



U.S. Department of the Interior
Bureau of Land Management

Big Sandy Inc. Phase 3 Sandy Valley Exploration Project Final Environmental Assessment

DOI-BLM-AZ-C010-2021-0029-EA

U.S. Department of the Interior
Bureau of Land Management
Colorado River District
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JUNE 2024

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Table of Contents

CHAPTER 1	INTRODUCTION.....	1
1.1	Identifying Information.....	1
1.1.1	Title, EA Number, and Type of Project.....	1
1.1.2	Location of Proposed Action.....	1
1.1.3	Name and Location of Preparing Office.....	1
1.1.4	Applicant Name.....	1
1.2	Background.....	1
1.3	Purpose and Need for Action.....	2
1.4	Decision to Be Made.....	2
1.5	Land Use Plan Conformance.....	2
1.5.1	Relationships to Statutes, Regulations, Other Plans, and Environmental Analysis Documents.....	2
1.6	Scoping, Issue Identification, and Public Participation.....	2
CHAPTER 2	PROPOSED ACTION AND ALTERNATIVES.....	4
2.1	Proposed Action.....	4
2.1.1	Committed Environmental Protection Measures and Best Management Practices.....	6
2.2	No Action Alternative.....	9
2.3	Alternatives Considered but Not Analyzed in Detail.....	10
CHAPTER 3	AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....	10
3.1	Resources and Uses.....	10
3.2	Resources Brought Forward for Analysis.....	15
3.2.1	Native American Religious Concerns/Traditional Values.....	15
3.2.2	Socioeconomics and Environmental Justice.....	16
3.2.3	Special-Status Species.....	18
3.2.4	Vegetation Resources (Native and Invasive).....	19
3.2.5	Water Resources (Including Water Rights).....	20
3.2.6	Wildlife (Including Migratory Birds).....	22
3.2.7	Recommended Mitigation and Monitoring.....	23
CHAPTER 4	CUMULATIVE EFFECTS ANALYSIS.....	23
4.1	Introduction.....	23
4.2	Past, Present Actions, and Reasonably Foreseeable Future Actions.....	24
4.3	Cumulative Impacts Analysis.....	25
4.3.1	Cumulative Impacts of the Proposed Action.....	25
4.3.2	Cumulative Impacts of the No Action Alternative.....	26
CHAPTER 5	CONSULTATION, COORDINATION, AND PREPARERS.....	26
APPENDICES	27
	Appendix A – Acronyms and Abbreviations	
	Appendix B – List of References	
	Appendix C – Figures	
	Appendix D – Exploration Plan of Operations	
	Appendix E – Public Comment and BLM Response Summary	
	Appendix F – Arizona Game and Fish Guidelines for Wildlife Compatible Fencing	
	Appendix G – Biological Evaluation	
	Appendix H – Socioeconomics and Environmental Justice Scoping Analysis	

CHAPTER 1 INTRODUCTION

1.1 Identifying Information

1.1.1 Title, EA Number, and Type of Project

Title: Big Sandy Inc., Phase 3 Sandy Valley Exploration Project

Document Number: DOI-BLM-AZ-C010-2021-0029-EA

Type of Project: Lithium and Poly-Metal Minerals Exploration

Case File No.: AZAZ106090656

1.1.2 Location of Proposed Action

The proposed Sandy Valley Exploration Project (Project or Proposed Action; a list of all acronyms and abbreviations is found in Appendix A) is located west of the Aquarius Mountains approximately 2 miles east of Wikieup, Mohave County, Arizona. Wikieup is the largest community within the Big Sandy Groundwater Basin. The majority of groundwater development in the basin has been in the southern portion along Big Sandy Valley. Groundwater is the primary source of water for Wikieup.

The general Project location is shown in Figure 1, Project Location, and Figure 2A, Project Site (all figures can be found in Appendix C). The 613-acre exploration area is divided within a northern area (North Middle [NM] and North Zone [NZ] prospecting core holes) and a southern area (Southern Zone [SZ] core holes), as shown in Figures 2A through 2D.

The Project site is approximately 613 acres and is located on public lands administered by the Bureau of Land Management (BLM) Colorado River District, Kingman Field Office (KFO). The site is located within portions of Townships 16 and 15 North, Ranges 12 and 13 West, Sections 18, 25, and 36.

1.1.3 Name and Location of Preparing Office

Bureau of Land Management, Kingman Field Office

1.1.4 Applicant Name

Big Sandy Inc.

1.2 Background

Big Sandy Inc. (Big Sandy; the Applicant) has submitted an Exploration Plan to the BLM KFO to conduct a third phase of lithium exploration drilling activities near Wikieup, Arizona. The Applicant previously conducted two phases of prospecting core hole exploration for lithium resources within the Project site in 2019. Phase 1 of the Project consisted of drilling 16 holes encompassing approximately 1.57 acres. Twelve of these drill holes were accessed, drilled, and reclaimed (0.795 acres of reclaimed disturbance). Phase 2 of the Project consisted of drilling 37 holes, all of which were accessed, drilled, and reclaimed (4.978 acres of reclaimed disturbance).

These two successful exploration phases (AZA-037487) helped to better define the areas where lithium resources exist. The Exploration Plan submitted to the BLM provides for a more detailed plan to better define the extent of the lithium resources. The new Project area proposed for exploration (Figures 1, 2A, 2B, 2C, and 2D) would be the third phase of exploration activities conducted by the Applicant and would consist of two focused exploration areas. The Exploration

Plan (Appendix D) provides for further detailed exploration focused on a concentrated array drilling pattern while aiming to reduce impacts to known sensitive resources. The Project is designed to test the quantity and quality of lithium deposits within the concentrated area.

1.3 Purpose and Need for Action

The purpose of the Proposed Action is to provide the Applicant an opportunity to explore its valid existing mining claims on public lands managed by the BLM. The need for the Proposed Action is established by BLM's responsibility under the Mining Law of 1872; Section 302 of the Federal Land Policy Management Act of 1976, as amended; the BLM Surface Management Regulations at 43 Code of Federal Regulations (CFR) Section 3809; and the use and occupancy regulations found at 43 CFR Section 3715. Under these regulations, the BLM is required to assess to the Exploration Plan and to ensure that any exploratory activities, if approved, do not cause unnecessary or undue degradation of the public lands, and to respond to the request for occupancy as part of the Exploration Plan (signage and fencing) that is reasonably incident to the development of locatable minerals.

1.4 Decision to Be Made

The decision to be made by the BLM's Authorized Office would be one of the following:

- Approve the Exploration Plan as submitted (43 CFR 3809.411[d][1]),
- Approve the Exploration Plan subject to changes or conditions necessary to meet the performance standards of 43 CFR 3809.420 and to prevent unnecessary or undue degradation (43 CFR 3809.411[d][2]), or
- Disapprove or withhold approval of the Plan of Operations if mitigation measures would not prevent unnecessary or undue degradation of public lands.

1.5 Land Use Plan Conformance

Kingman Field Office Resource Management Plan, Date Approved: March 1995

The Proposed Action as described herein is in conformance with the Kingman Field Office Resource Management Plan and Environmental Impact Statement (BLM 1993; the list of references is provided as Appendix B). Specifically, the Record of Decision states the following: "Minerals Subject to NEPA review, approximately 1,555,000 acres of federal minerals will be open to locatable mineral exploration and development, mineral materials sales, and mineral leasing" (BLM 1995: page 1, Record of Decision, Minerals).

1.5.1 Relationships to Statutes, Regulations, Other Plans, and Environmental Analysis Documents

The Proposed Action is consistent with applicable federal laws and regulations, plans, programs, and policies of federal, state, and local governments.

1.6 Scoping, Issue Identification, and Public Participation

The principal goals of scoping are to allow public participation to identify issues, concerns, and potential impacts that require detailed analysis. Internal scoping was conducted with the BLM in August 2020 to discuss the proposed mineral exploration and identify potential concerns/issues for analysis. The following issues and concerns were identified at the meeting by BLM specialists:

- Potential impacts to nearby hot springs.
- Potential impacts related to Native American religious concerns.
- Potential impacts to special-status species.
- Potential impacts to vegetation resources (native and invasive).
- Potential impacts to groundwater in the area, and the source and volume of water needed to complete the Project.
- Potential impacts to wildlife (including migratory birds).

1.6.1 Public Review of Environmental Assessment and Responses to Comments

An environmental assessment (EA) for the Proposed Action was prepared in spring 2021 (BLM 2021). On April 12, 2021, the BLM issued a press release announcing the availability of the EA that was posted on the BLM’s National Environmental Policy Act website (“ePlanning”). The EA was available for a 30-day public review period from April 12, 2021, through May 11, 2021. Based on requests received during the public comment period, the BLM KFO extended the original comment period twice, for a total of approximately 90 days, and accepted comments through July 10, 2021, although comments received in a timely manner after this date were also considered. Two additional press releases were issued, one on May 11, 2021, and one on June 10, 2021, announcing each of the 30-day extensions of the comment period.

The BLM received 101 letters, emails, and comments during the public review period. Four public comments were received from federal and state agencies, 11 public comments were received from Native American tribes, 13 public comments were received from organizations, and 73 public comments were received from individuals. Additional coordination and consultation with interested tribes occurred during and after the public comment period to further discuss the Project and continue consultation efforts per Section 106 of the National Historic Preservation Act. A summary of comments received, and BLM responses is provided in Appendix E, Public Comment and BLM Response Summary.

1.6.2 Modifications to Proposed Action Based on Public Comments

Based on public comments on the Draft EA and BLM consultation with tribes, one significant issue was potential groundwater impacts to Cofer Hot Spring (*Ha’Kamwe’*) from the Project’s proposed use of a nearby well. In discussions between the BLM and the Applicant, the Applicant has agreed to purchase water from the municipal supply of Wikieup and remove the potential use of the well in the Exploration Plan. Other concerns related to Cofer Hot Spring (*Ha’Kamwe’*) were the impacts to the visual setting and auditory impacts to Tribal uses near the hot spring and surrounding areas. To reduce these impacts, the Applicant has agreed to relocate a Project staging area that was originally proposed at the existing airstrip located near Cofer Hot Spring (*Ha’Kamwe’*). The new location consolidates two originally proposed staging areas into one staging area and is approximately 0.45 miles east of the Cofer Hot Spring (*Ha’Kamwe’*) facilities (Figure 2C). Lastly because of concerns about the footprint of the project, the Applicant has refined access roads to drill sites by removing redundant routes to reduce overland travel disturbance and to keep all proposed drilling and access for the project on public lands. This Final EA has been updated to reflect these changes and has modified the Proposed Action in response.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Applicant proposes to conduct a third phase of exploration activities by conducting additional prospect exploration drill coring and bulk sampling of active federal mining claims within the Sandy Valley Prospect of Mohave County, Arizona. The 613-acre exploration area is divided within a northern area (NM and NZ prospecting core holes) and a southern area (SZ core holes), as shown in Figures 2A through 2D. Phase 3 activities would include drilling; coring; core analysis then plugging; and excavating, sampling, and backfilling one bulk sampling location (600 square feet).

Access to the Project area would be via existing Western Area Power Administration, Mohave Electric Cooperative Inc., BLM, and the Mohave County roads and trails across private and BLM-managed lands. Existing roads would connect to proposed new access roads to drill site locations. The proposed new access would consist of overland travel between drilling sites and, in the northern area, using existing two-track road washes. Existing roads proposed for use and new access to drill sites are shown in Figures 2A through 2D. Minor upgrades to the existing access roads have previously been accomplished with the Phase 1 and Phase 2 exploration plans with no additional existing road upgrade proposed with this application. (see Appendix D, Plan of Operations for Mineral Exploration).

New surface disturbance within the Project area would be minimal for the access roads, individual exploration sites, and ancillary support sites (two staging areas and water storage site). Access disturbance would be for the multiple-pass ingress and egress of the exploration equipment and support equipment. In total, the Project would disturb approximately 21 acres of land as detailed in Table 1.

Table 1. New Surface Disturbance

Proposed Disturbance	Length (Feet)	Width (Feet)	Area (Square Feet)	Area (Acres)
Access to Drill Pads	49,848	10	498,480	11.443
New Access to Bulk Sample Site	370	10	3700	0.085
Proposed Drill Pads (n=131)	80	40	419,200	9.62
Proposed Bulk Sample Site	20	30	600	0.014
Proposed Staging Areas (n=2)	80	40	6,400	0.146
12,000-Gallon Lifted Water Tank Storage Site	50	30	1,500	0.034
Total			929,880	21.342

Existing roads and proposed access (as shown in Figures 2A through 2D) would provide necessary access for equipment, personnel, water, and supplies to the exploration sites with minimal cuts and fills constructed; no turnouts or parking areas are proposed. Three barbed-wire fence crossings would be required in the NM drilling area (Figure 2C). At those locations, the fence would be let down or cut, H-braces would be installed to support the existing fence, and a temporary gate would be installed. Upon termination of Project activities, the temporary opening or gate would be permanently rewired and stretched to its original tension.

The exploration pad areas would accommodate the intended exploration equipment, water storage, drilling and coring supplies, and support trucks and trailers. Temporary truck and trailer parking and equipment storage may also occur along the existing BLM and Mohave County road disturbance, with no new disturbance proposed. No staging would occur on the previously reclaimed Phase 1/Phase 2 pads, range improvements, or water sources.

The 131 drill pad sites would measure 80 feet in length by 40 feet in width (9.620 total acres). Each drill pad site would include a small sump (measuring 15 feet by 10 feet by 4 feet deep) and would be able to accommodate a rubber track mounted 3.5-inch (HQ) core drilling unit with support trucks and trailers entirely within each site. Phase 3 drilling would focus on the sedimentary material host to the lithium mineralization. Phase 3 core holes would be approximately 3.5 inches in diameter, and the proposed coring depth would be a maximum of 360 feet (110 meters) using diesel-powered rotary coring equipment with fresh water and biodegradable polymer for coring. The proposed exploration drill holes and the bulk sampling site are proposed to gain maximum information while minimizing surface disturbance and occupation. The drill holes and bulk sampling site are located where metal reserves are more likely to be encountered or where subsurface information is less understood and where geologic anomalies may be present.

Drilling would be completed with four workers (one shift; staying at local lodging), which is expected to take up to 18 months.

Water use is anticipated at 1,000 gallons or less per core hole, totaling up to 131,000 gallons (0.40 acre-feet) of freshwater use for Phase 3 drilling activities. An additional 20,000 gallons (0.06 acre-feet) is estimated to be needed for dust suppression activities. A large truck would fill the tank multiple times during Project operations from Wikieup, Arizona, using municipal water under a volume-based direct purchase agreement with Wikieup. Water would be stored in a temporary 12,000-gallon water tank on Lower Trout Creek Road (Figure 2A). Water from the temporary tank would then be transported to the northern and southern exploration core holes and access roads on an as-needed basis using the smaller Project water truck or pickup trucks.

The temporary 12,000-gallon water tank would be transported to the water tank site, raised to a height of approximately 14 feet above ground surface during Project implementation, then lowered and removed from the site; the site would be reclaimed at the conclusion of the Project. The water tank would be raised and lowered with a self-contained hydraulic system, then water pumped from the truck to the tank and allowed to gravity-flow from the tank for use, with no generator or engine required for daily use of the tank.

A 180-horsepower or less, diesel-powered, rubber-track-mounted drilling rig with 3.5-inch (HQ) coring unit would be moved onto each of the drill hole sites with necessary analysis, water, and hole plugging materials. Fresh water with biodegradable polymer would be used as the coring medium, with the drill hole requiring 1 to 12 hours to drill and retrieve the 3.5-inch (HQ) core. The proposed drill hole would target formations containing metals potential.

Each core hole is anticipated to be dry and would be abandoned in accordance with Arizona State Department of Water Resources (ADWR) standards and procedures and in compliance

with Arizona Administrative Code R-12-15-816 prior to site reclamation. If confirmed dry, the core hole would be backfilled with drill cuttings or clean soil to within 20 feet of the surface, then filled from 20 feet to the surface with concrete. Should water be encountered, the core hole would be backfilled with bentonite chips, then filled from 20 feet to the surface with concrete. Additionally, as described in Section 2.1.1 if artesian water is encountered drilling would immediately cease and the hole abandoned by using cement grout via tremie pipe.

For bulk sampling, a track-mounted boring auger would access the bulk sampling site and excavate the contents of three 3-foot-diameter holes to a not-to-exceed depth of 100 feet, which allows collection of 2,000-pound bulk sample within a single bulk bag. The 2,000-pound bulk bags would be palletized and transported via flatbed truck for transportation to off-site milling and classification. In total, boring and sampling would remove approximately 100–150 tons of material from the three bore holes at the bulk sampling site. No shallow water or hydrocarbon zones are anticipated, but, if encountered, would bring a halt to deeper excavation and require immediate notification to the BLM KFO.

Following the completion of bulk sampling collection, each of the three 3-foot-diameter holes would be fenced, backfilled, and reclaimed. Backfill would be compacted in stages, utilizing the auger rig, and each hole would be left with a positive slope away from the backfill to minimize subsidence and surface water ponding at the bulk sampling site. Plugging, bulk sample site backfills, and surface reclamation would occur concurrently in intervals during the remaining drilling program as weather permits to minimize erosion potential.

Final reclamation of access roads and ancillary facilities would be completed concurrent with the final hole abandonment and reclamation activities described in the Exploration Plan. All disturbed areas would be reclaimed to the standards described in 43 CFR 3809.420. Reclamation activities include backfilling drill sites per ADWR standards, and recontouring surface disturbances followed by ripping/scarifying and manually reseeding. The seed mix would be certified weed-free and would be approved by the BLM prior to application. All soils removed for construction of drill sites and sumps would be stockpiled and returned to their original location. Any facilities impacted by the Project would be repaired and replaced as soon as practical before the end of the Project.

2.1.1 Committed Environmental Protection Measures and Best Management Practices

The following environmental protection measures and best management practices (EPMs/BMPs) would be implemented during the proposed exploration drilling and bulk sampling activities:

- Surface disturbances will be limited to the minimum amount as practically and safely possible.
- Navajo Transitional Energy Company (NTEC) and Arizona Lithium (AZL) will provide the opportunity to the Hualapai Tribe and other descendant tribal communities as requested, to monitor ground disturbing activities during Phase 3 of exploratory drilling. The purpose of the monitoring is twofold: 1) to observe and provide notification to the BLM for the inadvertent discovery of any buried archaeological or cultural materials and 2) to monitor for and observe the presence and depth of water and soils associated with spring deposits. NTEC and AZL seek tribal monitors voluntarily in order to provide transparency to tribal communities during Phase 3 drilling. All tribal monitor costs will be

paid by NTEC and AZL. Prior to ground disturbing activities, NTEC, the BLM, and the Tribe(s) will conduct a pre-construction meeting to discuss site safety, communication protocols, discovery treatment procedures, and the schedule for drilling. Tribal monitors will be provided personal protective equipment (PPE) and required to attend a site safety meeting daily while monitoring.

For scheduling purposes, NTEC will provide a minimum of two weeks (10 business days) notice to the Tribe(s) prior to ground disturbing activities in support of Phase 3 drilling. It is expected that the Tribe(s) will provide a monitor for each day of ground disturbance associated with Phase 3 drilling, but upon notifying the Tribe(s) of scheduled ground disturbance, drilling may commence in the absence of a Tribal monitor granted the proper 2-week notification period was provided.

- Pad and access disturbances will be relocated to avoid cultural resources with suitable buffers within the project area. Any scientifically important archaeological or paleontological resources will not be knowingly disturbed, altered, injured, or destroyed nor will any historical or cultural site, structure, building, or object. Guidelines in the BLM's Cultural Resources (Archaeology) Standard Stipulations for Mining Operations will be followed. The discovery of any cultural or paleontological resource that might be altered or destroyed by operations will be reported to the authorized BLM officer and the discovery will be left intact.
- In the event that previously unreported cultural resources are encountered during ground-disturbing activities, all work must cease immediately within 30 meters (100 feet) until a qualified archaeologist has documented the discovery and evaluated its eligibility for the Arizona Register of Historic Places and National Register of Historic Places, as appropriate, in consultation with the BLM, the State Historic Preservation Officer, and tribes, as appropriate. Work must not resume in this area without approval of the BLM.
- If human remains are encountered during ground-disturbing activities, all work must immediately cease within 30 meters (100 feet) of the discovery. The BLM, Arizona State Museum, State Historic Preservation Officer, and appropriate tribes must be notified of the discovery within 24 hours (following BLM protocol). All discoveries will be treated in accordance with the Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 USC 3001–3013), as appropriate, and work must not resume in this area without proper authorization.
- Noxious weed controls will be used throughout the Project life to prevent or minimize the introduction of noxious weed species into the Project area. Only BLM-approved, certified weed-free seed will be used during reseeded. Reclaimed areas will be monitored for infestations of noxious weeds.
- Surface disturbances will be limited as much as possible through interval reclamation during the drilling process. Reclamation and re-vegetation will include recontouring, reseeded, and the transplanting of plants as necessary. Any cacti in the areas to be disturbed will be transplanted (with proper orientation to the north) and will be replanted after re-contouring of disturbed areas. Large or crested saguaros or other large succulents or cacti species will not be disturbed. All areas of off-road travel and surface disturbance will be raked out at the completion of surface disturbance activities.
- If vegetation removal is required during the migratory bird breeding season (February 15–August 31), a survey will be conducted within 72 hours for each location to locate any

active bird nests or breeding bird behavior (e.g., mating pairs, territorial defense, carrying nesting material, transporting of food) that may be present; disturbance to active bird nests will be avoided during vegetation-clearing activities. The survey will include the area of disturbance and a 300-foot buffer and will be conducted by a BLM-approved biologist. Appropriate buffer distances for avoidance of active bird nests will be established in coordination with the BLM. Any tanks or sumps that hold water potentially containing contaminants will be fenced according to the Arizona Game and Fish Department's fencing guidelines to prevent attracting wildlife.

- Drill holes or other open excavations that may entrap wildlife will be covered if left open overnight or escape ramps will be installed (e.g., for trenches or other steep-sided excavations).
- Environmental awareness training will be provided for all personnel prior to conducting any on-site work. The training will include information on the protection of wildlife, including Sonoran Desert tortoise (*Gopherus morafkai*) and migratory bird nests, and procedures to be implemented in case they are encountered during Project activities.
- If any Sonoran Desert tortoises are encountered during Project activities, workers will adhere to the Arizona Game and Fish Department's current Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (see Appendix E in the Biological Evaluation (the Biological Evaluation is Appendix G to this EA)).
- Prior to the initiation of exploration activities, a qualified biologist will conduct a pre-activity survey of proposed temporary access roads, drill/sampling areas, and other temporary use areas to locate any occupied tortoise burrows/potential shelter sites that may be present in the Project area. The results of the survey will be provided to the BLM, and any occupied tortoise burrows or other shelter sites that may be used by Sonoran Desert tortoises (e.g., large burrows, caliche caves) will be flagged for avoidance.
- On-site workers will travel at reduced speeds on access roads (25 miles per hour maximum) and remain aware of wildlife on the road. All on-site workers will be required to check under their parked vehicles and equipment prior to driving to make sure there is not a tortoise sheltering underneath the vehicle or equipment. If a desert tortoise is found sheltering underneath a parked vehicle or equipment, the tortoise will be allowed to move out from under the vehicle/equipment on its own. If the tortoise does not leave in a timely fashion, the BLM will be consulted prior to the tortoise being moved in accordance with the Arizona Game and Fish Department's Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (see Appendix E in the Biological Evaluation (the Biological Evaluation is Appendix G to this EA)). Relocation of a Sonoran Desert tortoise could result in minor stress from handling; injury or mortality of Sonoran Desert tortoises is not anticipated to occur as a result of this Project.
- Applicant will follow all applicable sections of the Clean Water Act including sections 401, 402 (NPDES / AZPDES Permit), and 404 or provide justification if not applicable.
- Applicant will ensure they are following all applicable sections of the Rivers and Harbors act including section 10 or provide justification if not applicable.
- Necessary staging and water storage will occur within centrally located sites to reduce overall project traffic (Appendix D, Table 6). Any impacts, including noise and visual impacts from use of the ancillary areas would be temporary in nature and only necessary to facilitate staging of equipment prior to drilling operations. Use of the staging areas and fresh-water storage tank site are temporary uses to facilitate and support short-term drilling

operations and are not intended to provide long-term storage of equipment, supplies or water within the project area. The ancillary areas will be maintained to reduce noise and visual impacts by minimizing idling equipment / generators, minimizing equipment maintenance and repairs and the sites will be free of debris and remain as organized as possible during all phases of operation. After completion of activities in the area, equipment would be moved offsite or to other staging areas.

- Any survey and reference monuments will be protected to the extent economically feasible.
- Public safety will be protected while the project is in operation. All equipment will be operated and maintained in a safe and orderly manner.
- Damage to existing fences and other range improvements as a result of the project would be immediately repaired per approved BLM specifications. If a fence crossing is required for a location absent a gate, the fence would be let down or cut and H-braces would be installed to support the existing fence and a temporary gate would be installed. Upon termination of project activities, the temporary opening or gate would be permanently rewired and stretched to their original tension.
- Personnel would be instructed to minimize contact and avoid harassment of livestock and wildlife.
- All reasonable steps would be taken to prevent fires in the Project area. Appropriate fire suppression equipment would be kept on site. The applicant would comply with all state and federal fire laws and regulations that are applicable will be complied with.
- Solid wastes will be disposed of in a state, federal, or local designated site.
- Surface disturbances will be limited to the minimum amount as practically and safely possible.
- All personnel will be advised of the possibility of encountering desert tortoises and will be trained in the BLM's Guidelines for Handling Desert Tortoise On Roads and Vehicle Ways.
- Any facilities impacted by the project would be repaired or replaced as soon as practical before the end of the project.
- Surface disturbances will be as limited as practically as possible through interval reclamation during the drilling process. Reclamation and re-vegetation will include recontouring and seeding with the transplanting of plants not anticipated. All areas of off-road travel and surface disturbance will be raked out at the completion of surface disturbance activities.
- Though not expected, if water is intersected during core hole drilling the hole shall be plugged using cement grout (preferable) or bentonite clay via tremie pipe and abandoned in accordance with Arizona Administrative Code R12-15-816. If artesian water is encountered drilling would immediately cease and the hole abandoned by using cement grout via tremie pipe.

2.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. The Phase 3 Project, including exploration drilling and bulk sampling of active federal mining claims within the Sandy Valley Prospect of Mohave County, Arizona, would not occur, and therefore no new surface disturbance would occur within the Project area.

2.3 Alternatives Considered but Not Analyzed in Detail

No alternative actions are proposed. Any possible alternative actions would be limited given the narrow focus of the exploration drilling program. No alternative actions were evaluated in detail because none were identified that would have fewer impacts than the Proposed Action.

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Resources and Uses

The BLM is required to consider many authorities when evaluating a federal action. Table 2 summarizes the resources and uses that have been reviewed by the BLM Interdisciplinary Team to determine whether the resources and uses would be affected by the Proposed Action, and rationale for whether the resource area will be carried forward for detailed analysis. Those resources or uses determined not present or present but not affected by the Proposed Action need not be carried forward or discussed further. Resources or uses determined to be present that may be affected may be carried forward in an EA if there are issues that necessitate a detailed analysis.

Table 2. Resources and Uses

Resource/Use	Present (Yes/No)	May Be Affected (Yes/No)	Rationale	Analyzed in Section
Air Quality	Yes	No	The Project area lies within the Mohave County particulate matter (PM ₁₀) attainment area as classified by the U.S. Environmental Protection Agency (ADEQ 2019). Effects from drilling operations were taken into consideration when the classification was made. Therefore, the Proposed Action would be in conformance with PM ₁₀ attainment area air quality standards.	N/A
Areas of Critical Environmental Concern	No	No	There are no Areas of Critical Environmental Concern within the Project area.	N/A
Cultural Resources	Yes	No	A Class III Cultural Resources Survey was conducted and resulted in one previously recorded site and three newly recorded sites (Harte and Wolfe 2020). The proposed drilling program was designed to avoid known resources identified in the Class III survey.	N/A
Environmental Justice	No	No	Minority, low-income, and disadvantaged populations are present within Mohave County and Wikieup, but not at levels that warrant their classification as such for purposes of environmental justice. The Proposed Action would not cause any disproportionately high and adverse effects on minority or low-income populations, either individually or collectively. However,	3.2.2

Table 2. Resources and Uses

Resource/Use	Present (Yes/No)	May Be Affected (Yes/No)	Rationale	Analyzed in Section
			environmental justice is analyzed in Section 3.2.2 of this EA.	
Farmlands – Prime/Unique	No	No	No prime or unique farmland would be affected by the Proposed Action.	N/A
Fire Management	Yes	No	The Exploration Plan calls for the use of a 12,000-gallon freshwater tank and other appropriate fire suppression equipment. All reasonable steps would be taken to prevent fires in the Project area.	N/A
Fish Habitat	No	No	No fish habitat is present in the Project area.	N/A
Floodplains	Yes	No	Floodplains within the NZ Project area is associated with Bitter Creek Wash and are identified as Zone A flood zone (see Figure 3). These floodplains are subject to inundation by the 1% annual chance flood. The drilling and sampling proposed would not occur in the active wash area and with implementation of the Spill Control Plan (Appendix D), no impacts would be expected to floodplains.	N/A
Forestry Resources and Woodland Products	No	No	There are no woodlands within the vicinity of the Project area.	N/A
Human Health and Safety	Yes	No	Drilling operations would be implemented in accordance with all applicable federal, state, and site-specific safety regulations. All equipment will be inspected, operated, and maintained in accordance with manufacturer guidelines. Daily tailgate safety meetings would be conducted to protect workers. The Project would operate with barriers and signage to prevent endangering human health and safety.	N/A
Land Use Authorizations/ Access	Yes	No	The Project area lies entirely within active federal mining claims on federal surface and mineral lands, under the management of the BLM. Access to the Project area would be via existing Western Area Power Administration, Mohave Electric Cooperative Inc., BLM, and the Mohave County roads and trails across private and BLM-managed lands. Accessing individual drill sites would be limited to overland travel as described in the Exploration Plan. No new access roads would be constructed. No access would be restricted to the area by the proposed exploration operations. No land use authorization/access issues are anticipated for the Proposed Action.	N/A

Table 2. Resources and Uses

Resource/Use	Present (Yes/No)	May Be Affected (Yes/No)	Rationale	Analyzed in Section
Lands with Wilderness Characteristics	No	No	There are no lands with wilderness characteristics within the Project area.	N/A
Livestock Grazing Management	Yes	No	The northern Project area lies within the Hot Spring livestock grazing allotment, and the southern Project area lies within the Gray Wash livestock grazing allotment (BLM 2018). The Proposed Action is temporary, and all new disturbances would be reclaimed per the Exploration Plan upon completion of the Proposed Action. Impacts to grazing would be negligible.	N/A
Mineral Resources	Yes	No	The Proposed Action calls for exploration drilling for lithium and other poly metals in the Project area. The Proposed Action would not affect mineral resources.	N/A
Native American Religious Concerns/ Traditional Values	Yes	Yes	Native American Religious Concerns and Traditional Values are analyzed in Section 3.2.1 of this EA.	3.2.1
Paleontological Resources	Yes	No	The Big Sandy Formation is host to the lithium-bearing sediments targeted in the exploration program within the Project area. This geologic formation is known to contain diverse mammalian and avian fossils of Late Miocene age (Dickinson 2008), but there is no Potential Fossil Yield Classification given to the Big Sandy Formation. Any potential effect on paleontological resources would be limited given that much of the Proposed Action would occur on the overlying unconsolidated sand and gravel sediments. Fossils in this formation are rare, and the primary fossil quarries are found several kilometers south of the Project area near Box Canyon Wash (Dickinson 2008).	N/A
Recreation	Yes	No	There are no designated recreation areas within the Project area. Dispersed recreation occurs in the Project area, and access would not be restricted by the Proposed Action; therefore, no impacts to recreation are anticipated.	N/A
Socioeconomics	Yes	Yes	Socioeconomics are analyzed in Section 3.2.2 of this EA.	3.2.2
Soil Resources	Yes	No	Soils in the Project area include cacique family extremely gravelly loam, 1% to 7% slopes; Cave gravelly sandy loam, dry, 10% to 35% slopes; and Torriorthents, dry, 35% to 65% slopes, according to the National	N/A

Table 2. Resources and Uses

Resource/Use	Present (Yes/No)	May Be Affected (Yes/No)	Rationale	Analyzed in Section
			Resources Conservation Service (NRCS 2006). The Proposed Action would result in the disturbance of approximately 21.342 acres of land. Reclamation of disturbed areas (e.g., access roads and drill pads) would be re-contoured to blend with original contours and to mitigate future erosion. Disturbed areas and areas of overland travel would be scarified then reseeded by a manual broadcast method and raked by hand to reduce disturbance to the extent practicable.	
Special-Status Species	Yes	Yes	There are no federally Threatened or Endangered species in the Project area. Sonoran desert tortoise is a sensitive species designated by the BLM that may be present in the Project area and is discussed in Section 3.2.3 of this EA.	3.2.3
Travel and Transportation Management	No	No	Travel and transportation management would not be impacted by the Proposed Action as there is no approved Travel Management Plan for this area nor changes to access.	N/A
Vegetation Resources (Native and Invasive)	Yes	Yes	Vegetation resources are analyzed in Section 3.2.4 of this EA.	3.2.4
Visual Resources	Yes	No	The Project area is within areas designated as Visual Resource Management Class II and Class III (BLM 2019). The objective of Class II is to retain the existing character of the landscape while allowing for low levels of change. The objective of Class III is to partially retain the existing character of the landscape while allowing for moderate levels of change (BLM 1986). The Proposed Action is temporary and should not attract the attention of the casual observer. All new disturbances would be remediated upon completion of the Proposed Action.	N/A
Wastes – Hazardous or Solid	Yes	No	Hazardous materials proposed to be used in the Project area would be properly contained. Any spills would be cleaned up using the best available practices and disposed of at an approved disposal facility. Potential impacts to the environment include accidental release of materials during transportation to and from the Project site, or from the use, handling, and storage at the	N/A

Table 2. Resources and Uses

Resource/Use	Present (Yes/No)	May Be Affected (Yes/No)	Rationale	Analyzed in Section
			site, which is discussed in the Exploration Plan of Operations (Appendix D).	
Water Resources (including Water Rights)	Yes	Yes	Water resources are analyzed in Section 3.2.5 of this EA.	3.2.5
Water Quality (Surface/ Ground)	Yes	No	<p>The Proposed Action would not affect water quality within or near the Project site. Drilling methods would use fresh water, biodegradable polymers, and ADWR standard hole backfilling materials (e.g., clean soil/bentonite/cement).</p> <p>The proposed drill holes would target formations containing metals potential. No shallow water or hydrocarbon zones are anticipated, but, if encountered, would be isolated using bentonite chips following the drilling and coring process. Each core hole is anticipated to be dry and would be abandoned in compliance with Arizona Administrative Code R-12-15-816 prior to site reclamation. If confirmed dry, the core hole would be backfilled with clean soil within 20 feet of the surface, then filled from 20 feet to the surface with concrete. Though not expected, if water is intersected during core hole drilling the hole shall be plugged using cement grout (preferable) or bentonite clay via tremie pipe and abandoned in accordance with Arizona Administrative Code R12-15-816. If artesian water is encountered cement grout via tremie pipe shall be used. Therefore, no impacts to water quality is expected.</p>	N/A
Wetlands/ Riparian Zones	Yes	No	The wetlands/riparian zones within the NM and NZ Project area include Bitter Creek Wash. This is classified as a riverine, intermittent streambed, seasonally flooded wetland. The wetlands/riparian zones within the SM and SZ Project area include Gray Wash and another unnamed wash. These are classified as a riverine, intermittent streambed, temporarily flooded wetlands. No drill sites would be located in these wetlands/riparian zones; therefore, the Proposed Action would not affect these areas.	N/A
Wild and Scenic Rivers	No	No	The Project area is not near designated, suitable, or eligible wild and scenic rivers.	N/A
Wild Horses and Burros	Yes	No	The Project area is within the Big Sandy Herd Management Area (HMA) (BLM n.d.). Minimal forage would be removed by the	N/A

Table 2. Resources and Uses

Resource/Use	Present (Yes/No)	May Be Affected (Yes/No)	Rationale	Analyzed in Section
			proposed Project within the HMA; therefore, no impacts would be expected to wild burros.	
Wilderness	No	No	The Project area is not near any designated wilderness.	N/A
Wildlife (including Migratory Birds)	Yes	Yes	Wildlife is analyzed in Section 3.2.6 of this EA.	3.2.6

Notes: PM₁₀ = particulate matter less than or equal to 10 microns in diameter; N/A = not applicable; EA = environmental assessment; NM = North Middle; SM = South Middle; SZ = South Zone; NZ = North Zone; BLM = Bureau of Land Management; ADWR = Arizona Department of Water Resources.

3.2 Resources Brought Forward for Analysis

The BLM Interdisciplinary Team evaluated potential impacts from the Proposed Action and alternatives on resources and resource uses (as listed in Table 2) to determine if detailed analysis would be necessary. Through this process, the Interdisciplinary Team determined the resources discussed below warrant detailed analysis in this EA.

The affected environment for the No Action Alternative is the same as that for the Proposed Action.

3.2.1 Native American Religious Concerns/Traditional Values

3.2.1.1 Affected Environment

As expressed through consultation with the BLM, Native American tribal communities consider the nearby *Ha’Kamwe’* (also referred to as Cofer Hot Spring) to be of traditional cultural value and part of a traditional cultural landscape. *Ha’Kamwe’* and the surrounding cultural landscape is considered ancestral to the Hualapai people and continues to be revered as patrimony and ceremonial purposes integral to the identity of the Hualapai people. *Ha’Kamwe’* was determined to be a Traditional Cultural Property eligible for listing on the National Register of Historic Places by the BLM.

3.2.1.2 Environmental Consequences

Proposed Action

Impacts with the proposed drilling operations on religious concerns/traditional values include the following:

- Temporary visual effects from drilling equipment and surface disturbance,
- Temporary noise and vibration from drilling activities and vehicular travel through the area,
- Temporary disruption to cultural practices at and/or near *Ha’Kamwe’*,
- Impacts to native wildlife and vegetation (removal of vegetation, noise, human presence),
- The potential for cumulative effects to natural and cultural environments.

Visual, noise, and vibration effects from drilling activities would be temporary. Coordination with and providing notice to the Hualapai Tribe of drilling activities in the vicinity of the *Ha’Kamwe’* may reduce impacts to cultural practices at or near the hot spring. Effects to the

natural environment (i.e., vegetation and wildlife), are addressed below in sections 3.2.3, 3.2.4, and 3.2.6.

To minimize impacts to *Ha’Kamwe’* the previously proposed well to use as a water source for the project activities has been removed from the updated exploration plan. Additionally, a staging area near *Ha’Kamwe’* has also been removed from the updated exploration plan. Analysis of water resources has determined that the water source for *Ha’Kamwe’* is located in a deeper aquifer, which the proposed drilling activities are not anticipated to reach (refer to Section 3.2.5 for detailed information). Though not expected, if water is intersected during core hole drilling the hole shall be plugged using cement grout (preferable) or bentonite clay via tremie pipe and abandoned in accordance with Arizona Administrative Code R12-15-816. If artesian water is encountered drilling would immediately cease and the hole abandoned by using cement grout via tremie pipe. Overall, the removal of the well and staging area would reduce impacts and operator presence in the immediate vicinity of *Ha’Kamwe’*.

Given the temporary nature of the visual, noise, and vibration effects from the proposed drilling activities, the removal of use of the well and the staging area, and the reclamation requirements, the BLM has determined that there would be no permanent alteration to the characteristics that qualify *Ha’Kamwe’* for inclusion in the National Register of Historic Places.

No Action

Under the No Action Alternative, the Proposed Action would not occur and there would be no effects to *Ha’Kamwe’*, its use, and/or its surrounding cultural landscape.

3.2.2 Socioeconomics and Environmental Justice

3.2.2.1 Affected Environment

The following three communities surrounding the Sandy Valley Exploration Project Area were identified for consideration of impacts to socio-economics and environmental justice from this project:

- (1) Wikieup census designated place (CDP)
- (2) Bagdad CDP
- (3) Alamo Lake CDP

These communities are located within Mohave, Yavapai and La Paz counties, Arizona, and are within a radius of 30 miles from the project area (see Map 1 in Appendix H). The total population (as of 2020 census data) of the Wikieup CDP is 71, Bagdad CDP 2,212, and Alamo Lake CDP is 19. Mohave County had a population of 210,998, Yavapai County had 232,396 and La Paz County had a 2020 population of 21,035.

Median household incomes for the Wikieup CDP were \$84,250, Bagdad CPD \$70,402 and Alamo Lake CDP is \$142,708 which are above average for the counties. Mohave County median household income in 2020 was \$47,686, Yavapai County \$53,329, and La Paz County \$34,956. Minority population of the Wikieup CDP is at 31.0%, Bagdad CDP is 44.9%, and Alamo Lake CDP is at 0.0%. Total county minority populations are Mohave County 23.3%, Yavapai County 19.9%, and La Paz County is 42.8%.

The following key indicators were assessed for analysis for this project.

- A. Population
- B. Median household income
- C. Poverty rate
- D. Ethnicity composition
- E. Unemployment rate
- F. Population composition by age
- G. Population with less than high school education (that is, percent of individuals aged 25 and over with less than high school degree).
- H. Linguistic isolation rate (that is, percent of individuals aged 5 and over who speak languages other than English at home or speak English less than very well).

The results of the datasets are presented in Appendix H, Tables 1 through 5 and Figures 1 and 2 in this Appendix. For each table and each figure, the data source is listed at the end of the table and figure, respectively.

- Table 1: Environmental justice considerations (reference area)
- Table 2: Environmental justice considerations (communities)
- Table 3: Primary socioeconomic indicators
- Table 4: Additional socioeconomic indicators
- Table 5: Employment by sector
- Figure 1: Primary socioeconomic indicators
- Figure 2: Additional socioeconomic indicators

The indicator “minority population” is calculated based on the definition provided in Council on Environmental Quality (1997); that is, the difference between “Total population” and “Not Hispanic or Latino (white alone).”

The data compiled, analyzed and presented in Appendix H indicate that, for the recent year 2020, two out of the three communities (Wikieup CDP, Bagdad CDP and Alamo Lake CDP) within a radius of 30 miles from Sandy Valley Exploration Project Area should be considered as environmental justice communities of concern.

- Wikieup CDP based on community criterion 2 (minority population higher than 110% of reference area, that is, Mohave County).
- Bagdad CDP based on community criterion 2 (minority population higher than 110% of reference area, that is, Yavapai County).

3.2.2.2 Environmental Consequences

Proposed Action

The data compiled, analyzed and presented in Appendix H indicate the following key socioeconomic characteristics of the analysis area in the year 2015 and the year 2020:

- Wikieup CDP and Alamo Lake CDP are two very small communities with a population less than 100 people in 2020; Bagdad CDP has a population slightly more than 2,000 people.
- In terms of income level, all three communities have median household income in 2020 higher than those of the counties they are located, Arizona and the nation;

- In terms of poverty levels, all three communities have poverty levels in 2020 lower than those of the counties they are located, Arizona and the nation;
- In terms of employed labor forces by sectors in 2020, the three communities have different major employment sectors: (A) wholesale trade and retail trade sector for Wikieup CDP, (B) natural resources, agriculture and mining sector for Bagdad CDP, and (C) information sector for Alamo Lake CDP;
- From 2015 to 2020, Wikieup CDP had a reduced unemployment rate and a reduced preliminary education level (that is less than high school education), from 16.8% to 10.8%, and from 42.6% to 9.7%, respectively; and
- Wikieup CDP has a remarkably higher unemployment rate in 2020 (10.8%) than those of Mohave County (3.4%), Arizona (3.5%) and the nation (3.4%).

The combination of socioeconomic characteristics for these areas suggest that the community in the Wikieup CDP would benefit from projects such as the proposed action as it would reduce the potential unemployment numbers for the area.

No Action

Under the No Action alternative, the proposed exploration drilling program would not occur. No changes to populations, income, or employment opportunities would be added to the community in the Wikieup CDP.

3.2.3 Special-Status Species

3.2.3.1 Affected Environment

As identified in the Biological Evaluation prepared for the proposed Exploration Plan (see Appendix G), Sonoran desert tortoise, a sensitive species designated by the BLM, has the potential to occur within the Project area. The proposed exploration activities are located within an area that has been designated as Category III (the least valuable and protected habitat) for desert tortoise habitat. Sonoran desert tortoise is protected under a multi-agency Candidate Conservation Agreement, with signatories that include multiple state and federal agencies, including the BLM.

Sonoran desert tortoise occurs primarily on rocky slopes and bajadas in Sonoran desert scrub and adjacent vegetation communities throughout central, southern, and western Arizona. Boulder-covered slopes are the preferred habitat of Sonoran desert tortoise, but tortoises may also be present in low densities on lower mountain bajadas and along washes when suitable shelter sites are present (Grandmaison et al. 2010).

Suitable habitat for Sonoran desert tortoise is present throughout the Project area and on adjacent lands. Tortoises could potentially be encountered anywhere in the Project area given the proximity to documented occurrences of this species in the immediate Project vicinity. Potential shelter sites that were observed during the biological survey on October 29, 2019, were limited to a series of caliche caves along the eastern edge of Bitter Creek. No large burrows (of sufficient size for adult tortoises) were encountered on the hillsides or hilltops in the northern (NM and NZ) drill area, which typically had small- to medium-sized (up to 12-inch) cobbles, but no large boulders and few areas of rock outcrop. The southern (SZ) drill area is less rocky than the

northern drill area with fewer trees and cacti; the southern (SZ) drill area extends along flat ridgetops with steep, eroded sides.

3.2.3.2 Environmental Consequences

Proposed Action

The Proposed Action would result in the temporary loss of approximately 21.342 acres of potential foraging habitat for Sonoran desert tortoise and may also result in impacts to potential shelter sites for tortoises.

Sonoran desert tortoises may be encountered on access roads and other temporary use areas due to the presence of suitable habitat throughout the Project site. Reclamation of disturbed areas would occur upon completion of the exploration activities, as described in this Exploration Plan. Given the relatively small overall area that would be impacted by ground-disturbing activities and the low observed density of potential shelter sites for tortoises within the project area, the likelihood of any direct interaction between the proposed action and any Sonoran desert tortoises is relatively low. Taking into consideration the amount of available foraging habitat in the Project area and the surrounding area, with implementation of EPMs/BMPs for desert tortoise identified in Section 2.1.1, no long-term impacts to Sonoran desert tortoise are anticipated from the temporary loss of desert scrub vegetation in the Project area.

No Action

Under the No Action Alternative, the Proposed Action would not occur, thus eliminating any potential impacts to Sonoran desert tortoise.

3.2.4 Vegetation Resources (Native and Invasive)

3.2.4.1 Affected Environment

Vegetation in the Project area consists of a variety of trees, shrubs, subshrubs, and cacti that are native to the Sonoran Desert and indicative of the Paloverde-Cacti-Mixed Scrub Series (Appendix G).

Foothills paloverde (*Parkinsonia microphylla*) and shrubs/subshrubs, including creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), flat-top buckwheat (*Eriogonum fasciculatum*), and brittlebush (*Encelia farinosa*), are the dominant species occurring in the Project area. Succulent and cactus species that commonly occur throughout the Project area include ocotillos (*Fouquieria splendens*), prickly pears (*Opuntia* spp.), chollas (*Cylindropuntia* spp.), hedgehogs (*Echinocereus* sp.), California barrel cacti (*Ferocactus cylindraceus*), Graham's nipple cacti (*Mammillaria grahamii*), crucifixion thorn (*Canotia holacantha*), and saguaro cacti (*Carnegiea gigantea*). A sparse to moderate ground cover of desert Indianwheat (*Plantago* sp.), three-awn (*Aristida* sp.), fluffgrass (*Dasyochloa pulchella*), and big galleta (*Pleuraphis rigida*) is present between cacti, shrubs, and trees. Weedy and invasive species appear to be uncommon in the Project area, consisting primarily of red brome (*Bromus rubens*) in scattered locations throughout the Project area.

Bitter Creek, a wide and sandy-bottomed ephemeral wash, borders the southern edge of the northern drill area. Bitter Creek and the various smaller washes in the Project area are lined with xeroriparian vegetation consisting of a combination of paloverde trees, velvet mesquite (*Prosopis*

velutina), catclaw acacia (*Senegalia greggii*), wolfberry (*Lycium andersonii*), white ratany (*Krameria grayi*), cheeseweed (*Hymenoclea* sp.), sweetbush (*Bebbia juncea*), desert broom (*Baccharis sarothroides*), and canyon ragweed (*Ambrosia ambrosioides*).

3.2.4.2 Environmental Consequences

Proposed Action

Under the Proposed Action, approximately 21.342 acres of vegetation would be removed or crushed within the Project area. Areas where vegetation is removed would leave the ground bare, which could increase chances of invasive species to grow. Given the amount of available vegetation in the Project area and in the surrounding area and the implementation of EPMs/BMPs for vegetation resources identified in Section 2.1.1, no long-term impacts to vegetation would occur.

No Action

Under the No Action Alternative, the Proposed Action would not occur, thus eliminating removal or crushing of vegetation within the Project area.

3.2.5 Water Resources (Including Water Rights)

3.2.5.1 Affected Environment

Water resources are a sensitive resource within the Project area and vicinity. The Project area is located within the Big Sandy River Watershed, which has a volume of 13 million acre-feet of recoverable groundwater (Manera 2000). Topography for the Project area consists primarily of hilly terrain that is dissected and occasionally incised by ephemeral drainages; flat-topped ridges with steeply eroded sides are also present in the southern drill area. The northern drill area is located at elevations from 1,960 feet to 2,280 feet; the southern drill area is at elevations from 1,840 feet to 2,020 feet. The northern and southern drill areas are approximately 0.7 miles and 0.5 miles east of the Big Sandy River, respectively. Bitter Creek, Sycamore Creek, Gray Wash, and various other unnamed ephemeral washes drain west-southwest from the adjacent Aquarius Mountains into the Big Sandy River (Figure 3, Flood Plains and Drainages).

The Project area overlies the Wikieup Groundwater Subbasin contained within the Big Sandy Basin, as designated by the ADWR. The Big Sandy Basin is not located in a general stream-adjudicated area, nor within one of five ADWR Active Management Areas that are subject to regulation pursuant to the Groundwater Code, nor within one of three Irrigation Non-Expansion Areas in the state. Therefore, the Big Sandy Basin falls under the requirement that groundwater use is subject to reasonable use. In addition, the Project area is not located within an area with an identified Grandfathered Water Right (ADWR 2022). Three separate aquifers have been defined for the southern portion of the Big Sandy Basin (Manera 2000 and ADWR 2009). Figure 4 shows a generalized cross-section of the Project area hydrography, including the three aquifers, the depth of drilling, and the aquifer source for the Cofer Hot Spring (*Ha 'Kamwe'*). The three aquifers are identified as follows:

- Upper Aquifer composed of recent stream and floodplain alluvium.
- Middle Aquifer composed of older basin fill.
- Lower Aquifer composed of volcanic rocks of Sycamore Creek.

The Upper Aquifer is isolated from the Middle Aquifer by the Wikieup formation, a lacustrine clay that has a very low permeability rate and varies in thickness from 200 feet to more than 600 feet (Manera 2000). The Wikieup formation clay hosts the lithium mineralization that is the target of the Proposed Action. The depth of drilling of the proposed Project is 360 feet below ground surface, which would not advance below this confining layer into the Middle Aquifer.

The Lower Aquifer reportedly receives groundwater recharge from areas where the volcanic rocks of Sycamore Creek are exposed outside of the Project area (Manera 2000). This area has been experiencing drought conditions. According to data from the Western Regional Climate Center, Wikieup, Arizona typically averages 9.89 inches of rain a year (WRCC 2022). For the period of January 1, 2024, to May 31, 2024, for a Mohave County rain gauge station located at Big Sandy River near Wikieup, the year-to-date total is 4.57 inches.

The local municipal water supply source would be Wikieup. A 12,000-gallon water storage tank on Lower Trout Creek Road would be used, and municipal water would be obtained under a volume-based, direct-purchase agreement with Wikieup.

The aquifer that supplies the Cofer Hot Spring (*Ha'Kamwe'*) is a deeper confined aquifer (Lower Aquifer) that is geologically isolated from the overlying aquifers (Upper and Middle Aquifers) by an aquitard (Manera 2000) (Figure 4). The Lower Aquifer is located approximately 1,100 feet below ground surface.

Whether there is any contribution of water to Cofer Hot Spring (*Ha'Kamwe'*) from the Upper Aquifer (floodplain alluvium) is unclear. In any case, protection of water resources would be provided by promptly plugging and abandoning all core holes especially those that intersect water in accordance with Arizona Administrative Code R12-15-816.

Drilling activities would be located north and east of Cofer Hot Spring (*Ha'Kamwe'*), a hydrologic resource that is culturally significant to the Hualapai Tribe. Cofer Hot Spring (*Ha'Kamwe'*) is located in the southwest quarter of Township 16 North, Range 13 West, Section 25. Cofer Hot Spring (*Ha'Kamwe'*) is fed by the Lower Aquifer, which is confined and hydraulically isolated from the Middle Aquifer by an aquitard consisting of approximately 10 feet of volcanic sediments (Manera 2000). The confined nature of the Lower Aquifer has been documented by exploratory drilling when artesian flowing conditions were encountered once the confining volcanic sediments were breached at approximately 1,060 feet below ground surface by drilling (Manera 2000). This test well was drilled in the northwest quarter of Township 15 North, Range 12 West, Section 7 with a measured artesian flow of 125 gallons per minute. Similar chemical composition and temperature (96°F) of the water from the confined aquifer and water that discharges from Cofer Hot Spring (*Ha'Kamwe'*) was the basis for establishing the spring source (Manera 2000; USGS 2022b).

3.2.5.2 Environmental Consequences

Proposed Action

Water would be used to ensure cuttings removal during the drilling process and for as-needed dust suppression on the existing and proposed access roads during exploratory drilling activities. Water use is anticipated at 1,000 gallons or less per core hole, totaling up to 131,000 gallons

(0.44 acre-feet) of water use for the Phase 3 exploration Project, based on the water demands that were necessary for the earlier Phase 1 and Phase 2 operations. An additional 20,000 gallons would be used for dust suppression, resulting in a total estimated Project water use of 165,000 gallons. As noted in Section 1.6, to address concerns about potential impacts to groundwater at Cofer Hot Spring (*Ha 'Kamwe'*), the use of an existing well near Cofer Hot Spring (*Ha 'Kamwe'*) is no longer proposed. The Applicant would source water from the Wikieup municipal supply, which does not come from the Lower Aquifer, and store it within a temporary, on-site, aboveground water tank. Therefore, effects to water resources would be de minimis because the water would be a volume-based, direct-purchase agreement with Wikieup.

The total depths of exploratory drilling would reach a maximum of 360 feet below ground surface. The aquifer that supplies the spring is located approximately 1,100 feet below ground surface and, as a result, the drilling itself is not anticipated to reach this aquifer (Manera 2000). Data collected during the first two phases of exploratory drilling support this finding, where groundwater was not encountered in any of the drilling conducted for those earlier exploratory efforts. Though not expected, if water is intersected during core hole drilling the hole shall be plugged using cement grout (preferable) or bentonite clay via tremie pipe and abandoned in accordance with Arizona Administrative Code R12-15-816. If artesian water is encountered drilling would immediately cease and the hole abandoned by using cement grout via tremie pipe. Therefore, the drilling activities are anticipated to have no impact to groundwater.

No Action

Under the No Action Alternative, the Proposed Action would not occur and there would be no effect to water resources.

3.2.6 Wildlife (Including Migratory Birds)

3.2.6.1 Affected Environment

A Biological Evaluation was prepared for the Project and is provided as Appendix G. A variety of wildlife, including many bird species, were observed (or heard) within the Project area during the site visit conducted on October 29, 2019. Birds that were observed included cactus wren (*Campylorhynchus brunneicapillus*), Gila woodpecker (*Melanerpes uropygialis*), verdins (*Auriparus flaviceps*), house finches (*Haemorhous mexicanus*), black-tailed gnatcatchers (*Poliophtila melanura*), black-throated sparrows (*Amphispiza bilineata*), and curve-billed thrashers (*Toxostoma curvirostre*). Black-tailed jackrabbits (*Lepus californicus*) were also observed; small rodent burrows and wood rat (*Neotoma* spp.) middens were the primary signs of small mammal activity within the Project limits. Signs of cattle grazing (i.e., scat, broken tree limbs) were observed throughout the Project area. Other wildlife species that are likely to occur in the Project area include birds such as mourning dove (*Zenaida asiatica*), greater roadrunner (*Geococcyx californianus*), and red-tailed hawk (*Buteo jamaicensis*); mammals such as mule deer (*Odocoileus hemionus*), javelina (*Pecari tajacu*), and coyote (*Canis latrans*); and reptiles such as western diamondback rattlesnake (*Crotalus atrox*).

3.2.6.1 Environmental Consequences

Proposed Action

The Proposed Action would result in the loss of 21.342 acres of soil and vegetation, temporarily displacing wildlife in the area. EPMs/BMPs to reduce weeds and promote native regrowth would be implemented, as specified in the Biological Evaluation (Appendix G).

Reclamation of disturbed areas would occur upon completion of the exploration activities. Given the relatively small overall area that would be impacted by ground-disturbing activities and the amount of available foraging habitat in the Project area and surrounding area and the implementation of EPMs/BMPs for wildlife identified in Section 2.1.1, no long-term impacts to wildlife (including migratory birds) are anticipated from the temporary loss of desert scrub vegetation in the Project area.

No Action

Under the No Action Alternative, the Proposed Action would not occur, thus eliminating any potential impacts to wildlife.

3.2.7 Recommended Mitigation and Monitoring

In addition to the committed EPMs/BMPs listed in Section 2.1.1, BLM proposes the following:

- Removal of saguaros (*Carnegiea gigantea*) 12 inches (30 centimeters [cm]) diameter at breast height (dbh) or greater would be avoided. Saguaros that cannot be avoided and meet salvage criteria would be transplanted adjacent to the disturbed area.
- Big Sandy Inc. would protect all survey monuments found within the study area. Survey monuments include, but are not limited to, General Land Office and BLM Cadastral Survey Corners, reference corners, witness points, U.S. Coast and Geodetic Survey benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments.
- Native American tribes overseeing or otherwise coordinating use of *Ha'Kamwe'* (Cofer Hot Spring) will be provided reasonable notice before drilling activities commence and given the anticipated duration of these activities. This will ensure that cultural practices are either not disrupted or will be subject to only limited, temporary disruption.

CHAPTER 4 CUMULATIVE EFFECTS ANALYSIS

This section introduces other actions that overlap geographically and temporally with the proposed project and will be considered in cumulative impacts.

4.1 Introduction

Past, present, and reasonably foreseeable future actions (RFFAs) are analyzed to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and/or Alternatives may have an additive and significant relationship to those effects.

Per the Council on Environmental Quality (“CEQ”) regulations found at 40 CFR 1508.1(g), ‘effects’ and ‘impacts’ are synonymous in this EA. Effects are changes to the human environment from the proposed action or alternatives that could include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected

ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.

The CEQ defines cumulative impacts as follows:

‘...are effects on the environment which results from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.1(g)(3)).

4.2 Past, Present Actions, and Reasonably Foreseeable Future Actions

Past actions considered are those whose impacts to one or more of the affected resources have persisted to present day. Present actions are those occurring at the time of this evaluation and during implementation of the Proposed Action, which is expected to last up to 18 months.

RFFAs constitute those actions that are known or could reasonably be anticipated to occur within the analysis area for each resource, within a time frame appropriate to the expected impacts from the Proposed Action.

Past and present mining exploration activities within the vicinity of the Proposed Action that are included as part of the analysis for cumulative effects include the following projects:

- Bradda Head Lithium, (Zenolith (USA), LLC) with exploration activities located north, northeast, and southeast of Wikieup, Arizona - Lithium-bearing clay exploration for ten drill holes was conducted under a mining notice for 4.4 acres. This exploration was completed and reclaimed in 2022.
- Bradda Head Lithium Basin North Exploration, (Zenolith (USA), LLC) north of Six Mile Crossing and west of Bagdad, Arizona - Drilling is in progress. Seven drill-holes are permitted for total disturbance of 3.8 acres.
- Big Sandy Inc. Phase I and II east of Wikieup, Arizona - Lithium-bearing clay exploration for forty-nine drill-holes were completed and abandoned for total surface disturbance of 5 acres.
- Bell Exploration located north of Wikieup, Arizona - Three drill holes were completed and reclaimed for a total of 1.8 acres disturbance.

Reasonably foreseeable mining exploration activities within the vicinity of the Proposed Action that are included as part of the analysis for cumulative effects include the following projects:

- Kodiak Copper Corporation, Mohave Project south-southwest of Wikieup, Arizona – Copper, molybdenum, and silver exploration activities. Twenty-five drill-holes under a mining notice are planned for up to 4.5 acres of disturbance.
- Sitka Gold Corporation near Burro Creek, approximately 13 miles southeast of the town of Wikieup, Arizona - gold exploration project with fifteen drill-holes planned. The drill-rig will be mobilized to the project by helicopter and placed atop wooden drilling platforms. Decision approved September 2023. Total surface disturbance will be 0.01 acres.
- Bradda Head Lithium Exploration Plan, (Zenolith (USA), LLC) located near Six Mile Crossing west of Bagdad, Arizona - lithium exploration project. The plan has been submitted to the BLM and will be subject to environmental analysis under the NEPA. This project proposes up to four phases of drilling with up to 350 drill holes and a maximum surface disturbance of 150 acres over the four phases.

Other past, present, and RFFA that occur within the area include livestock grazing under authorized permits, dispersed recreation activities such as off-highway vehicle travel, and a proposed plan for gathering wild burros and implementation of population controls (EA# DOI-BLM-AZ-C010-2023-0025-EA).

4.3 Cumulative Impacts Analysis

Based on the actions listed in the table above and the potential resources directly or indirectly affected by the Proposed Action or Alternatives are considered for cumulative effects.

4.3.1 Cumulative Impacts of the Proposed Action

The Proposed Action would result in 21.342 acres of surface disturbance from mineral exploration activities and disturbance from the surface to a maximum depth of 360 feet. The past and present exploration projects include up to 15 acres of disturbance, most of which has previously been reclaimed. RFFAs contribute approximately 154.51 acres of additional disturbance, cumulatively totaling approximately 191 acres of potential surface disturbance in combination with the Proposed Action.

Vegetation in the area could be removed or crushed as a result of the past, present, and RFFAs. Areas where vegetation is removed increases potential for invasive species to grow. Implementation of reclamation activities, Applicant Committed Environmental Protection Measures, and mitigation measures proposed for the various projects would help mitigate these impacts and reduce the potential for invasives to become established. Exploration activities (past, present and RFFA and the current Proposed Action) as well as dispersed recreation and livestock could also result in temporary displacement of wildlife species and disturbance of foraging habitat for various species until reclamation is completed. Noise and human presence along with vegetation removal or crushing would be temporary and not cause long-term effects once drilling and reclamation activities are completed. In combination with other past, present, and RFFAs there would not be long-term effects expected to wildlife species populations or foraging habitat from the 191 acres of cumulative surface disturbances in this area.

The socioeconomic characteristics of this area and the combination of past, present, and RFFAs suggest that the community in the Wikieup CDP could benefit from these mineral exploration projects, such as the proposed action, as it could reduce the potential unemployment numbers for the area as well as provide contributions to the local businesses for the use of services such as lodging, food, and gas during the life of the proposed exploration projects.

Groundwater resources in the area are not anticipated to be affected by the past, present, and RFFAs in the area related to mining and mining exploration as they all incorporate ADWR Standards for drill hole plugging and abandonment to protect groundwater. Additionally, other uses that occur or are expected to occur in relation to dispersed recreation and the proposed plan for gathering wild burros and implementation of population controls in the area would not involve activities that have potential to encounter groundwater. Those past, present, and RFFAs related to livestock grazing are required to obtain authorized range improvements and water rights for their use. Therefore, cumulative impacts to water resources are expected to be negligible.

In combination with other past, present, and RFFAs there would not be significant cumulative impacts expected in the long-term to any of the resources present with the implementation of applicant committed environmental protection measures and mitigation measures after reclamation activities are completed.

4.3.2 Cumulative Impacts of the No Action Alternative

Under the No Action Alternative there would be similar cumulative impacts as those described under the Proposed Action analysis. The acreage of surface disturbance would be reduced to approximately 169.51 acres as the current proposed exploration would not occur.

CHAPTER 5 CONSULTATION, COORDINATION, AND PREPARERS

Table 3 provides the persons, groups, and agencies consulted for this EA, and Table 4 provides the list of preparers.

Table 3. Persons, Groups, and Agencies Consulted

Agency/Group
Arizona Game and Fish Department
Big Sandy Natural Resources Conservation District
Chemehuevi Indian Tribe
Colorado River Indian Tribes
Fort Mojave Indian Tribe
Hopi Tribe
Hualapai Tribe
Navajo Nation
Salt River Pima-Maricopa Indian Community
Yavapai-Apache Nation
Yavapai-Prescott Indian Tribe

Table 4. List Of Preparers

Name	Title
Paul Misiaszek	BLM, KFO Geologist
Joelle Acton	BLM, KFO Wildlife Biologist
Thomas Thompson	BLM, former KFO Archaeologist
Amanda Dodson	BLM, KFO Field Manager
Hebin Lin	BLM, AZ/NM Regional Socioeconomist
Angelica Rose	BLM, Colorado River District Planning and Environmental Coordinator
Anthony Griego	Environmental Resources Management (ERM)
David Abranovic	Environmental Resources Management (ERM)
Ian Tackett	Logan Simpson
Allison Wolfe	Logan Simpson
Marybeth Harte	Logan Simpson
Jonathan Rigg	Dudek, Project Manager/NEPA Planner
Michelle Ogburn	Dudek, NEPA Planner
Eric Schniewind	Dudek, Hydrologist
Candice Magnus	Dudek, NEPA Planner
Hailee McOmber	Dudek, GIS Specialist

APPENDICES

Appendix A – Acronyms and Abbreviations

Appendix B – List of References

Appendix C – Figures

Appendix D – Exploration Plan of Operations (Final)

Appendix E – Public Comment and BLM Response Summary

Appendix F – Arizona Game and Fish Guidelines for Wildlife Compatible Fencing

Appendix G – Biological Evaluation

Appendix H – Socioeconomics and Environmental Justice Scoping Analysis