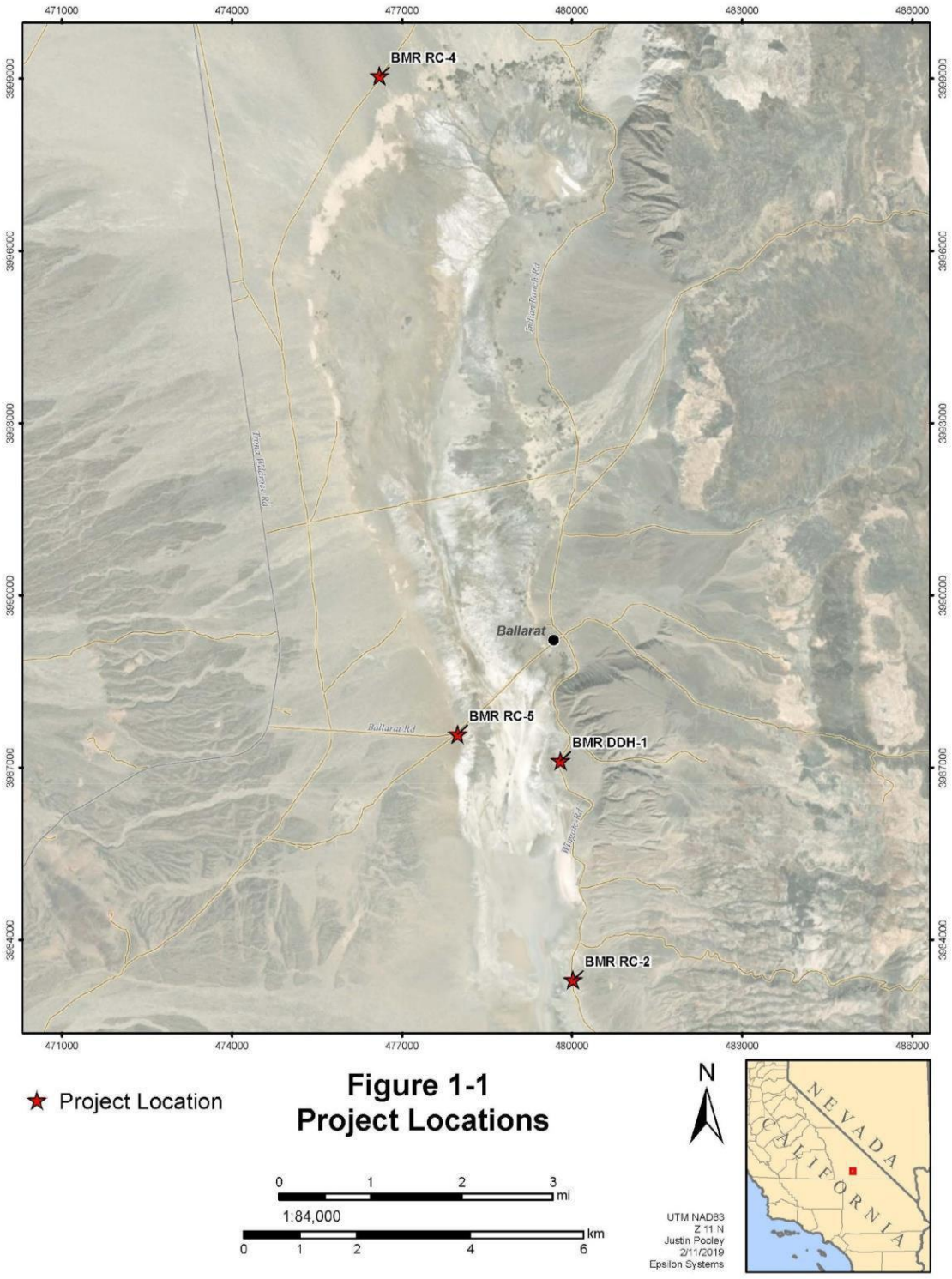
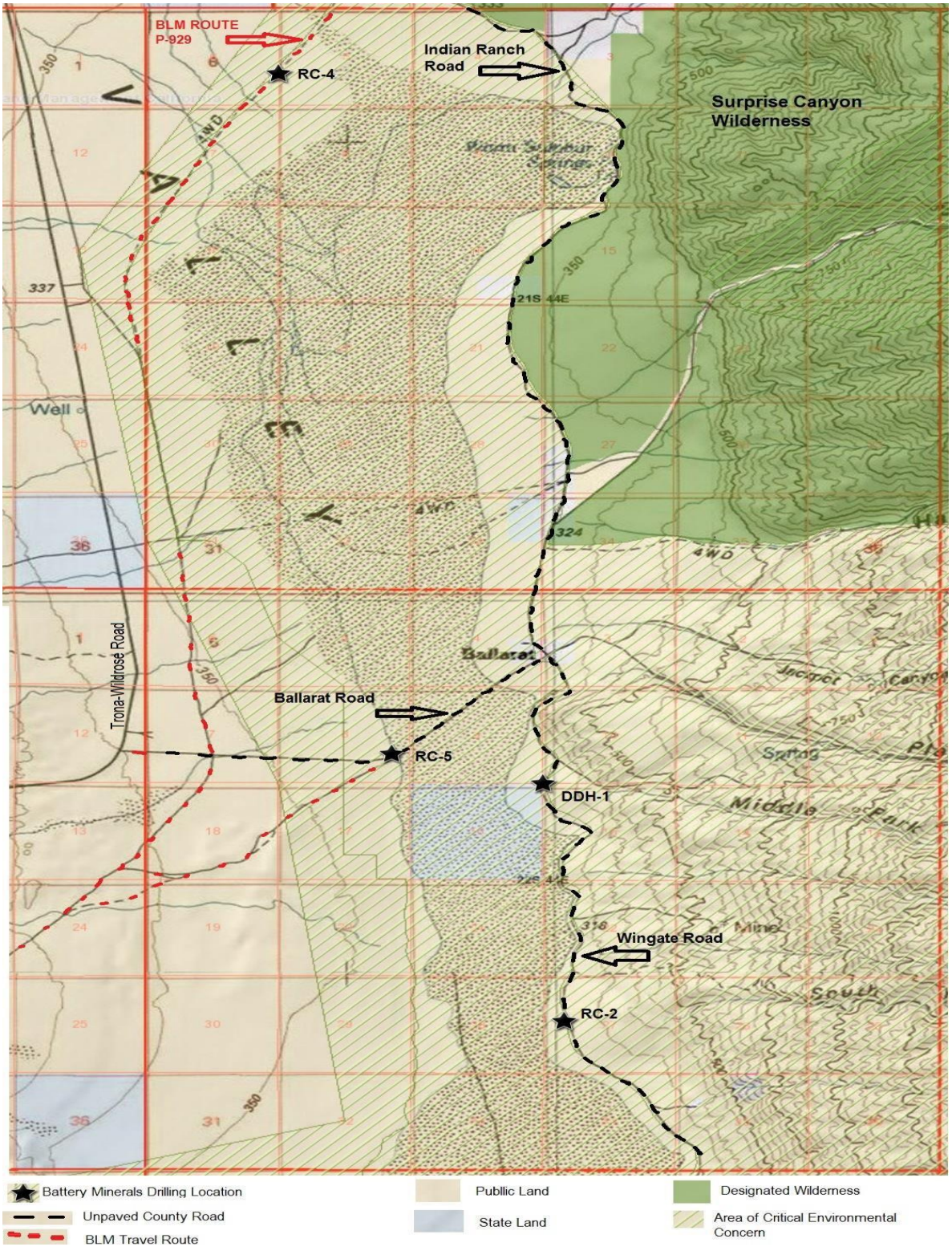


Figure 1-2: Land Ownership Map and Access Roads



1.3 CONFORMANCE WITH BLM LAND USE MANAGEMENT PLANS

This proposal is in conformance with the California Desert Conservation Area Management Plan of 1980 as amended (CDCA Plan) (BLM 1980), the Northern and Eastern Mojave Management Plan (NEMO) (BLM 2002), and the Desert Renewable Energy Conservation Plan (DRECP), approved on September 14, 2016 (BLM 2016). The NEMO and DRECP plans are land use plan amendments (LUPAs) to the CDCA Plan. Each subsequent plan amendment supersedes previous plans and plan amendments where it has made changes. These and other plans are publicly available at the California BLM website for land use planning at https://eplanning.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do.

The DRECP eliminated Multiple Use Classifications within the California Desert Conservation Area (CDCA). The four proposed drill sites are located on lands classified as being within the National Land Conservation System (NLCS) and on lands located within an Area of Critical Environmental Concern (ACEC). Operations causing disturbance greater than casual use in an ACEC are required to have an authorized Plan of Operation per 43 CFR 3809.11(c) (3).

1.4 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS AND REQUIREMENTS

The alternatives are consistent and comply with the following federal laws and regulations:

- The Mining Law of 1872 (30 U.S. Code [USC] 22) provides for the right to explore and purchase valuable mineral deposits on lands belonging to the United States, so far as is not inconsistent with the laws of the United States.
- The FLPMA of 1976 states that it is the policy of the United States to manage the public lands for multiple use and sustained yield while providing for resource protection in a manner that also recognizes the nation's need for domestic sources of minerals, provides rights of ingress and egress to locators under the Mining Law of 1872, and mandates the Secretary of the Interior to prevent unnecessary or undue degradation of public lands (Title I, Section 102 (a)(7) and(12), and Title III, Section 302 (b)(f), of FLPMA) [43 USC 1701(a)(12) and 43 USC 1732(b)].
- The Mining and Minerals Policy Act of 1970 (30 USC 21a) as amended declares it is the policy of the United States to foster and encourage the orderly and economic development of domestic mineral resources.
- The National Historic Preservation Act (NHPA; 16 USC 470) requires federal agencies to consider the effect of federal undertakings (including federal authorizations) on sites that may be eligible for inclusion in the National Register of Historic Places (NRHP).
- The Endangered Species Act (ESA) (16 USC 1536) requires federal agencies to ensure that federally authorized actions are not likely to jeopardize the continued existence of any threatened or endangered species.
- Surface Management regulations (43 CFR § 3809) establish procedures and standards to prevent unnecessary or undue degradation of public lands by operations authorized by the mining laws.
- Federal regulation 43 CFR § 3809.11 specifies that an operator must submit a plan of operations for any operations causing surface disturbance greater than casual use or within an ACEC. The authorization of a plan of operations is a federal decision subject to NEPA.

In addition to the laws and regulations listed above, this EA was written considering the recommendations provided in Executive Order (EO) 13817, A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals. The goal of EO 13817 is to reduce the nation's vulnerability to disruptions in the supply of critical minerals. Lithium is on the final list of 35 such critical minerals. The supply vulnerabilities are to be reduced by implementing the following:

- Identifying new sources of critical minerals;
- Increasing activities at all levels of the supply chain, including exploration, mining, concentration, separation, alloying, recycling, and reprocessing critical minerals;
- Ensuring that miners and producers have electronic access to the most advanced topographic, geologic, and geophysical data within U.S. territory to the most advanced extent permitted by law and subject to appropriate limitations for purposes of privacy and security, including appropriate limitations to protect critical infrastructure data such as those related to national security areas; and
- Streamlining leasing and permitting processes to expedite exploration, production, processing, reprocessing, recycling, and domestic refining of critical minerals.

This EA studies potential effects related to the exploration for lithium resources.

Conservation Management Actions (CMA)

The following CMAs are applicable to the proposed project alternative due to the Project location and the types of activities proposed. Information regarding the implementation of the CMAs can be found in the DRECP LUPA (BLM 2016). Where applicable, references to the CMAs have also been included under Chapter 2, Chapter 4 and the Environmental Protection Measures:

- LUPA-BIO-1, LUPA-BIO-2, LUPA-BIO-3, LUPA-BIO-4, LUPA-BIO-5, LUPA-BIO-6, LUPA-BIO-7, LUPA-BIO-8, LUPA-BIO-9, LUPA-BIO-10, LUPA-BIO-11, LUPA-BIO-12, LUPA-BIO-13, LUPA-BIO-14, LUPA-BIO-15, LUPA-BIO-16, LUPA-BIO-PLANT-1LUPA-AIR-1, LUPA-CUL-4, LUPA-REC-1, LUPA-SW-1, LUPA-SW-6, LUPA-SW-7, LUPA-SW-9, LUPA-SW-14, LUPA-SW-16-18, LUPA-SW-31, LUPA-VRM-1, LUPA-VRM-2

1.5 Scoping and Public Comment

An environmental resources analysis was conducted, through coordination with the BLM RFO Interdisciplinary Team. Substantive issues discussed and potential impacts resulting from the proposed action and alternatives are summarized in the Interdisciplinary Team checklist, included as Appendix A. Resources present with the potential for significant impact are analyzed in detail in this EA. Resources either not present or present, but not affected to a degree requiring detailed analysis, were not carried forward in this EA. The rationale for determination for each resource is included in Appendix A.

Resources determined to be present with the potential for significant impact, which have been carried forward in this EA, are:

- ACECs;
- Invasive plants and noxious weeds;
- National Conservation Lands;

- Special Status Species
- Visual resources;
- Lands with wilderness characteristics.

This EA will be published on the BLM Environmental Documents and Land Use Plans website located at: https://eplanning.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do.

Chapter 2 Proposed Action and Alternatives

This EA includes two alternatives: the proposed action as submitted by BMR, and the No-Action Alternative, under which BLM would not authorize this project. This chapter provides descriptions of both alternatives as well as descriptions of alternatives considered but eliminated from detailed study.

2.1 PROPOSED ACTION

The proposed operation is to drill four exploration bore holes at the locations and in the manner described below, in the Panamint Valley, Inyo County, California (Figure 1-1). The primary exploration target is lithium brine. Lithium is a soft, silvery-white alkali metal, the lightest such metal on the periodic table at atomic number 3. Lithium and its compounds are used in manufacture of highly efficient batteries, heat-resistant glass, pharmaceuticals, lubricating greases, and aluminum-lithium alloys (https://en.wikipedia.org/wiki/Aluminium%E2%80%93lithium_alloy).

2.1.1 General Description

It is proposed to drill four holes vertically to a depth of 2,000 feet each, using PQ core drilling methods with diameters of approximately 3 3/8 inches. The holes will be temporarily cased with 3-inch PVC casing. The drill rigs to be used are all standard rigs, widely used in the mineral exploration business. The drill rigs are about 8 feet wide and 30 feet long. A standard drill additive, "Hydraul-ez", will be used to assist in the drilling process (see Appendix B for MSDS specifications). Crews of one driller and two helpers will be used, working on two shifts per day. Water consumption is expected to be about 2,000 gallons per day and will be trucked in by a locally-sourced contractor. Table 2-1 provides a list of the drilling sites and their locations.

Table 2-1 Project Drilling Sites

Drilling Site Name	Coordinates*
RC-2	480101E 3983108N
DDH-1	479877E 3986923N
RC-4	476681E 3998855N
RC-5	478061E 3987385N

* UTM Zone 11S NAD27 Coordinates

The terrain is nearly level at all drill sites. While some site leveling may need to occur, the chosen level sites will allow the proponent to keep such disturbances to a minimum. In addition, 10 feet wide x 20 feet long x 5 feet deep sumps to hold drill cuttings will be dug immediately adjacent to the drill pads. The anticipated total disturbance would be less than .25 acres per site. The sites have been chosen to minimize disturbance of vegetation and no significant disturbance of vegetation is anticipated.

Following drilling, a snap sampler attached to a winch will be used to take brine samples of approximately two liters. Sampling takes approximately 10 hours. A second sample of two liters will be taken approximately 10 days following the first. Holes will be secured when not in use. Once the second sample has been taken, the PVC casing will be removed, and the hole will be filled with bentonite abandonment material to within 10 feet of the surface with concrete filling the top 10 feet. No more than two holes will remain un-abandoned and un-reclaimed at any one time.

Table 2-1 provides a list of the mobile equipment proposed for use under the Proposed Action.

Table 2-1 Proposed Action Mobile Equipment List

Equipment Type	Number of Units
Atlas Copco truck-mounted drill	1
Truck-mounted pipe carrier	1
2,000-gallon water truck	1
Backhoe	1
Light-duty pickup trucks	2
Parts trailer	1

2.1.2 Exploration Routes and Roads

All personnel will live off the project site. There will be no structures on the site other than a portable toilet. All of the proposed sites are immediately adjacent to existing county or BLM designated routes as shown in Figure 1-1. Most of these roads are in good condition and will require no improvement. The RC-4 access road, BLM route P0929, is a primitive jeep trail and may require some minimal work (intermittent blading for short stretches of 100' or less) to smooth out rough patches where flood waters have coursed over the roadbed.

2.1.3 Reclamation

Upon completion of drilling, each drill hole will be filled with suitable clay-based abandonment material to a depth of 10 feet below the surface and the top 10 feet of the hole will be filled with concrete. Drill hole abandonment will take place immediately after completion of the drill hole. The sumps will be fenced off and netted to prevent burros, tortoises, and bats from consuming the sump waters until the sumps dry out. At that time, the sumps will be back-filled with material originally excavated, and the sumps and disturbed areas will be contoured to match the land configuration present before the drilling activity began. The reclaimed landscape shall have characteristics that approximate the visual quality of the adjacent area with regard to location, scale, shape, color and orientation of major landscape features and meet the needs of the planned post disturbance land use. Sump and drill site reclamation will take place as soon as possible after completion of drilling at each site. Drilling and reclamation activities are expected to overlap. However, no more than two sites will be active in one of these phases at any given time.

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Figure 2-1 provides a view of a nearby reclaimed site

Figure 2-1 Sample Reclaimed Exploration Site

2.1.4 Project Schedule

Each hole will take approximately three weeks to drill. Slotted 3-inch polyvinyl chloride (PVC) casings will be installed in each hole for sampling. Sampling takes approximately 10 hours. A second sample will be taken approximately 10 days following the first. Once the second sample has been taken the PVC casing will be removed, and the hole will be filled with bentonite abandonment material to within 10 feet of the surface with concrete filling the top 10 feet. Reclamation activities would take one 10-hour shift at each drilling location. The entire project would be completed in approximately 12 months.

2.1.5 **Design Features/Environmental Protection Measures**

- A biologist would be on-site during excavations and equipment movement as needed to ensure avoidance and minimization measures are appropriately implemented;
- Resources setbacks would be identified to avoid and minimize adverse effects to specific biological resources such as the edge of mapped riparian vegetation or suitable habitat for Focus and BLM special status species, if present;
- Seasonal restrictions would be implemented or visual barriers installed for activities which may impact BLM special status species, if present;
- Worker education would be implemented to cover topics including, but not limited to, biological resource identification and protections, avoidance, reporting, and protection measures; the

described predator subsidy management standards would be implemented as part of the Project design including, but not limited to, controlling food subsidies, water subsidies, and breeding site

- A designated biologist would be on-site during excavations and equipment movement as needed to ensure avoidance and minimization measures are appropriately implemented; only an USFWS Authorized biologist can move desert tortoises from harm's way if halting equipment does not fully protect the desert tortoise or results in delays to project activities. The authorized biologist must move the desert tortoise the shortest distance possible into appropriate habitat to provide for its safety.
- Subsidized predator standards will be implemented-All trash and food items shall be promptly contained within closed, raven-proof containers or placed out of site in vehicles with closed windows.
- Check under vehicles and equipment for tortoises before moving. If a tortoise is found underneath one, operator must wait until it leaves on its own accord.
- Vehicular traffic will not exceed 15 miles per hour on BLM access roads.
- The baseline biological survey of the area included surveying for special status plants, however, as stated in the Biological Report, it was not conducted during the appropriate survey season for annual species, therefore a second survey will be completed prior to construction. The surveys for special status plants should be implemented in the spring when conditions are suitable for target species to be present and in bloom.
- If construction takes place from February 1 to August 31 nesting bird surveys (including Le Conte's thrasher) should be implemented 3 days prior to construction. If nesting birds are detected, monitoring of active nests and or exclusion zones may be required, therefore contact the BLM immediately.
- Pre-construction surveys for special status wildlife species will be conducted prior to drilling activities.
- Implement water and wetland dependent resource protection measures including but not limited to: construction site standard practices; equipment maintenance; drainage erosion and sediment control actions; erosion control measure inspections; Water from the sump pump will fenced off from burros and wildlife. The top of the water shall be covered with fence panels or something to prevent bats and birds from drinking. Any holes (i.e. bore holes) in which burros and wildlife may step or get stuck in, shall be covered or capped.
- Weed management practices would be implemented as part of the Proposed Action operations including but not limited to vehicle cleaning, use of weed-free materials, and monitoring for weeds;
- The presence of a biological monitor would be used to establish sensitive resource avoidance areas as needed.
- Nighttime lighting would be short-term and limited to only necessary use areas.
- Proposed Action activities would be confined to the designated routes and drill sites.
- The described closure and decommissioning measures would be covered by the site reclamation activities
- The operator would obtain and adhere to the required permits or authorizations from the Great Basin Unified Air Pollution Control District (GBUAPCD). The operator would also adhere to the

required GBUAPCD prohibitions including fugitive dust precautions such as road watering or chemical applications for dust control, particulate matter standards, and nitrous oxide emission standards. A fugitive dust control plan would be prepared.

- Use of sumps to hold drill cuttings will protect surface water and groundwater resources;

  Up-to-date industry practices would be used to prevent toxic substances from leaching into the soils;
- An emergency response plan would be prepared for the control of spills prior to Project initiation;
- Desert pavement is within the proposed boundary of two of the drill sites (RC2 and DDH-1). The operator will avoid disturbing the pavement to the extent possible by parking all non-essential trucks on the side of the road and by use of weight distributing pads for when vehicles and equipment must drive over said pavement. No raking of pavement is allowed, only re-texturize broken surfaces with small rocks. Avoidance is preferred.
- All relevant requirements of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) will be complied with;
- Construction within, or alteration of, 100-year floodplains will be avoided where possible, and permitted only when all required permits from other agencies are obtained.
- Water extracted for the project will be solely for the beneficial use of the project or its associated mitigation and remediation measures, as specified in approved plans and permits;

  The construction and abandonment of all wells would conform to specifications contained in the California Department of Water Resources Bulletins #74-81 and #74-90 and their updates;
- The proponent will be required to follow all federal and state laws and regulations, such as California Water Code Section 13260, Water Quality Control No. 2003-0003-DWQ, and all applicable Basin Plan provisions provided by the Lahontan Regional Water Quality Control Board (LRWQCB)
- Road improvements and drilling activities would use state-of-the-art techniques to minimize disturbance.

2.2 The No-Action Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter V (BLM 2008), this EA evaluates the No-Action Alternative, which is a reasonable alternative to the Proposed Action. The objective of the No-Action Alternative is to describe the environmental consequences that would result if the Proposed Action were not implemented. The No-Action Alternative forms the baseline from which the impacts of the proposed action can be measured. Under the No-Action Alternative, the activities associated with the project would not occur.

2.3 Alternatives but Eliminated from Detailed Study

The purpose and need for this action are to obtain physical samples of possible mineralization at depth. Alternatives, which may be limited to surface samples or indirect geophysical investigations, were not considered because they do not meet the purpose and need for obtaining the necessary physical samples. No other alternatives have been considered for this project.

Chapter 3 Affected Environment

This chapter describes the existing environment of the project area affected by the proposed action or alternatives under consideration.

3.1 INTRODUCTION

Supplemental Authorities that are subject to requirements specified by statute or Executive Order must be considered in all BLM environmental documents. The elements associated with the Supplemental Authorities listed in the NEPA Handbook (BLM 2008: Appendix 1) are provided in Table 3-1. The table lists the elements and their status in the project area as well as the rationale to determine whether the element is present in the project area, and if so, to what degree the element would be affected by the proposed action. Supplemental Authorities that may be affected by the proposed action are analyzed in Chapter 4. For the formal Interdisciplinary Team Checklist, see Appendix A.

Table 3-1 Supplemental Authorities Identified in the BLM NEPA Handbook.

Resource	Determination	Rationale
Air Quality	NI	Implementation of the Proposed Action would have minor, short-term impacts. With the implementation of the environmental protection measures (2.1.5), Air quality would not be impacted to a degree requiring detailed analysis.
Area of Critical Environmental Concern	PI	The project area is within the Panamint Lake ACEC.
Cultural Resources	NI	Based upon cultural survey, no Historic Properties will be affected by this undertaking.
Greenhouse Gas (GHG) Emissions	NI	The Proposed Action would not impact or contribute substantially to increase GHG emissions and does not meet the requirements for greenhouse gas reporting (https://www.epa.gov/ghgreporting).
Environmental Justice	NP	No minority or economically disadvantaged communities are present which could be affected by the Proposed Action.
Farmlands (Prime or Unique)	NP	This element is not present within the project area or vicinity and is not further analyzed in this EA.
Floodplains	NI	The project is primarily located in an isolated valley bottom distant from established communities. Though DDH-1, RC-2, and RC-5 are sited in a location designated as Special Flood Hazard Area Subject to Inundation by the 1% Annual Chance Flood (Without Base Flood Elevation, Zone A), the extent of project development is not expected to influence flood hazard for any nearby properties. No impact is expected if LUPA-SW-16 of DRECP is adhered to and impacts to rangeland health are expected to be negligible and do not necessitate detailed analysis.
Fuels/Fire Management	NI	The risk and consequences of fires in the area do not necessitate detailed analysis.
Geology/Mineral Resources/ Energy Production	NI	The Proposed Action would allow for quantitative sampling and mapping of mineralization. The removal of drilling samples would have no measurable effect on whatever mineral deposit may be present.

Invasive Plants/ Noxious Weeds	PI	Tamarisk spp. are present in the lakebed. Disturbance can make areas more susceptible to weed invasion and spread. Impacts to this resource have been carried forward for detailed analysis.
Lands/Access	NI	Access to the area would be along existing roads. No conflicts with other land uses in the area have been identified.
National Conservation Lands	PI	Project is located on National Conservation Lands. Impacts to this resource have been carried forward for detailed analysis.
Livestock Grazing	NI	Not within/nearby an allotment and not likely to be utilized for trailing or future grazing opportunities.
Native American Religious Concerns	NI	Based upon the past 10 years of BLM government-to-government consultation with Tribes in the region, no Important Tribal resources occur within the APE.
Paleontology	NP	Based on existing baseline data, paleontological resources were not identified in the project area. This element is not analyzed in this EA.
Rangeland Health Standards and Guidelines	NI	The Proposed Action is purposefully located in denuded areas and there are no historic rangeland health surveys for these areas. Impacts to rangeland health are expected to be negligible and do not necessitate detailed analysis.
Recreation	NI	Project is located within a Special Recreation Management Area (SRMA). The area supports a wide range of recreational opportunities, including off-road vehicle touring, dispersed camping, hiking, backpacking, and horseback riding (as a special group event). Project will not impede travel or restrict other uses for which people recreate in the area. Impacts to this resource are expected to be negligible and do not necessitate detailed analysis.
Socioeconomics	NI	The local economy would be positively affected by the Proposed Action. The degree would be negligible and does not necessitate additional analysis.
Soils	NI	Impacts to soils resulting from blading and/or vehicle use and/or overland travel have already occurred on all proposed access routes and on two of the four drill sites. The remaining two drill sites will require overland travel, including locations where desert pavement is present. Environmental protection measures (2.1.5) have been included to prevent soil erosion and to reduce the potential impacts to desert pavement. Given these measures and the small scope of the project, potential impacts related to soils are considered minor and not to a degree necessitating additional analysis.
Special Status Animal Species other than USFWS candidate or listed species (e.g., migratory birds)	PI	Special status species may be located in and around the project area. The Proposed Action may affect their presence, habitat, or use of the area. Impacts to this resource have been carried forward for analysis.
Special Status Plant Species other than USFWS candidate or listed species	PI	Special status species may be located in and around the project area. No special status species plant species were located near the Project during the Biological assessment survey. Activities will occur on mainly denuded sites and a second survey will be conducted prior to construction. Special status plant species have been carried forward.
Threatened, Endangered or Candidate Animal Species	NI	No threatened, endangered, or proposed for listing animal have been identified in the project area. However, a desert tortoise has been sighted at the mouth of nearby Golar Canyon in the past... Therefore, a USFWS Activity Form has been completed and

		stipulations have been added to the Environmental Measures (2.1.5). Given these measures and the small scope of the project, potential impacts will be negligible and not to a degree necessitating additional analysis.
Threatened, Endangered or Candidate Plant Species	NP	No threatened, endangered, or proposed for listing plant species have been identified within or near the project area.
Vegetation	NI	The Proposed Action would occur mostly existing denuded sites. Impacts to vegetation will be minimal and do not require additional analysis. Given the Environmental Protection Measures, (2.1.5) vegetation would not be impacted to a degree requiring detailed analysis.
Visual Resources	PI	The project is within a Visual Resource Management Class II area. The objective of this class is to retain the existing character of the landscape; the level of change should be low and should not attract attention. Impacts to this resource have been carried forward for detailed analysis.
Wastes (hazardous or solid)	NI	No potentially harmful materials would be left on, or in the vicinity of the project area. No chemicals subject to SARA Title III in amounts greater than 10,000 pounds would be used. No extremely hazardous substances as defined in 40 CFR § 355 in threshold planning quantities would be used. Solid waste generated from the project area would be properly disposed at an approved landfill or recycled when possible. Given the applicant-committed environmental protection measures, potential impacts related to solid and hazardous wastes are considered minor and not to a degree necessitating additional analysis.
Water Quality (surface/ground)	NI	LUPA-SW-17, the mineral sampling nature of the project and lack of other consumptive users within the groundwater basin means that this activity is unlikely to impact long-term recharge or integrity of the basin. In addition, Panamint Valley groundwater basin is not a critically over drafted basin and is determined to be "very low" as determined by the California Department of Water Resources; The proponent will be required to follow all federal and state laws and regulations, such as California Water Code Section 13260, Water Quality Control No. 2003-0003-DWQ, and all applicable Basin Plan provisions provided by the Lahontan Regional Water Quality Control Board (LRWQCB). Following these established water quality requirements reduces the potential for water quality impacts and does not necessitate additional analysis.
Waters of the U.S.	NP	The Proposed Action is located within HUC 18090204, the Panamint Valley hydrographic basin. Drainages in the area flow into Panamint Valley, which contains no Traditionally Navigable Waters or Relatively Permanent Waters. Panamint Valley is also an internally drained, closed basin. No impacts to Waters of the U.S. are anticipated to occur.
Wetlands/Riparian Zones	NI	The proposed drilling sites are within the Panamint Valley groundwater basin (6-58). There are several springs (Warm Sulphur Springs and Post Office Springs) and at least one well located nearby the proposed drilling sites. With the addition of Environmental Protection Measures (2.1.5), the exploratory nature of the Proposed Action is not expected to significantly impact

		these resources and does not necessitate further analysis.
Wild and Scenic Rivers	NP	The proposed drilling sites are located outside of any designated or proposed Wild & Scenic River corridor.
Wild Horses and Burros	NI	The proposed drilling sites are within the Panamint Herd Area for burros. The locations of the drill sites are in area inhabited by burros. Caution shall be used in driving at slow speeds to prevent burro/vehicle collisions. Care will be given at the project site not to let food, garbage, or standing water become available to burros. Any holes which burros may step in shall be covered or capped. Potential impacts are considered minor and not to a degree necessitating additional analysis.
Wilderness	NP	The proposed drilling sites are outside of designated wilderness.
Wilderness Study Area	NP	The proposed drilling sites are outside of any Wilderness Study Area.
Lands with Wilderness Characteristics (LWCs)	PI	The proposed drilling sites are located within two wilderness inventory units comprising the lakebed that have been found to have wilderness characteristics: LWC 142-1 and LWC 140. Impacts to these resources have been carried forward for detailed analysis.

NP = not present in the area impacted by the proposed or alternative actions NI = present, *but not affected to a degree that detailed analysis is required* PI = present with potential for significant impact analyzed in detail in the EA

Those elements listed under the supplemental authorities with NP or NI are not discussed further in this EA. The elimination of non-relevant issues follows the CEQ policy, as stated in 40 CFR 1500.4.

3.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

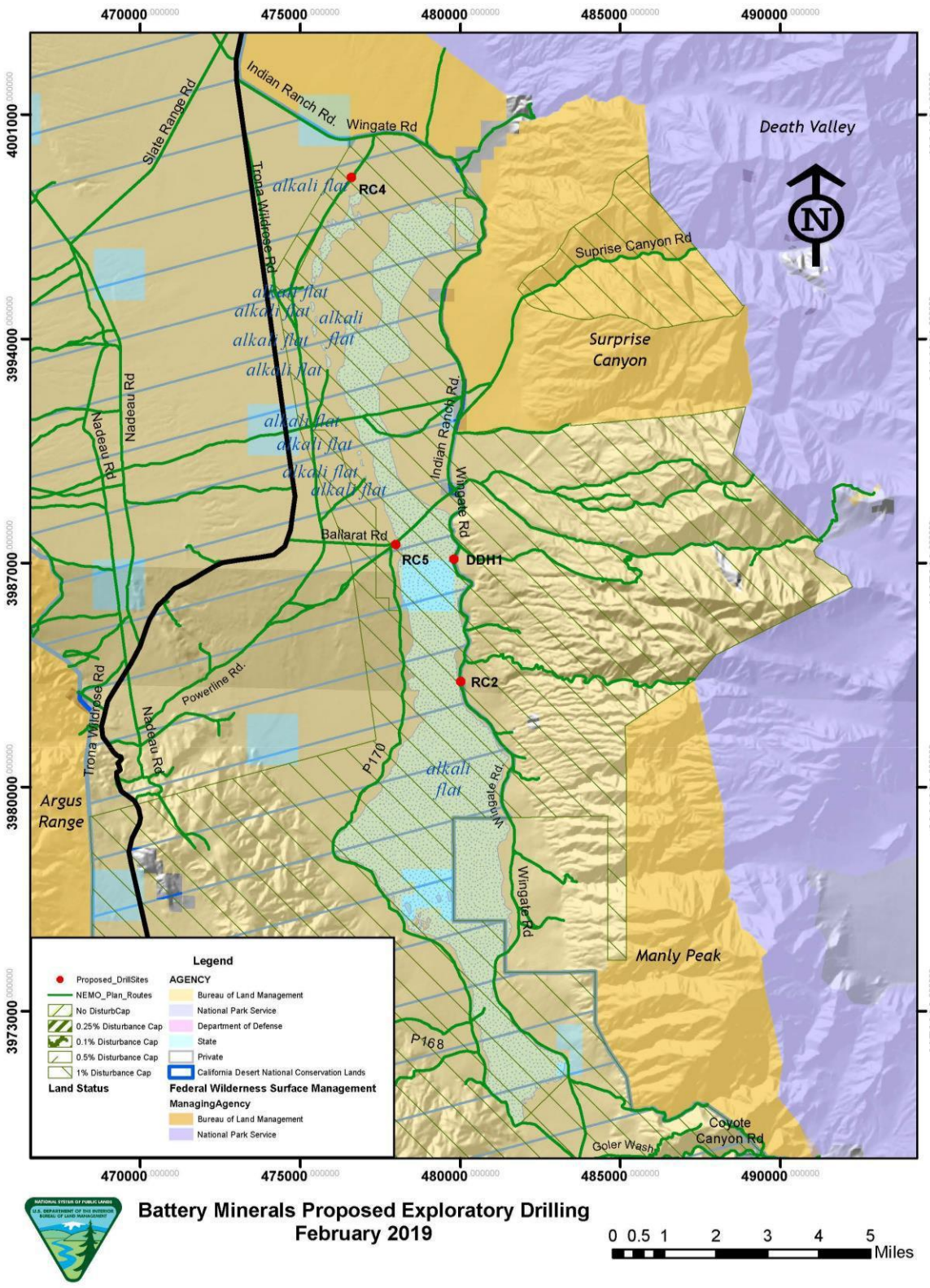
The project locations are in the Panamint Lake Unit of the greater Panamint/Argus ACEC. Panamint Valley is the one of the only remaining large, undeveloped valleys in the BLM RFO area (Figure 3.1). The area contains unique desert wetland communities, including mesquite bosques and fresh and saltwater marshes. Endemic fairy shrimp occur in the lake.

Panamint Lake is the remains of a Terminal Pleistocene lake, originally 700 feet deep. The lake contains ephemeral wetlands with perennial pools at freshwater springs located along the lake margins. The bosques and wetlands are prime stopover and wintering habitats for migratory birds, as well as important areas for nesting birds. The riparian areas produce insect prey for native birds, bats, reptiles, and amphibians, and provide shelter to Desert Bighorn Sheep. When filled with water, this shallow lake has outstanding scenic reflections of the surrounding mountains. The terrestrial and aquatic natural communities provide an additional ecosystem service of carbon sequestration. Some areas within the ACEC provide a combination of meteorological, geological, hydrological and topographical features that have been identified as important climate refugia for wildlife species (BLM 2016).

Management goals for the Panamint/Argus ACEC include:

- Protect sensitive wildlife and vegetative species;
- Protect wetland, aquatic, and riparian habitats;
- Protect paleontological resources;
- Preserve unique geologic and hydrologic features;
- Preserve scenic views and existing low impact recreational opportunities;
- Protect that critical connectivity corridor between the Argus, Slate, and Panamint ranges and between Panamint Valley and undeveloped lands to the south; and
- Protect unique cultural resources, both prehistoric and cultural.

Figure 3-1: Panamint Valley Land Status depicting DRECP Designations



3.3 BIOLOGICAL RESOURCES

Preliminary database searches provided a basis for addressing the appropriate special status resources potentially occurring near the project areas. Information on special status wildlife, plants, and habitats within the vicinity of the Study Area was obtained from the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CNDDB) *Rarefind 5* and the California Native Plant Society's *Online Inventory of Rare and Endangered Plants* (CNPS v8-02). The database searches were conducted for the Ballarat, Panamint, Telescope Peak, Manly Falls, Manly Peak, Slate Range Crossing, Maturango Peak SE, Maturango Peak NE and Jail Canyon United States Geological Survey 7.5-minute quadrangles. Critical habitat maps were also reviewed to determine if the proposed action areas are within USFWS-designated or proposed critical habitat for federally listed species. In previous consultations with BLM, burrowing owl (*Athene cunicularia*) will be considered as potentially occurring for this project.

A qualified field biologist familiar with the natural resources and special status species of the region conducted a field survey of the Project Study Area on August 22, 2017. For the purpose of the proposed project, the APE was defined as a minimum 1-acre survey at each pad location and a survey of the existing jeep trail (an open designated vehicle route) that accesses the northernmost drill pad using a 10-meter buffer on each side of the road. The overall natural resources survey footprint consists of 7 acres (see Appendix C: BA, Epsilon 2018a).

3.3.1 Wildlife

Faunal species in the Panamint Valley include lagomorphs such as the desert cottontail (*Sylvilagus audubonii*) and black-tailed jackrabbit (*Lepus californicus*) and rodents such as antelope ground squirrel (*Ammospermophilus leucurus*), Botta's pocket gopher (*Thomomys bottae*), desert kangaroo rat (*Dipodomys deserti*), Panamint kangaroo rat (*Dipodomys panamintinus*), Panamint pocket gopher (*Thomymus umbrinus scapterus*), Panamint chipmunk (*Eutamius panamintinus*), and desert wood rat (*Neotoma lepida*). Carnivores include coyote (*Canis latrans*), American badger (*Taxidea taxus*), mountain lion (*Felis concolor*) and bobcat (*Lynx rufus*). Artiodactyls common to the area are limited to mule deer (*Odocoileus hemionus*) (Jameson and Peeters 2004; Tomback 2000). Common birds and reptiles include black-throated sparrow (*Amphispiza bilineata*), mourning dove (*Zenaida macroura*), greater roadrunner (*Geococcyx californianus*), western kingbird (*Tyrannus verticalis*), raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), desert iguana (*Dipsosaurus dorsalis*), common chuckwalla (*Sauromalus ater*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard (*Phrynosoma platyrhinos*),), gopher snake (*Pituophis catenifer*), common kingsnake (*Lampropeltis getula*), Panamint rattlesnake (*Crotalus stephensi*), Mojave rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*) (Evens and Tait 2005; Stebbins and McGinnis 2012).

3.3.2 Vegetation

RC-2 is located on the junction of the alluvial fan and the valley floor edge and does not support much vegetation. RC-4, also devoid of vegetation, is on the valley floor just south of Indian Ranch Road. The site is located on sandy soils with no discernable aspect.

RC-5 is located southeast of Ballarat Road at the western edge of an Alkali Flat basin with areas of fine alkaline soils and some areas of rocky gravel covered soils. The vegetative community is a mixture of *Larrea tridentata* Shrubland Alliance (Creosote Bush Scrub) with elements of *Suaeda nigra* Shrubland

Alliance (Bush Seepweed Scrub). The dominant perennials are creosote bush, bush seepweed (*Suaeda nigra*), allscale, and desert holly (*Atriplex hymenelytra*).

DDH-1 is located just east of Wingate road along the western edge of the Panamint Mountains where they meet the valley floor. The site is located at the base of an alluvial fan with a western aspect. The alkaline soils are covered with a mixture of gravel and cobble. The vegetation is a combination of *Suaeda nigra* Shrubland Alliance (Bush Seepweed Scrub) and *Atriplex hymenelytra* Shrubland Alliance (Desert Holly Scrub). Bush seepweed is the dominant shrub.

3.3.3 Special Status Species

No special status plants or wildlife were observed in the project area. Seven special status plant species have suitable habitat, elevation and substrate present to potentially occur. The seven species include four annual species and three perennial species. None of the three perennial species were detected during the August survey. A follow up spring survey would be required to determine the presence or absence of the five annual species under suitable seasonal conditions. The potential annual species are Clokey's cryptantha (*Cryptantha clokeyi*) which is an annual herb which has the potential to occur in a variety of habitats; Death Valley round-leaved phacelia (*Phacelia mustelina*); creamy blazing star (*Mentzelia tridentata*); Latimer's woodland gilia (*Saltugilia latimeri*); and Hoffman's buckwheat (*Eriogonum hoffmanii var. hoffmanii*), which prefers slightly higher elevation and slopes but has a low to medium potential to occur. The three perennial species Greene's rabbitbrush (*Chrysothamnus greenei*), Amargosa beardtongue (*Penstemon fruticiformis var. amargosae*), and Death Valley sandpaper-plant (*Petalonyx thurberi* ssp. *gilmanii*) have low to medium potential to occur.

Some special status wildlife species listed in Table 3-2 have a higher potential to occur due to their dynamic nature, especially for foraging. There is medium to high potential for foraging habitat for pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and Western mastiff bat (*Eumops perotis californicus*); however, there is no suitable roosting habitat in the Study Area and these species should not be significantly impacted by drilling activities. There is suitable foraging habitat present for both golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*), and they may also occur as passage migrants; however, both species prefer steep cliffs for nesting and there is no suitable nesting habitat in the immediate Study Area. Suitable habitat for Le Conte's thrasher occurs on several of the sites, as well as a low potential for burrowing owl. Desert tortoise (*Gopherus agassizii*) has a low potential in the project area, but a medium potential for commuting to the site locations. The historic records for desert bighorn sheep (*Ovis canadensis nelsoni*) indicate that up to 144 individuals are currently occupying the steeper and rocky portions of the Panamint Mountains and on rare occasions forage near the valley floor. This species is unlikely to be affected by the project as it is stated. The majority of special status bird species lack suitable nesting habitat and pass through during migration or exist as vagrants. Suitable nesting habitat is present for many birds covered under the Migratory Bird Treaty Act (MBTA).

Table 3-2 Special Status Species with Potential to Occur in Project Area

Common Name	Scientific Name	Federal Status	California Status	Other Status	Occurrence Potential
Pallid bat	*Antrozous pallidus*	None	None	BLM_S, CDFW_SSC, USFS_S	Medium-foraging only
Golden eagle	*Aquila chyrsaetos*	None	None	BLM_S, CDFW_S, CDFW_FP-WL, USFWS_BCC	Medium-foraging only
Burrowing owl	*Athene cunicularia*	None	None	BLM_S, CDFW_SSC	Low
Panamint alligator lizard	*Elgaria panamintina*	None	None	BLM_S, CDFW_SSC	Low, no suitable habitat
Townsend's big-eared bat	*Corynorhinus townsendii*	None	Candidate, Threatened	BLM_S, CDFW_SSC, USFS_S	Medium-foraging only
Western mastiff bat	*Eumops perotis californicus*	None	None	CDFW_SSC	Medium-foraging only
Prairie falcon	*Falco mexicanus*	None	None	CDFW_WL, USFWS_BCC	High-foraging only
Desert tortoise	*Gopherus agassizii*	Threatened	Threatened		Low in the specific sites, up to medium for daily commutes across sites
Le Conte's thrasher	*Toxostoma lecontei*	None	None	CDFW_SSC	Medium
Inyo towhee	*Melozone crissalis eremophilus*	Threatened	Endangered		Low, no suitable habitat
Desert bighorn sheep	*Ovis canadensis nelsoni*	None	None	BLM_S, CDFW_FP, USFS_S	Low
American badger	*Taxidea taxus*	None	None	CDFW_SSC	Low – Medium
Mohave ground squirrel	*Xerospermophilus mohavensis*	None	Threatened	BLM_S, IUCN_VU	Low, perennial shrub diversity is sparse and low in action areas. The nearest record is over seven miles southwest
Morrison bumble bee	*Bombus morrisoni* \	None	None	IUCN_VU	Low
Antioch multilid wasp	*Myrmosula pacifica*	None	None		Low

CDFW = California Department of Fish and Wildlife, USFS = U.S. Forest Service, USFWS = U.S. Fish and Wildlife Service, IUCN = International Union for Conservation of Nature, S = Sensitive, SSC = Species of Special Concern, FP = Fully protected, BCC = Birds of Conservation Concern, WL = Watch List, VU = Vulnerable.

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3.4 INVASIVE PLANTS AND NOXIOUS WEEDS

Invasive species are those that are non-native to an ecosystem and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. A noxious weed one that is harmful to the environment or animals, especially one that may be the subject of regulations governing attempts to control it.

The California Invasive Plant Inventory, published by the California Invasive Plant Council (CIPC), categorizes non-native invasive plants that threaten the state's wildlands. Categorization is based on an assessment of the ecological impacts of each plant. The Inventory represents the best available knowledge of invasive plant experts in the state.

The Inventory categorizes plants as High, Moderate, or Limited, reflecting the level of each species' negative ecological impact in California. Other factors, such as economic impact or difficulty of management, are not included in this assessment. It is important to note that even Limited species are invasive and should be of concern to land managers. Although the impact of each plant varies regionally, its rating represents cumulative impacts statewide. Therefore, a plant whose statewide impacts are categorized as Limited may have more severe impacts in a region. Conversely, a plant categorized as having a High cumulative impact across California may have very little impact in some regions (CIPC 2006). Below are the impact ratings, as defined by CIPC:

- High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- Moderate – These species have substantial and apparent, but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

A plant survey of the project sites was conducted in August 2017. During the survey, Russian thistle (*Salsola tragus*) was observed. Russian thistle has a CIPC rating of "Limited." Although not observed at the project sites, tamarisk (*Tamarix* spp.) are present in the lake bed in several locations. This species has a CIPC High rating.

3.5 NATIONAL CONSERVATION LANDS

The project area is located within NLCS lands allocated by the DRECP (see Map 3.1). Within the CDCA, NLCS units are made up of BLM-administered lands with nationally significant ecological, cultural, and scientific values. BLM identifies lands that are components of the NLCS as National Conservation Lands. These lands are managed to conserve, protect, and restore these values. Additional criteria used by the DRECP to select lands for inclusion in the NLCS include landscape intactness, scenic quality, and

landscape linkages. In general, the DRECP emphasizes habitat connectivity and cultural-botanical locations.

The proposed project falls within the Panamint Unit of the Basin and Range Ecoregion Subarea. This unit encompasses 197,941 acres and has a 1 percent ground disturbance cap. The National Conservation Lands within this subarea include ecological values such as vegetation alliances and intact habitat linkages amongst a number of designated BLM wilderness areas, Death Valley National Park, undeveloped military lands, and Inyo National Forest. Linkages for wildlife migration are critical to the conservation of certain species (including such BLM sensitive species as Bighorn sheep), especially with respect to climate change.

This subarea also includes diverse cultural values and includes some of the richest cultural areas in the California desert, including landscapes and sites associated with the earliest prehistoric Native American occupation and some of the oldest historic mining areas in California. Known cultural properties include several resources listed on the NRHP and several additional resources that are considered eligible for listing. Archaeological, cultural, and historic research being conducted within this area promises to contribute to our understanding of human adaptation and survival, landscape use and mobility by both prehistoric and historic people, and conflict and resolution among these diverse cultural groups.

3.6 VISUAL RESOURCES

The BLM, through FLPMA, is charged with protecting the scenic value of the public lands they administer. To accomplish this, the BLM has developed and uses an analytical process – the Visual Resources Management (VRM) system – to identify, set, and maintain those scenic values. The VRM system has two key aspects: inventorying visual resources and managing those resources (BLM 1984a).

For visual resources on BLM-administered lands, the visual values reflected in Visual Resource Inventory (VRI) classes are considered in establishing goals and objectives for resource management. What is the visual appeal of a given landscape? How interesting is the topography? How diverse are the plant communities? Is water present? How much color, contrast and harmony are present? How much does the adjacent scenery contribute to the rating unit's overall appeal? How scarce, relatively unique or rare, is this visual resource within its larger physiographic region? How intact is the area? To what degree has it been culturally modified? Do the modifications or lack thereof detract or add value to the scenery?

The project is located along the margins of Panamint Lake, a large, flat, undeveloped expanse consisting primarily of dry alkali flats with large shallow pools of standing water. These pools expand and contract throughout the year with weather events and the seasons. The pools are fed by sporadic small fresh and saltwater springs located along the edges of the lakeshore. These support an unique and eclectic assortment of plants ranging from saltgrass, to pickleweed, to saltbush, sedges, reeds, and several large mesquite bosques. Low elevated benches along the lakeshore consist of fine desert pavements with little to no vegetation. Outer margins consists of fine sandy to silty soils dominated by creosote. Colors vary throughout the year ranging from monotones of greys, browns, and rusts in the summer, late fall, and winter to olive to bright greens with flashes of color when the spring blooms are on. The lake is flanked by the Panamint and Slate Ranges. These mountains provide vertical relief. They stand in dramatic contrast to the lakebed due to the ruggedness of their terrain and the astounding height and steepness of their escarpments. Outstanding reflections of these mountains are often encapsulated in the pools found along the lakeshore.

VRI class values reflect the quality of the visual resource, but are not the sole determinant of how visual resources on public lands are managed. BLM manages public lands for a variety of purposes. VRI class values and ultimately, VRM class designations, must also take into account the degree of public sensitivity to a landscape. Sensitivity levels (High to Low) are a measure of public concern for scenic quality. These levels are influenced by the types of users, the amount of use, demonstrations of public interest, adjacent land uses, and Special Area designations.

The Panamint Lake bed merits a high sensitivity rating. The areas along the shore are in frequent use and are popular with a wide-variety of users from birders, to campers, to off-road vehicle users, to hikers and even horseback riders. Most come for the sense of space and unspoiled scenery, and the challenging jeep trails and historical vestiges found in the many abandoned mines and ruins in the mountains.

Visual Resource Management Classes are established through Resource Management Plans. The DRECP assigned a VRM Class of II to Panamint Lake and Panamint Valley more generally, in light of their visual attributes, respective ACEC and NCL designations, and proximity to designated wilderness and Death Valley National Park. On the scale of I-IV, Class II is the highest class assignment normally available for land outside of designated wilderness.

The VRM classes set VRM objectives for lands in each class, as well as the level of visual change in the landscape character that is allowed as a result of proposed management activities. The four proposed drilling sites are located along the margins of Panamint Lake and therefore, fall within VRM Class II lands. The primary objective and allowed levels of change for VRM Class II lands are described as follows:

- Class 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.

3.7 LANDS WITH WILDERNESS CHARACTERISTICS

BLM is required under Section 201 of the FLPMA to maintain an updated inventory of public lands and their resources and values. This inventory requirement includes maintaining an updated inventory of lands with wilderness characteristics. The project sites are distributed across two wilderness inventory units that have been found to have wilderness characteristics. The inventories were conducted in 2012 and in 2015 in preparation for two land use plan amendments (the West Mojave Plan (WEMO) and the DRECP). The two units are identified as WIU #CDCA 142-1 (Slate Range and Southern Panamint Valley) and WIU #CDCA 140 (Panamint Lake).

The inventory information represents findings, not a land use allocation. As such, the inventories must be taken into consideration in project level and land use planning decisions. A finding of lands with wilderness characteristics does not change or prevent change in management and use of public lands. BLM will however consider the protection of wilderness character on public lands as part of its multiple-use mandate.

WIU #CDCA 142-1 (2012). At 81,554 acres, this unit is the largest, contiguous area of undeveloped wild lands outside of designated wilderness in the Ridgecrest Field Office Area. This area encompasses the

Slate Range and the southern half of Panamint Valley. It is separated from its adjacent unit to the north (WIU #CDCA 140) by the Ballarat Road.

The unit meets wilderness criteria for natural condition. The unit in its current configuration excludes all non-conforming peripheral developments. The Briggs Permit Area has been excluded from the unit. The Keystone Mine along its eastern periphery has now been excluded as well. There are no active mines or other developments found within the unit's current boundaries; nor have there been any such mines or developments in the area for many (perhaps as much as 50-60 years). Very few vehicle routes intrude into the area. All are primitive jeep trails, and as such, do not qualify as wilderness inventory roads. The area is very remote and is inaccessible to vehicles over 80% of its terrain. As such, it provides many outstanding opportunities for solitude and for primitive and unconfined recreation for visitors traveling cross-country on foot or by horse.

The unit has many unique supplemental values. It contains an important wildlife corridor, enabling Nelson's desert bighorn sheep and other upland species, to move without disruption or interference across Panamint Valley between mountainous areas on NAWS lands, in the Slates, Panamints and Argus Ranges. The southern floor of Panamint Valley is very pristine and comprises some of the best low elevation saltbush-scrub and creosote-scrub wildlife habitat available in the Ridgecrest Resource Area. The valley is currently the northern extent of known Desert tortoise range in the eastern half of the Field Office area.

The unit encompasses the southern half of Panamint Lake. This area supports many unique desert wetland communities, including mesquite bosques and freshwater and saltwater marshes. Endemic fairy shrimp occur in the lake. The lake contains ephemeral wetlands with perennial pools at freshwater springs located around the lake margins. In California, Utah pickleweed occurs only in this area and in adjacent Death Valley National Park. The bosques and wetlands are prime stop-over and wintering habitats for migratory birds, as well as important areas for nesting birds. When filled with water, this shallow lake has outstanding scenic reflections of the surrounding mountains.

The WIU also contains significant cultural resources. At least five archeological sites have been recorded. The most significant of which are a series of prehistoric rock alignments and a prehistoric burial. It is important to note that although only five sites have been recorded here, it is known from archival research that there are many more sites in the region. These unrecorded sites include historic period mining camps, trash dumps and historic cabins; as well as prehistoric rock art sites, village sites, and human remains.

WIU #CDCA 140 (2015). This unit encompasses an area of approximately 17,700 acres and all of the northern half of Panamint Lake. It meets wilderness criteria for natural condition. The small military radar installation on the north side of Ballarat Road has been excluded from the unit. The lakebed has not been modified and there is very little human use within the interior of the unit. The lakebed has been closed to vehicles since the early 1980's due to environmental and cultural concerns. Only one open, designated vehicle route crosses the unit. This route appears at its northern tip. The route (identified on the ground as P3) is an infrequently used primitive jeep trail that often disappears in the wet season. Vehicle trespass onto the lake bed is an on-going concern along the periphery of the unit but has dropped in frequency and extent over time. Most intrusions terminate at informal campsites located within a couple hundred feet of Indian Ranch Road (the eastern boundary of the unit).

The unit is primarily flat but is large and expansive enough to provide screening from the highway and any peripheral activities and developments such as the small settlement of Ballarat. As one moves deeper into the interior of the unit, the sheer distance makes such things substantially unnoticeable. Instead, the view shed is overwhelmingly dominated by the steep alluvial fans, deep canyons, and rugged mountains of the Panamints. Outstanding opportunities for solitude and for primitive and unconfined recreation exist within the wetland areas and mesquite bosques in the northeast corner of the unit.

Supplemental values include a relatively large expanse of open water and fresh and saltwater marshes emanating from Warm Sulphur Spring and several reported prehistoric sites in the area.

Chapter 4 Environmental Consequences

The direct and indirect effects of the proposed action and No-Action Alternative on resources present and brought forward for analysis are discussed in this section. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and occur later in time or are further removed in distance, but are still reasonably foreseeable. The effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).

4.1. CUMULATIVE EFFECTS STUDY AREA

For the cumulative effect study area (CESA), the portion of the Panamint/Argus ACEC in Panamint Valley was used and includes approximately 52,310 acres as shown in Map 3.1. Sources of information used to determine past and present actions and reasonably foreseeable future actions include the following:

BLM Land & Mineral Legacy Rehost 2000 System -

LR2000; Google Earth imagery.

4.1.1 Past and Present Actions

The CESA has been affected by the follow categories of past and present actions:

Mining and exploration;
Off-highway travel and recreation;
Wildlife and wild burro use; and
Military use of surrounding air space from the China Lake NAWS.

Exploration and mineral development has occurred primarily as part of the Briggs gold mine to the east of the area. The large mine still produces small amounts of gold from the leach pads, and previously mined ore.

General recreation occurs along Indian Ranch, Wingate and Ballarat Roads, particularly in the form of off-highway vehicle travel and historical investigations. Other recreational activities may include hiking, backpacking, and photography. Unauthorized off-highway vehicle use may also occur within the CESA, primarily along closed linear disturbance features.

Wildlife and wild burro use occurs in the CESA, particularly around sources of water and riparian vegetation, such as Warm Sulphur Spring.

Military-related air traffic from the China Lake NAWS frequent the air space around and above the Project Area, which is designated as part of the R-2508 airspace complex, creating noise and vibrations within and around the valley.

4.1.2 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions (RFFAs) within the CESA would include a continuation of the present actions including mining and exploration, recreational use of the roads, wildlife and wild burro use, and military air traffic use.

4.2 THE PROPOSED ACTION

4.1.3 Areas of Critical Environmental Concern

4.1.3.1 Direct and Indirect Impacts

Exploration for locatable minerals within the Panamint/Argus ACEC is approved on a case-by-case basis. All activities within the ACEC must be analyzed cumulatively, to assess whether proposed actions can be accommodated within the ACEC and meet its management goals.

The proposed action would result in approximately 0.25 acres at each of the four drilling sites. Drilling would occur at no more than two sites at a time (.5 acres). All sites will be reclaimed to match the land configuration present before the proposed action commenced. The Panamint Lake Unit of this ACEC encompasses 23,197 acres and has a 1 percent ACEC disturbance cap. Current disturbance within this ACEC is at 75.6 acres, or 0.326 percent of the total area (BLM 2019). The proposed action of up to one acre of disturbance would bring the total area disturbance up to 76.6 (0.5 percent of total area) for the ACEC. This would be a negligible impact on the Panamint Lake Unit and the ACEC as a whole and would not require ground disturbance mitigation as provided in CMAs ACEC-DIST-1 and ACEC-DIST-2.

4.1.3.2 Cumulative Impacts

The proposed action would result in approximately 0.5 acres (two sites) of ground disturbance within the Panamint/Argus ACEC at any one time and a total of one acre of ground disturbance. Due to this and the addition of the Environmental Protection Measures in Ch. 2, the proposed action would pose negligible cumulative ACEC impacts.

4.1.4 Special Status Species

4.1.4.1 Direct and Indirect Impacts

Direct impacts to special status animal species would result from animal disturbance. Animals may move into adjacent nearby habitats during drilling, and reclamation activities to avoid humans and equipment. This would temporarily increase wildlife pressures on adjacent areas. However, given the small size of the proposed disturbance area and short duration of the project, impacts resulting from animal movement and impacts to adjacent habitats would be slight.

Indirect impacts to special status animal species would involve the loss of habitat or forage area. The drilling sites would be on areas with little to no vegetation present. Each drilling location would cover approximately 0.25 acres and would be reclaimed approximately one month after drilling starts. Given the project area size, loss of habitat would be minimal.

No special status species were observed during an August 2017 survey of the project areas. However, the Panamint Valley is known to be within the migratory path of many MBTA-listed species and a desert tortoise have been sighted in the southern portion of the valley in the past. Given the scarcity of vegetation within the drilling site areas, it is unlikely that migratory birds' nests would be encountered in the project areas. However, a pre-construction survey will be performed and should migratory bird nests be found on the project areas, the BLM will be contacted for further guidance and monitoring. Exclusion zones may be required to minimize effects.

While special status plants may occur in the general vicinity, direct impacts to these species are not anticipated. Most of the sites are devoid of vegetation and a second survey will be completed this Spring to ensure no special status species will be impacted. If a special status plant is found at that time, it will be marked and avoided.

Based on the information provided above and the Environmental Protection Measures that will be adhered to in 2.1.5, implementation of the proposed action is not anticipated to have significant direct and indirect impacts on any special status species.

4.1.4.2 Cumulative Impacts

Given the size of the project within the larger, mostly undisturbed Panamint Valley and the Environmental Protection Measures in 2.1.5, the proposed action would not have measurable cumulative impacts to special status species.

4.1.5 Invasive Plants and Noxious Weeds

4.1.5.1 Direct and Indirect Impacts

The proposed action would result in a temporary direct impact to a small acreage of public land. This disturbance (up to one acre, dispersed between four drilling sites) would occur primarily on lands denuded of any vegetation. Russian thistle was observed near the project areas during August 2017 biological surveys, and tamarisk is present in discrete locations in Panamint Lake outside the project areas.

Given the small disturbance area, the presence of only two invasive plant and noxious weed species in a few, discrete locations at this time, and the implementation of environmental protection measures, the spread of invasive plants and noxious weeds is considered to be of low risk. Therefore, there would be no significant invasive plant and noxious weeds impacts associated with the proposed action.

4.1.5.2 Cumulative Impacts

Given the small size of the project areas, the Environmental Protection Measures in Ch. 2 and the large and mostly weed-free and undisturbed nature of the Panamint Lake, the proposed action would not have measurable cumulative impacts to invasive plants and noxious weeds.

4.1.6 National Conservation Lands

4.1.6.1 Direct and Indirect Impacts

The proposed action would disturb a total of approximately 1 acre of land within the Panamint Unit of the Basin and Range Ecoregion Subarea. The disturbance would occur at four drilling sites along the margins of Panamint Lake. This would impact landscape intactness while the proposed project was underway and

would continue until each area is recovered to original conditions. It would also impact habitat connectivity while the proposed action is underway, as the presence of crews and use of heavy machinery and equipment could cause wildlife to avoid the area. Presumably, these effects would be temporary, and wildlife would return once crews, machinery, and equipment leave the areas.

Scenic quality would be impacted during the drilling and reclamation activities. Given the nature of the project, these impacts would be temporary and highly localized. Vegetation is sparse or nearly non-existent at all of the drilling locations. Most of the plants can be avoided rather than removed. One site (RC5) has already been disturbed by vehicles pulling off and camping. At this site as well as at RC4, backfilling and smoothing over the sump and raking or brushing out all equipment tracks, should suffice to bring these areas back to their pre-project condition.

Of more concern are the two proposed drill sites located off of Wingate Wash Road along the eastern margins of Panamint Lake south of Ballarat. These sites are up on small, elevated benches that are very pristine and contain areas of desert pavement. Desert pavement is difficult if not impossible to restore. Care must be taken to minimize soil disturbance at these sites. Mitigation measures recommended by specialists have been adopted and are now incorporated into the proposed action to address this concern. (See Environmental Protection Measures, 2.1.5). The Panamint Unit encompasses 197,941 acres and has a 1 percent (or 1,979-acre) disturbance cap. Current disturbance within the unit is 989.45 acres, or 0.50 percent (BLM 2019). The addition of 1 acre of disturbance associated with the proposed action would bring this up to 990.45 acres, or 0.50 percent. This would be a negligible impact on the Panamint Unit and would not require ground disturbance mitigation as provided in CMA NLCS-DIST-2. Due to the small project areas and temporary nature of the project, the proposed action would have negligible impacts to National Conservation Lands.

4.1.6.2 Cumulative Impacts

The cumulative effects of the proposed action would result in a slight increase to the overall disturbance area within the Panamint Unit of the Basin and Range Ecoregion Subarea and would have negligible impacts to National Conservation Lands. The Environmental Protection Measures in 2.1.5 will minimize impacts.

4.1.7 Visual Resources

BLM's visual resource management program includes a standardized system to analyze potential visual impacts of proposed projects and activities on lands administered by the BLM (BLM Manual 8431). Visual contrast rating sheets are completed to determine if a project conforms to the resource management plan. To evaluate the environmental consequences of the alternatives for this project, four key observation points (KOPs) were established to complete the contrast rating analysis. They were selected to represent the views of most visitors to the area who would customarily pass by these drill sites via the county roads on their way to campsites and more remote destinations in the area. A location map, photographs of each KOP with simulations of what could be expected from the drilling projects, and subsequent visual contrast rating sheets are provided in Appendix D.

4.1.7.1 Direct and Indirect Impacts

KOP #1 is located along Indian Ranch Road at the intersection with the infrequently used, primitive jeep trail providing access to drill site RC4. The landscape type is focal, centered directly on the trail heading out to the drill site. The land here is flat and the vegetation is low and sparse. However, this intersection is 0.8 miles from the drill site itself. It is unlikely that the drilling equipment would be visible somewhere along the horizon at this distance. Even if the tallest piece of equipment, the drill, was barely visible, it would top out and be lost against the deep blue backdrop of the mountains behind it.

What might be visually detectable is any changes in the character of the jeep trail itself. Significant changes are unlikely to occur as long as road maintenance is kept to the specified bare minimum, i.e., blading only intermittently as needed to even out the road surface for short distances. A temporary uptick in traffic and in the width of visible treads on the trail would be apparent. This may attract attention and encourage more use as people seek to investigate. But these types of impacts are simple use impacts and would be acceptable within VRM Class II objectives. They would resolve themselves over time upon completion of the project.

The degree of contrast from this KOP would be none. The project easily meets VRM Class II objectives.

KOP #2 is located directly across Ballarat Road from drill site RC5. Ballarat Road is the principal entryway into the area and with Indian Ranch Road to the north and Wingate Wash Road to the south forms the backbone of the transportation network off the Trona Wildrose Highway on the east side of Panamint Valley. The drill site is located immediately off to the side of the road in a large previously disturbed camping area that is foreground and center. The landscape type is panoramic with an uninterrupted view of the enormous flat expanse of the lake bottom flanked by distant mountains.

The contrast rating over the short term would be at least Moderate with respect to the number and size of equipment and vehicles that would be installed on-site. In this way, the drilling project would exceed impacts typically caused by campers in 1-2 pickups or RVs with dirt bikes or quads in tow. The jumble of multiple large and vertical components would sit in the foreground and would completely dominate and obscure the view. In the short term, this drill site would not conform to VRM Class II objectives. The level of change would be moderate and activities on site would attract the attention of the casual viewer.

However, virtually all of these impacts would cease with removal of the drilling components. The only significant land modification (the sump) would be hidden behind the drilling equipment over the course of drilling and would be filled in and smoothed over (re-contoured to match its surroundings) at the conclusion of the project. The site can be easily be restored to its previous condition and may be improved with additional reclamation by smoothing over all tracks in the immediate vicinity and rebuilding the

road berm blocking entry to the site. At the conclusion of the project, with mitigations in place, the project would meet VRM Class II objectives.

KOP #3 and KOP #4. These sites are more problematic, because they are pristine and a significant amount of ground-breaking new disturbance would need to occur to access and use these sites. These KOPs are located along the lake shore immediately off of the Wingate Wash Road, the principal travel route to such popular destinations as Pleasant, South Park, and Goler canyons. Both sites rated moderate to strong contrasts with respect to changes in landform in addition to uniformly strong contrasts with respect to structures (presence of equipment and vehicles on-site).

At KOP #3, the project will require construction of a new linear feature (short access road/ramp) involving some soil (berm), vegetation, and rock pile removal. At KOP #4, a section of elevated bench with fine desert pavement will need to be breached (driven over) and modified (broken down). (See simulations in Appendix D.)

Strong contrasts associated with the presence of vehicles and equipment on-site will be startling in this remote area, particularly at such close range. However, these contrasts will cease with removal of the equipment upon completion of the project. In both instances, sumps will be kept out of sight behind the drilling equipment and down off of the benches by the lake shore, where they can be most easily backfilled and smoothed over to match original conditions. Earth-disturbing activities related to access and use of these benches will not be so easily resolvable. Both contain either patches (Drill Site DDH1 across from KOP#3) or more broadly expansive areas (Drill Site RC2 across from KOP #4) of fine desert pavement, which cannot be easily restored. These surfaces are delicate and are comprised of fine mosaics. Imprints of equipment, tracks, treads, troughs, or large areas of subsidence are likely to persist, particularly where they have broken through the surface and exposed fresh soil.

Drill Site DDH1 (KOP #3) is a much more heterogeneous site. The desert pavement there is patchy, largely confined to linear features (long-abandoned roadbeds) between rock piles. Impacts to these surfaces may be effectively hidden by re-texturizing with small rocks and moving disturbed rock piles back into place. The original road berm at this site was quite high, so restoring the berm to its original height may adequately hide and disguise the damage. This site can probably be brought back into conformance with VRM Class II objectives once the project has been completed.

Drill Site RC2 (KOP #4) has only a minimal berm. Vehicles and equipment are more likely to drive over and break down the berm and in the process, break down the leading edge of the pavement. The pavement here is exceptionally fine, smooth and even. There are no rock piles or vegetation on site to hide surface damage behind. This site may never be brought back into conformance with VRM Class II objectives, particularly if the public uses the visible disturbance to pull-off and camp.

In sum, the project will have strong short term visual impacts at three of the four KOPs. It is likely to result in persistent moderate impacts at least one of these KOPs. Still these

impacts will be confined to only three small, dispersed sites located along the lakebed margins. These sites are not unique to the area and will be passed by rather quickly by visitors traveling along the roads. The vast majority of the lakeside will be unaffected.

4.1.7.2 Cumulative Impacts

Visual impacts of equipment on soil surfaces at drill sites DDH1 and RC2 are likely to persist. These may be exacerbated and extended by public appropriation and use.

4.1.7.3 Mitigation

Tracks on desert pavement should not be raked or brushed out. It would be better to re-texturize broken surfaces with small rocks. Emphasis should be placed on avoidance rather than reclamation. Non-essential vehicles (vehicles used for transport of crews) do not need to be parked on the benches at drill sites DDH1 and RC2. They can be parked alongside Wingate Wash Road. Water trucks could also be staged along the roadside at these two sites to avoid impacts. Water could be piped (or even pumped) from the road to the sump at the back of the site. Efforts should be made to minimize the number of times critical heavy equipment (such as the drill rig, pipe rack, and parts truck) is moved on-site (ideally one time in and one time out). If mats exist, that can be laid over the desert pavement to better distribute the weight of the vehicles and equipment at site RC2, then mats should be used.

4.1.8 Lands with Wilderness Characteristics

4.1.8.1 Direct and Indirect Impacts

The proposed action would not establish new vehicle routes for exploration within the road less wilderness inventory units. It may result in some minor intermittent improvements to the access route to drill site RC4 within WIU #CDCA 140, but would not change its fundamental character as a primitive jeep trail. There may be a temporary uptake in traffic to this drill site which is nearly a mile inside the unit due to visible activity on the route. But this uptake would be expected to cease upon completion of the drilling project and successful reclamation of the drill site. The other three drill sites are all located on the periphery of the second unit (WIU #CDCA 141-1), most likely well within the county road ROW.

Virtually all physical disturbances would be confined to the drilling sites (each affecting no more than 0.25 acres). No more than two of these sites are expected to be active at the same time. These sites are isolated and widely dispersed within and along the lakebed margins. Naturalness would be diminished at these project sites during the period when drilling and reclamation activities are underway. This period could last anywhere from one to two months per site. Two of the four sites, including the one in the interior of unit #CDCA 140, will be easily reclaimed. One site is already disturbed by camping activities and illegal vehicle trespass onto the lakebed and may be improved by reclamation and roadside re-berming. Physical impacts at the other two sites immediately off Wingate Wash Road will be more difficult to restore to their pre-project natural condition. Extra efforts will be made to keep disturbances at these sites down to the bare minimum. (See project prescriptions and recommended mitigations under Visual Resources.)

Opportunities for solitude would be reduced within the project areas, mostly on the immediate approach to or within immediate sight and sound distance of each work site. The areas of greatest impact would be

along roads near the margins of Panamint Lake. Impacts would persist through the duration of drilling and reclamation activities at each of the four drilling sites. Reclamation coupled with adequate mitigation would bring each drilling site back to something approaching its original condition.

With consideration to the small size and short-term nature of these activities, impacts to lands with wilderness characteristics would be negligible.

4.1.8.2 Cumulative Impacts

The proposed action cumulative impacts to lands with wilderness characteristics would be negligible. The Environmental Protection Measures in Ch. 2 will minimize impacts.

4.2 THE NO-ACTION ALTERNATIVE

4.2.1 Areas of Critical Environmental Concern

4.2.1.1 Direct and Indirect Impacts

Under the No-Action Alternative, the proposed project activities would not occur. No surface disturbance would occur and there would be no impacts to ACECs.

4.2.1.2 Cumulative Impacts

No cumulative impacts to ACECs would occur under the No-Action Alternative

4.2.2 Invasive Plants and Noxious Weeds

4.2.2.1 Direct and Indirect Impacts

Under the No Action-Alternative, the proposed action would not occur. No surface disturbance would occur and there would be no invasive plants and noxious weeds impacts.

4.2.2.2 Cumulative Impacts

No cumulative invasive plants and noxious weed impacts would occur under the No-Action Alternative.

4.2.3 National Conservation Lands

4.2.3.1 Direct and Indirect Impacts

Under the No-Action Alternative, the proposed project activities would not occur. No surface disturbance would occur and there would be no impacts to NLCS lands.

4.2.3.2 Cumulative Impacts

No cumulative impacts to NLCS lands would occur under the No-Action Alternative.

4.2.4 Visual Resources

4.2.4.1 Direct and Indirect Impacts

There would be no visual resources impacts due to the No-Action Alternative.

4.2.4.2 Cumulative Impacts

The No-Action Alternative would have no cumulative impacts to visual resources.

4.2.5 Lands with Wilderness Characteristics

4.2.5.1 Direct and Indirect Impacts

No disturbances or changes to the area would occur under the No-Action Alternative. The LWCs' current natural condition and opportunities for solitude and/or opportunities for primitive and unconfined recreation would remain unaffected. Therefore, there would be no impact to lands with wilderness characteristics.

4.2.5.2 Cumulative Impacts

No cumulative impacts to lands with wilderness characteristics would occur.

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