

# Kirkland High Quality Pozzolan Mining and Reclamation Plan

DRAFT  
ENVIRONMENTAL ASSESSMENT

**DOI-BLM-AZ-P010-2017-0017-EA  
AZA 37212**

U.S. Department of the Interior  
Bureau of Land Management  
Hassayampa Field Office  
21605 North 7<sup>th</sup> Avenue  
Phoenix, Arizona 85027  
623-580-5500

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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**

ACOE	Army Corps of Engineers
ADA	Arizona Department of Agriculture
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AF	acre-feet
AGFD	Arizona Game and Fish Department
AMA	Active Management Area
APE	Area of Potential Effect
APP	Aquifer Protection Permit
A.R.S.	Arizona Revised Statutes
ASM	Arizona State Museum
ASR	Alkali Silica Reactions
ASTM	American Society for Testing and Materials
AZPDES	Arizona Pollutant Discharge Elimination System
BCR	Bird Conservation Region
BLM	Bureau of Land Management
bls	beneath land surface
BMPs	best management practices
CEQ	Council on Environmental Quality
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
CAA	Clean Air Act
CWA	Clean Water Act
DR	decision of record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPG	Environmental Planning Group
ERT	Online Environmental Review Tool

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ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
FONSI	finding of no significant impact
GMU	Game Management Unit
gpd	Gallons per day
HQP	high quality natural pozzolan
HUC	Hydrological Unit Code
ID team	interdisciplinary team
INA	Irrigation Non-expansion Area
IPaC	Information Planning and Conservation
IWMP	Integrated Weed Management Program
KMC, LLC	Kirkland Mining Company
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MRPO	Mining and Reclamation Plan of Operations
MSGP	Multi-Sector General Permit
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OHWM	ordinary high water mark
Proposed Action	Proposed Action Alternative
RFFAs	reasonably foreseeable future actions
RMP	Bradshaw-Harquahala Resource Management Plan
SCM	Supplementary Cementitious Material
SGCN	species of greatest conservation need
SHPO	State Historic Preservation Office

SPCC	Spill Prevention, Control and Countermeasure
SR	State Route
SWPPP	stormwater pollution prevention plan
U.S.	United States
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WUS	Waters of the U.S.

## 1.0 INTRODUCTION/PURPOSE AND NEED

### 1.1 Introduction

Kirkland Mining Company, LLC (KMC, LLC) is proposing to mine a high quality natural pozzolan (HQP) and remove a stockpile of screened HQP fines from a previous mining operation (the Project) on land administered by the Bureau of Land Management (BLM). The Project is within the unpatented Capital One through Capital Twelve placer mining claims, and Capital Association Placer mining claim in Yavapai County near the town of Kirkland, Arizona within the BLM's Bradshaw-Harquahala Planning Area (portions of Sections 28, 32 and 33 of Township 13 North, Range 4 West, Gila and Salt River Baseline and Meridian [Figures 1 through 3]). KMC, LLC submitted a Draft Mining and Reclamation Plan of Operations (Draft MRPO) to the BLM Hassayampa Field Office on June 22, 2017. The Draft MRPO was determined to be complete by the BLM and National Environmental Policy Act (NEPA) review was initiated with a public notice on June 26, 2017. Through planning and coordination with BLM resource specialists, KMC, LLC submitted a revised Draft MRPO to the BLM on July 5, 2018.

The Draft MRPO proposes future mining and related operations on approximately 88 acres within 160 acres of land administered by the BLM (the MRPO Area) and 5 acres of KMC, LLC privately-held land<sup>1</sup> (the Project area, Figures 1 through 3). Operations would be conducted in accordance with BLM regulations published in the Code of Federal Regulations (CFR) at 43 CFR part 3809 (Surface Management) and 43 CFR 3715 (Use and Occupancy Under the Mining Laws), and would be consistent with the BLM's Bradshaw-Harquahala Resource Management Plan (BLM 2010).

The federal lands proposed for utilization have been the subject of years of prior mining and quarrying activity. KMC, LLC owns land adjacent to the MRPO Area, which consists of BLM land and unpatented placer claims. The west side of the Project area can be accessed via an existing maintained road across the KMC, LLC privately-owned lands and BLM lands (Figures 2 and 3). As part of the mining activities, KMC, LLC proposes ancillary activities and facilities associated with access; fueling, servicing, and storage of equipment; and weighing of the HQP for sale to customers on the adjacent lands privately-owned by KMC, LLC. The mining related activities on KMC, LLC's privately-owned lands are non-federal connected actions<sup>2</sup> to the Project on BLM lands. The BLM will evaluate the effects associated with mining related activities on these privately-owned lands as part of the Project.

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<sup>1</sup> Privately held lands are located within a portion of Section 29 of Township 13 North, Range 4 West, Gila and Salt River Baseline and Meridian.

<sup>2</sup> Those actions that are "closely related" and "should be discussed" in the same NEPA document (40 CFR 1508.25 (a)(1)). Actions are connected if they automatically trigger other actions that may require an EIS; cannot or will not proceed unless other actions are taken previously or simultaneously; or if the actions are interdependent parts of a larger action and depend upon the larger action for their justification (40 CFR 1508.25 (a)(1)). Connected actions are limited to actions that are currently proposed (ripe for decision). Actions that are not yet proposed are not connected actions, but may need to be analyzed in cumulative effects analysis if they are reasonably foreseeable.

1 The HQP would be loaded onto trucks in the mine area and trucked to the scales located on KMC,  
2 LLC's adjacent privately-owned lands, where they would be weighed and sent to market. All of the  
3 HQP will be transported from the mine with up to 25-ton transport haul trucks. Trucks will be sent  
4 to processing plants, and finished material will be sent on to the customer. Rail transport may occur  
5 for customers outside a 350-mile radius. Transport of the mined HQP to KMC, LLC's market is a  
6 non-federal connected action to the Project. The BLM will evaluate the effects associated with the  
7 proposed transportation network as part of the analysis of effects from the Project.

8 The HQP from the Project area will be used in specialized industrial mineral applications, most  
9 importantly as an effective natural pozzolanic Supplementary Cementitious Material (SCM) used  
10 in cement, mortars, and concrete to enhance concrete density, strength, durability, and chemical  
11 resistance. Most transportation departments across the country now require up to 25-percent  
12 pozzolan in their infrastructure mix designs to strengthen and protect the concrete from Alkali  
13 Silica Reactions (ASR) and sulfate attack. Other uses for the HQP continue to be the subject of  
14 research and development and include a wide range of applications such as an absorbent filtration  
15 medium, waste remediation material, and highly specialized uses in ceramics, bioplastics, and  
16 geopolymers (materials with amorphous networks that may be used for fire- and heat-resistant  
17 coatings and adhesives, medicinal applications, high-temperature ceramics, new binders for fire-  
18 resistant fiber composites, toxic and radioactive waste encapsulation, and cementing components  
19 to make concrete).

20 This Environmental Assessment (EA) evaluates and analyzes the environmental consequences of  
21 the proposed mining and related operations, including the analysis of direct, indirect, and  
22 cumulative effects of the federal and non-federal connected actions that would result from the  
23 implementation of the Proposed Action and No Action Alternatives.

## 24 **1.2 Decision to be Made**

25 The Authorized Officer is the deciding officer responsible for the evaluation of KMC, LLC's Draft  
26 MRPO. Based on the analysis of impacts presented in this EA, the Authorized Officer must  
27 determine if impacts are significant as defined by the Council on Environmental Quality (CEQ)  
28 (40 CFR 1508.27). If the threshold for significance is not exceeded, the BLM will prepare a finding  
29 of no significant impact (FONSI) to explain why implementation of the Draft MRPO is not a major  
30 federal action that would require an Environmental Impact Statement (EIS). In gauging  
31 significance, the agency must consider both context and intensity, as defined in 40 CFR 1508.27.

32 The Authorized Officer will prepare a *decision record* (DR) to document and explain the reasoning  
33 for the decision. The DR would include a description of the selected alternative; the rationale for  
34 the decision; a description of alternative and monitoring plans; a summary of public involvement  
35 efforts and comments received; and a description of appeals opportunity.

1 Following completion of the BLM’s review of the Draft MRPO, including the analysis under  
2 NEPA and public comment, the BLM may:

- 3 1. Approve the MRPO as submitted (43 CFR 3809.411(d)(1));
- 4 2. Approve the MRPO subject to changes or conditions necessary to meet the performance  
5 standards at 43 CFR 3809.420 and 43 CFR 3715.5, and to prevent unnecessary or undue  
6 degradation (43 CFR 3809.411(d)(2)); or
- 7 3. Withhold approval of the MRPO because the MRPO proposes operations that would  
8 result in unnecessary or undue degradation of public lands.

### 9 **1.3 Purpose and Need**

10 The BLM’s purpose for action is to respond to KMC, LLC’s Draft MRPO and provide opportunity to  
11 KMC, LLC to conduct mining operations and development of associated infrastructure within KMC,  
12 LLC’s unpatented mining claims on BLM-administered lands, pursuant to federal mining laws.

13 The BLM’s need for the action is established by the BLM’s responsibility under the Federal Land  
14 Policy and Management Act of 1976 (FLPMA) and the BLM Surface Management Regulations  
15 at 43 CFR 3809, to respond to the Draft MRPO and take action necessary to meet the performance  
16 standards in 43 CFR 3809 and prevent unnecessary or undue degradation of the subject  
17 BLM-administered lands. In addition, the BLM must determine whether any occupancy of  
18 BLM-administered land proposed in the Draft MRPO is in conformance with the regulations at  
19 43 CFR 3715.

### 20 **1.4 Land Use Plan Conformance**

21 The BLM has developed the Bradshaw-Harquahala Resource Management Plan (RMP) to guide long-  
22 term management of public lands that it administers in the Bradshaw-Harquahala Planning Area. The  
23 Project is in conformance with the Bradshaw-Harquahala RMP. As found in Section 2.3.6.1 (MI-3,  
24 pg. 47) and Map 12 (BLM 2010), the Project area is not within any specially-designated areas where  
25 mining is prohibited and is designated in the RMP as an area that is available for disposal (BLM 2010,  
26 Appendix B). Further, the Project area does not occur within any special management area.

### 27 **1.5 Relationship to Statutes, Regulations, and Other Authorities**

28 Because portions of the proposed mining operations and reclamation activities would be located  
29 on unpatented mining claims held by KMC, LLC and land administered by the BLM, operations  
30 must comply with procedures and standards described in the BLM surface management  
31 regulations for mining on public lands, 43 CFR 3809. Surface management regulations recognize  
32 the statutory right, under the General Mining Law of 1872, of mining claim holders to develop  
33 federal mineral resources and to use federal land for mining purposes. Under these regulations, the  
34 BLM is required to review KMC, LLC’s Draft MRPO to ensure that: 1) adequate provisions are

1 included to minimize, where feasible, adverse impacts to environmental and cultural resources on  
2 public land; 2) measures are included to provide for reclamation, where practicable; and 3) the  
3 proposed operations comply with other applicable federal, state, and local laws and regulations.

4 The proposed activities on BLM-administered land are also subject to review and approval by the  
5 BLM pursuant to the following laws, policies, and planning document:

- 6 • Mining and Minerals Policy Act of 1970, as amended;
- 7 • Federal Land Policy and Management Act of 1976 (FLPMA), as amended; and,
- 8 • BLM's Approved Bradshaw-Harquahala RMP (BLM 2010).

9 Federal regulations require that all mining plans of operation (43 CFR 3809.411) granted under  
10 the FLPMA be analyzed in accordance with NEPA and Council on Environmental Quality (CEQ)  
11 regulations contained in 40 CFR 1500–1508. The BLM Hassayampa Field Office retains  
12 responsibility for compliance with NEPA. Under NEPA requirements, the BLM must also  
13 coordinate with other federal, state, and local agencies with responsibilities that may include some  
14 aspects of the Proposed Actions. As the lead federal agency under NEPA, the BLM initiates  
15 coordination with other agencies, including consultation with the State Historic Preservation  
16 Office (SHPO) under the National Historic Preservation Act (NHPA). Key permitting  
17 requirements that are applicable to the Project are listed in **Table 1-1**.

1

**Table 1-1. Key Project Permitting Requirements**

Permit or Requirement	Authorizing Agency
Mining and Reclamation Plan of Operations authorization under 43 CFR 3809 and 43 CFR 3715	BLM
AZPDES Section 402 Permit for Stormwater Discharge	
- Multi-Sector General Permit (MSGP) for Mineral Mining and Dressing, Sector J	Arizona Department of Environmental Quality (ADEQ)
- Attendant Stormwater Pollution Prevention Plan (SWPPP)	
- Spill Prevention, Control, and Countermeasure Plan (SPCC) (40 CFR Part 112)	Environmental Protection Agency (EPA)
Clean Water Act Section 404 Nationwide Permit 14 (Linear Transportation Projects)	U.S. Army Corps of Engineers
Clean Water Act State 401 Certification (conditionally certified under the Nationwide Permit Program)	ADEQ
Clean Air Act General Air Quality Permit	ADEQ
Notice of Intent to clear land 30 days prior to clearing of native vegetation on privately-owned lands	Arizona Department of Agriculture (ADA)
Notification of Commencement of Operations and Closing of Mines under 30 CFR 56.1000	Mine Safety and Health Administration (MSHA)
Notice of Start-Up for Mine Operations (A.R.S. § 27-303(A))	Arizona State Mine Inspector (ASMI)
Mining/Metallurgical Use Exemption (A.R.S. 11-812.A2)	Yavapai County Development Services
MFG, Modular, Factory Built & Park Model Homes	Yavapai County Development Services
Driveway Permit within a County Right of Way	Yavapai County Public Works
Floodplain Development Permit	Yavapai County Flood Control District
Posting of Traffic and Access Signage	Yavapai County Public Works and Arizona Department of Transportation (ADOT)
National Historic Preservation Act (16 U.S.C. §§ 470 et seq)	BLM and Arizona State Historic Preservation Office

2 The NEPA calls on federal, state, and local governments to cooperate in analyzing project  
3 proposals and requires federal agencies to invite tribal, state, and local governments and other  
4 federal agencies with special expertise and/or jurisdiction to serve as cooperating agencies in the  
5 NEPA process (40 CFR 1508.5). Those with jurisdiction by law will make their own decisions to  
6 approve or deny all or part of the Project. Those with special expertise or information assist in  
7 development of the analysis. The following agencies have agreed to serve as Cooperating Agencies  
8 and to assist the BLM with this EA:

- 9 • Environmental Protection Agency
- 10 • Arizona Department of Environmental Quality
- 11 • Yavapai-Prescott Indian Tribe

## 1 **1.6 Scoping and Issue Identification**

### 2 **1.6.1 Outreach Summary**

3 On June 26, 2017, the BLM published a news release announcing the public scoping period. The  
4 BLM provided letter notification to approximately 143 residents within a 2-mile radius of the  
5 Project (Kirkland and Skull Valley). The notification included a link to the Project website with  
6 additional information available. Also on June 26, 2017, the BLM published the project website  
7 through ePlanning, the BLM's national "NEPA Register." All public notifications included a  
8 hyperlink to the Project homepage, which provided an introduction to the project, links to Project  
9 information such as the Draft MRPO and Frequently Asked Questions.

10 A public open house was held on July 11, 2017 at the Skull Valley Community Center.  
11 Approximately 140 people were in attendance.

12 On July 24, 2017, the BLM published a second news release announcing the extension of the  
13 public scoping period. Articles on the extension were published in The Daily Courier (Prescott)  
14 on July 19, 2017 and August 4, 2017; the Wickenburg Sun on July 19, 2017 and July 27, 2017;  
15 The Yellow Sheet on August 2, 2017; and the Sedona Eye on July 22, 2017. The BLM provided  
16 email or postcard notifications to approximately 1,659 residents in the communities of Skull  
17 Valley, Kirkland, Yarnell, Congress, Peeples Valley, and Prescott. The notifications included a  
18 link to the project website with additional information available, including Frequently Asked  
19 Questions.

20 On August 23, 2017 the BLM published a news release for the final extension of the public scoping  
21 period until September 11, 2017. An article on the second extension of the public scoping period  
22 was published in The Daily Courier (Prescott) on August 31, 2017.

23 Flyers announcing the scoping extension and the Project Timeline Fact Sheet were posted in U.S.  
24 Post Offices in Skull Valley, Kirkland, Yarnell and Congress, and on a community board in  
25 Peeples Valley.

26 Approximately 989 emails or comment letters were received (approximately 1,442 pages,  
27 including literature, reports attached to emails or letters). Most of the emails and comment letters  
28 identified more than one issue, and many issues identified during scoping were duplicative.

29 The BLM also received petitions with 255 signatures or statements (approximately 133 pages).  
30 Petitions were submitted for the following topics:

- 31 1. Request an extension of the scoping period for 120-days;
- 32 2. Request an environmental impact statement;
- 33 3. Petition with various issues and concerns on the proposed mine;

1 4. Petition with a wide range of environmental issues, many non-specific to this project  
2 including statements such as “Save the Earth.”

3 Public comments received were made available on the project website on October 19, 2017.

4 On April 2, 2018, the BLM published a news release to announce the publication of baseline  
5 studies for the Project, including Geochemical Assay Testing, Potentially Jurisdictional Waters of  
6 the U.S., Evaluation of Skull Valley Ranch Wells as a Water Supply, Draft Traffic Statement, and  
7 Supplemental Traffic Analysis, and the revised Draft MRPO. Notification was made to 627  
8 individuals on the project email list. On May 21, 2018, an article was published in the Prescott  
9 Courier which described the publication of the baseline studies and key results. Although not done  
10 during an official comment period, the objective of the independent release of the baseline studies  
11 was to provide the public with key information that the public had sought during public scoping,  
12 but the baseline studies had not been completed at that time.

### 13 **1.6.2 Identification of Issues**

14 Using the comments submitted during the scoping period and input from the BLM interdisciplinary  
15 (ID) team, a list of issues to address in the EA (Key Issues) was developed in accordance with  
16 guidelines set forth in the BLM NEPA Handbook H-1790-1. Key Issues are defined as those used  
17 to develop alternatives to the Proposed Action, identify mitigation and monitoring measures, or  
18 guide the analysis of the environmental effects of the Proposed Action and alternatives. Issues  
19 were considered non-significant, or were not key issues, if they were:

- 20 • Beyond the scope of the proposal,
- 21 • Irrelevant to the decision to be made,
- 22 • Already decided by law, regulation, or policy, or
- 23 • Conjectural in nature or not supported by scientific evidence.

### 24 **1.6.3 Issue Analysis**

25 Based on a review of the comments received during the 78-day public scoping period, the  
26 following issues in **Table 1-2** were identified by the public:

1

**Table 1-2. Issues Identified during Scoping**

<b>Issue</b>	<b>Number of Comments</b>	<b>Issue Question</b>
Land Use	46	What would be the potential project-related impacts to land uses, such as dispersed recreation, sightseeing, and livestock grazing, in the vicinity of the mine?
Air Quality	431	What would be the potential project-related impacts to air quality, from the mine and transportation of mined materials?
Cultural Resources	19	What would be the potential project-related impacts to cultural resources from the mine?
Emergency Response	57	What would be the potential project-related impacts to emergency response services and public safety in the mine and along the transportation network?
Mineral Resources	11	What would be the potential project-related impacts to mineral resources?
Noise	165	What would be the potential project-related impacts to noise in the vicinity of the mine and along the transportation network?
Socioeconomic Resources	320	What would be the potential project-related impacts to social and economic resources (workforce, tax revenues, quality of life) in the vicinity of the mine and along the transportation network?
Soils/Geology	5	What would be the potential project-related impacts to soils/geology in the mine?
Transportation	1,039	What would be the potential project-related impacts to the existing road infrastructure and traffic along the transportation network?
Vegetation	52	What would be the potential project-related impacts to the vegetation communities within and adjacent to the mine?
Visual Resources	64	What would be the potential project-related impacts to the visual character of the mine vicinity?
Water Resources	446	What would be the potential project-related impacts to surface and groundwater within the mine and vicinity?
Wildlife	125	What would be the potential project-related impacts to wildlife, including sensitive species, in the vicinity of the mine?

2

## 1 **2.0 PROPOSED ACTION AND ALTERNATIVES**

2 This chapter describes and compares the alternatives considered for KMC, LLC's Project. NEPA  
3 requires the BLM to consider a No Action Alternative, the Proposed Action Alternative, and other  
4 alternatives that may be identified that meet the Project's purpose and need.

### 5 **2.1 Proposed Action**

6 Under the Proposed Action Alternative (the Proposed Action), Project components include  
7 excavation of the mine pit, portable support facilities for crushing and screening materials,  
8 maintenance of the access road and haul road, and construction of a weighing station and vehicle  
9 maintenance facility on adjacent privately-owned land. These facilities are described in KMC,  
10 LLC's revised Draft MRPO submitted to the BLM in July 2018, and include activities that would  
11 occur on BLM-administered land and the associated activities on privately-owned lands, including  
12 those determined to be connected actions subject to BLM review in accordance with the  
13 requirements of NEPA.

#### 14 **2.1.1 Mine Production Activities**

15 The Project area is approximately 88 acres (**Figure 4**) on BLM-administered lands. Initial mine  
16 activities would begin with removal of the existing stockpile and excavation of HQP in the west  
17 central portions of the Project area (**Figure 5**). Trucks will be loaded with product onsite. The  
18 removal operation would consist of the following activities:

- 19 1. Removal, wood-chipping, and piling of vegetation;
- 20 2. Stripping and placement of growth medium adjacent to the stockpile,
- 21 3. Crushing and screening with a portable crusher screen stacker to generally two-inch  
22 minus material; and,
- 23 4. Loading HQP into trucks for weighing and transport to the customer.

24 Mining will occur in 15-foot benches as shown in **Figure 6**.

25 Mine excavation is anticipated to begin in the west-central part of the Project area and progress  
26 southward and eastward including removal of the fines stockpile. Overburden will be placed as  
27 shown in **Figure 5** and moved to suitable locations in the mine disturbance area as mining and  
28 reclamation progresses.

29 At full production expected by year five of operations, the expected output from the Kirkland Mine  
30 is approximately 500,000 tons per year with a range of between 1,000 to 2,000 tons per day based  
31 upon economic demand. HQP would be mined as depicted on **Figure 4**. KMC, LLC anticipates  
32 mining the HQP in 15-foot benches in an open pit configuration, reflecting local geological  
33 conditions or rock orientation and stability. Based upon the local conditions and customer preference,

1 different portions of the developing pit would be opened through time. As portions of the pit are  
2 exhausted, mining would continue in other areas of the pit. Higher areas may be lowered in a 15-  
3 foot “pancake” method until these areas match the surrounding areas. Ultimately, the resource would  
4 be excavated to an elevation of approximately 3,970 feet above mean sea level (amsl).

5 KMC, LLC would maintain wall, bank, and slope stability on all active faces and those where  
6 persons work or travel. Loose or unconsolidated material would be sloped to the angle of repose  
7 or stripped back for at least 10 feet from the top of the pit wall.

8 As mining activities expand into undisturbed areas, the following activities would occur:

- 9 1. Removal of the vegetation;
- 10 2. Stripping and salvage of the topsoil;
- 11 3. Stripping and placement of overburden into staging areas or final reclamation areas in or  
12 around the pit (**Figure 4**);
- 13 4. Removal of the HQP using dozers with rippers, excavators, and loaders;
- 14 5. Loading and hauling to the portable crusher-screen-stacker located in the pit;
- 15 6. Primary crushing, screening, and stockpiling; and,
- 16 7. Transport crushed raw HQP offsite via covered transport haul trucks.

17 The majority of pit excavation is anticipated to be suitable for excavation using a single-shank or  
18 dual-shank ripper, although harder areas would require the use of a hydraulic hammer attached to  
19 an excavator. Blasting is not anticipated for any excavation activities. The HQP deposits are  
20 anticipated to break down into appropriate sizing on their own while being handled; however, one  
21 or more power screens and crusher-screen-stackers would also be used to process the HQP down  
22 to a 2-inch minus size. Harder boulders would be broken down using a hydraulic hammer if they  
23 are initially too large to fit in the crusher-screen-stacker.

24 After HQP has been quarried and crushed to two-inch minus onsite using portable crusher-screen-  
25 stackers, it would be placed into an onsite stockpile and either sold directly to customers or hauled  
26 offsite for additional processing depending on demand. In either case, the crushed HQP would be  
27 loaded using a front-end loader into covered transport haul trucks that would be suitable for use  
28 on public streets. KMC, LLC anticipates that covered transport haul trucks that would be hauling  
29 materials from the mine would have a trailer wheelbase of approximately 40 feet and would be  
30 able to carry up to 25 tons per load. For the foreseeable future, mining operations would occur  
31 during daylight hours within a 10-hour daily shift for four to six days per week, year-round.  
32 Primary crushing and screening operations would occur during daylight hours periodically  
33 throughout the year. Loading and hauling operations could occur 24 hours per day, 4 to 7 days per  
34 week. The overall life of the mine is anticipated to be 40 years.

35 No chemicals would be used in the mining process. Water would be routinely sprayed from a water  
36 tanker onto mine roadways and a combination of misters, spray bars, and flanges would be used

1 as needed in the crushing operations for dust suppression. The Proposed Action would require  
2 coverage under a General Permit with the Air Quality Division of ADEQ and all permit terms and  
3 conditions would be followed. Operations would comply with all emission limits and ambient air  
4 quality standards, and monitoring would be conducted to ensure U.S. National Ambient Air  
5 Quality Standards (NAAQS) are being met.

6 Emissions of fugitive dust from disturbed surfaces would be minimized by utilizing appropriate  
7 control measures including surface application of water to roadways and process areas, speed  
8 limits for operating equipment, and using covered trucks. Concurrent reclamation would be  
9 completed where possible to control dust.

10 All equipment would be fitted with standard emission controls to reduce emission to below the  
11 approved threshold levels.

### 12 **2.1.2 Mining Equipment**

13 The major pieces of mining equipment required to fulfill the production schedule are summarized in  
14 **Table 2-1**. The specific manufacturer or vendor selection and model numbers may vary and fleet  
15 size may vary slightly for future mine optimization, but the range of types of equipment and  
16 equipment sizes and capacities would be similar to the equipment shown in the table.

1

**Table 2-1. Anticipated Mining Equipment**

Equipment	Phase	Fleet Size
<b>Bulldozers</b>		
Caterpillar D8, with GP blade and single-shank or dual shank ripper	Initial	1
Caterpillar D7-D10 with rippers	Full Production	4
<b>Grader</b>		
Caterpillar 120 to 160 with scarifiers	Both	1
<b>Excavator</b>		
John Deere 850 or Caterpillar 320 to 5110 with hydraulic hammer	Both	1
<b>Mine Haul Truck</b>		
Caterpillar 740 Articulated Dump Truck	Initial	1
Caterpillar 725 to 740 Articulated Dump Truck	Full Production	2
<b>Front-End Loader</b>		
Caterpillar 960 (4.0 cubic yard bucket)	Initial	2
Caterpillar 950 to 960	Full Production	4
<b>Water Truck</b>		
Caterpillar 613 Water Wagon (5,000 gallon)	Both	1
<b>Service Truck</b>		
Ford F350 with compressor, tool cribs, and welding machine	Both	1
<b>Crusher</b>		
XH320 Trackpactor	Initial	1
XH320 Trackpactor	Full Production	2
<b>Power Screen</b>		
Chieftain 1700 Tracked Screening Plant	Initial	1
Chieftain 1700 Tracked Screening Plant	Full Production	2
<b>Stacker</b>		
Powerscreen M95 Radial Stacking Conveyor	Initial	1
Powerscreen M95 Radial Stacking Conveyor	Full Production	2

2 **2.1.3 Water Management**

3 Stormwater would be retained onsite in one or more retention basins (see example of retention  
4 basin locations at initial mine operation phase in **Figure 5**). These retention basins are anticipated  
5 to have up to 10 feet of working depth, 3:1 side slopes, and a total area of 3.54 acres at the outer  
6 edge of the basins. Using this design, these basins provide storage for 1,172,700 cubic feet of  
7 water. The mine operator intends to use rock mulch, drainage swales, and berms as necessary to  
8 limit erosion and transport of fine materials while allowing natural flow of stormwater into these  
9 retention basins.

1 All stormwater (or water used for dust suppression) within the footprint of the mine (contact water)  
2 would be contained within the mine area. It is anticipated that stormwater collected within the  
3 retention basin would percolate naturally into the ground through existing fissures in the HQP  
4 deposit (Burch Consulting Services, LLC 2018). Stormwater retention areas would vary in location  
5 and size. The proposed mining activities are designed using the guidelines set in the 2015 Drainage  
6 Design Manual (Drainage Manual) for Yavapai County (Yavapai County Flood Control  
7 District 2015). The Drainage Manual requires stormwater to be dissipated within a 36-hour period.  
8 Infiltration rates within the basin would be tested using either the Double Ring Infiltrometer test  
9 (ASTM D 3385-03) or the Environmental Protection Agency (EPA) Falling Head Percolation Test  
10 Procedure (EPA 1980). Both procedures are described in the Drainage Manual.

11 All stormwater that flows outside the footprint of the mine (non-contact water) would be diverted  
12 away from the mine to the extent possible. Drainage control would be achieved through a  
13 combination of contouring slopes to promote sheet flow and constructing stormwater diversion  
14 channels. Diversion channels would be designed to convey the 100-year, 24-hour storm event. It  
15 is important to note that the mine boundaries have been adjusted to maintain a minimum 50-foot  
16 separation between disturbed area and the potential waters of the U.S.

17 Except for dust control, the proposed operation is a dry process and does not consume water. Water  
18 would be needed at the mine for dust control on access and haul roads and for domestic and  
19 maintenance purposes. KMC, LLC currently estimates a maximum water demand of 35,000  
20 gallons per day (gpd) and an average demand of 28,800 gpd. Assuming mining operations would  
21 average 5 days per week, this equals 23 to 28 acre-feet (AF) of water use per year over the projected  
22 40-year mine life (Plateau 2018). Water needs for dust suppression would be trucked to the Project  
23 area from one or two existing irrigation wells on one or two ranches in Skull Valley. One ranch is  
24 in Section 4 and the other ranch is in Section 9 of Township 13 North, Range 4 West. Both ranches  
25 are privately-owned, and KMC, LLC would obtain water from their wells through acquisition of  
26 real property or contractual arrangement (Plateau 2018). The water would be hauled between 3 and  
27 5 miles to the Project area. Groundwater would be transported from the ranches to the mine site  
28 and used entirely within the Skull Valley subbasin of the Bill Williams River basin.

29 On the Section 9 Ranch, well pumpage for irrigation has typically totaled from 56 to 70 AF per year.  
30 Assuming a constant rate of pumping during the 6-month irrigation season, this is equivalent to 70  
31 to 88 gpm (Plateau 2018). Similarly, on the Section 4 Ranch, from 125 to 140 AF per year has  
32 typically been pumped for irrigation, which is equivalent to 156 to 176 gpm (Plateau 2018). Plateau  
33 (2018) estimates that the current volume of recoverable groundwater in the recent alluvium near the  
34 Section 9 Ranch totals from 1,800 to 4,500 AF. Near the Section 4 Ranch, this volume totals from  
35 900 to 2,300 AF. By comparison, the annual water demand of the mine is not expected to exceed 28  
36 AF per year. This shows that groundwater currently in storage in the area of the planned water supply

1 is more than sufficient to meet the long-term needs of the mine and allow for existing irrigation and  
2 residential needs.

3 There would be no chemical or other processing of fines on BLM lands or adjacent KMC, LLC  
4 land. Because KMC, LLC would use clean groundwater and processes environmentally benign  
5 HQP in its operations, it would not release pollutants into the aquifer or vadose zone.

6 The Proposed Action would require a Multi-Sector General Permit (MSGP) for mining Sector J  
7 for the Arizona Pollutant Discharge Elimination System (AZPDES) program with an attendant  
8 stormwater pollution prevention plan (SWPPP) as required by ADEQ. A SWPPP would be  
9 developed and implemented for the Project. Best management practices (BMPs) would be  
10 implemented to manage stockpile areas and other disturbed surfaces. Sediment control structures  
11 could include, but not be limited to fabric and/or hay bale filter fences, siltation or filter berms, and  
12 down gradient drainage channels to control storm water. Proposed activities are not located within  
13 active drainage channels or floodplains. All mining activities are a minimum of 50 feet from any  
14 potential water of the U.S. (**Figure 4**). Stormwater controls would include rock mulching and  
15 construction of drainage swales and berms to limit erosion and transport of fine materials while  
16 allowing natural flow of stormwater.

17 Groundwater quality in Arizona is regulated under ADEQ's Aquifer Protection Permit (APP)  
18 program while groundwater quantity is regulated through the ADWR. ADEQ specifies 24 types  
19 of facilities under A.R.S. § 49-250 as exempt from requiring an APP. The facilities, overburden  
20 stockpiles and stormwater retention basins, are exempted from permitting under the ADEQ's APP  
21 program. The excavated mining overburden would remain onsite within the footprint of the mine  
22 and would not be subject to any chemical or leaching agent, and the overburden would be used in  
23 the reclamation process. Surface impoundments within the mine area would be used solely to  
24 contain stormwater runoff.

25 The Proposed Action is not within an Arizona Department of Water Resources (ADWR)  
26 designated Active Management Area (AMA) or Irrigation Non-expansion Area (INA). Because  
27 clean groundwater would be used and environmentally benign HQP would be processed, no  
28 pollutants would be released into the aquifer or vadose zone.

#### 29 **2.1.4 Roads and Utilities**

30 Temporary roads would be constructed and maintained within the overall mine disturbance area  
31 as needed to perform mining activities. These roads would be designed and constructed to meet  
32 the BLM road standards described in Chapter 3 of BLM Manual 9113-Roads (BLM 1985) but  
33 would not be open to the public. These roads are anticipated to be classified as "Resource" or  
34 "Local" roads, with a maximum grade of 14 percent. With the exception of the main entrance road  
35 which would be 50 feet in width (**Figure 4**), temporary road widths would vary by classification

1 and the expected average daily traffic, but would generally be between 14 and 25 feet in width,  
2 not including berms.

3 Geometric design and construction would follow the guidelines set by U.S. Bureau of Mines  
4 Information Circular 8758 “The Design of Surface Mine Haulage Roads – A Manual” (Kaufman  
5 and Ault 1977). Roads would be bermed as necessary to meet U.S. Mine Safety and Health  
6 Administration (MSHA) specifications.

7 The main access road (**Figure 4**) is privately-owned by KMC, LLC (Book 2058, Page 494 Y.C.R.)  
8 and would be paved from Iron Springs Road to the planned gate on BLM lands west of the pit.  
9 The existing access road is between 22 and 25 feet in width and the mine operator requires a  
10 25-foot-wide access road for access to the mine and transport of the HQP; therefore, minor  
11 improvement and widening may be required in a few areas. An at grade crossing of a tributary to  
12 Copper Basin Wash would be improved and reinforced with concrete to allow for safe crossing  
13 during rain events and prevent erosion of the drainage.

14 The BLM-administered areas of the Project would not require any utility connections. The adjacent  
15 private parcel would require standard operational power for lights and other office uses. Sewer  
16 service would be provided by portable toilets on BLM lands and with existing septic on privately-  
17 owned lands, and potable water needs would be met using bottled water. Water needs for dust  
18 suppression would be trucked to the Project from two existing irrigation wells on two ranches in  
19 Skull Valley, as described in **Section 2.1.3**. The crusher-screen-stacker unit is self-contained with  
20 its own power-generation motor. This and other mine equipment used for the operation on BLM  
21 lands would require diesel fuel only and no electrical power lines are required on BLM lands.

### 22 **2.1.5 Support Facilities**

23 KMC, LLC plans to operate the mine on BLM lands using temporary structures and facilities,  
24 which would be removed when mining operations are completed. These include one or more  
25 portable crusher-screen-stackers located in the mine footprint, a staging area within the mine  
26 footprint for stockpiles and other material handling, and a support facilities area on privately-  
27 owned land adjacent to the BLM portions of the Project.

28 Other facilities on BLM land would include the following:

- 29 • One portable toilet;
- 30 • A concrete pad, approximately 20 by 40 feet, to fuel equipment;
- 31 • One double-walled diesel fuel tank (approximately 10,000 gallons);
- 32 • One water storage tank (maximum 18,000 gallons), a second water storage tank is also  
33 proposed to be located on privately-owned lands;
- 34 • Miscellaneous equipment and materials including waste receptacles; and
- 35 • Fencing and peripheral gates.

1 Mine support facilities would be located on privately-owned lands adjacent to the west of the mine.  
2 These facilities would be constructed in accordance with the Yavapai County mining /  
3 metallurgical use exemption requirements. The precise location and size of the facilities would  
4 vary as the production capacity of the mine increases, but the types of facilities would remain very  
5 similar. The anticipated facilities on privately-owned lands would include, but are not limited to:

- 6 • A designated parking area to accommodate mine and support staff vehicles, idle mine  
7 equipment, and trucks awaiting loads;
- 8 • Modular office and lunch buildings on either concrete foundations or blocks  
9 approximately, but not limited to, 25 by 60 feet;
- 10 • Portable toilets (one during initial production phase and up to several at full production);
- 11 • Storage buildings of variable sizes (approximately 24 by 24 feet and up to 40 by 80 feet),  
12 one of which would be used to service equipment as needed and would include a minimum  
13 40- by 40-foot concrete pad;
- 14 • A water storage tank (maximum 18,000 gallons), a second water storage tank is also  
15 proposed to be located on BLM lands;
- 16 • A waste oil storage container (maximum 2,500 gallons); and
- 17 • Miscellaneous equipment and materials including portable waste receptacles, and other  
18 facilities.

19 Fueling and equipment servicing would be performed on the concrete service pad. The pad would  
20 be an un-reinforced (for removal at closure), 12- to 14-inch thick pad.

21 The fuel tank would be an aboveground, fire-resistant (meeting requirements of the Uniform Fire  
22 Code), double-walled storage tank with built-in secondary containment and interstitial monitoring.  
23 Double wall design can be monitored for leak detection. The tank would be secured and locked  
24 during times when KMC, LLC personnel are not onsite. It would be placarded to identify the nature  
25 of fuel, emergency procedures, and emergency phone numbers. Fuel would be off-road diesel. The  
26 tank would be placed immediately adjacent to the concrete pad. Berms and protective barriers  
27 would be placed around the fuel tank to prevent accidental or malicious damage by vehicles or  
28 equipment.

### 29 **2.1.6 Overburden Management**

30 The lithology of the entire claim area has been proven through geotechnical mapping, sampling and  
31 testing to be the same material. The basalt cap can be as thick as 30 feet in the northern part of the  
32 claims (Ninyo and Moore 2015). Portions of other areas have a basalt cap of a few inches to six feet  
33 (Sandwell-Weiss 2016), which would be removed as overburden with a ripper and a loader.  
34 Overburden would be stockpiled no more than 50 feet high in various locations along the pit  
35 boundary as replacement for grading and re-contouring during reclamation efforts.

1 Management of overburden includes estimating the amount to be excavated, evaluating the  
2 potential reclamation uses for the material, and designing storage areas for the material.

3 The removal of overburden would be performed periodically throughout the life of the mine and  
4 used for reclamation purposes, potentially every one to three years.

5 The overburden would be handled by a rubber tire front-end loader and transported by truck to  
6 stockpiles or reclamation areas within the footprint along the outer edge of the proposed mine.

### 7 **2.1.7 Hazardous and Solid Waste Management**

8 No hazardous waste or deleterious substances would be produced at the Kirkland mine. During  
9 the life of the mine, the BLM could request a chemical analysis be performed in order to  
10 demonstrate that the material is environmentally benign. Any materials such as grease, unused  
11 chemicals, paint-related materials, spent batteries, and reagents that may be classified as hazardous  
12 waste would be shipped offsite for disposal as necessary. If disposal of these items is required,  
13 KMC, LLC plans to dispose of these materials using the most permanent, legal, and practicable  
14 disposal method available.

15 In general, non-hazardous waste would be managed in dumpsters or other appropriate containers.  
16 All containers would be covered or weighted to prevent blowing trash. Trash from the office area  
17 would be bagged. A waste disposal company would be contracted as necessary to manage wastes  
18 other than debris or construction wastes.

19 Grease associated with the mining, crushing, screening, and other operational equipment would be  
20 placed into drums or other bulk containers suitable for recycling. If the grease is not suitable for  
21 recycling, the contained waste would be sent offsite for disposal. While onsite, the containers  
22 would be managed in an area that would provide secondary containment.

23 Onsite fueling of the off-road equipment (e.g., loader, grader, and water truck) and portable  
24 crushing plant would be done from a portable diesel tank. All other vehicles would be fueled either  
25 offsite or at the fueling station located onsite. In the event that regulated material, such as diesel,  
26 is spilled, measures would be taken to control the spill and the appropriate agencies, including  
27 BLM, would be notified. Mine employees and contractors would maintain spill kits onsite for use  
28 in case of a spill.

29 Used oil from maintenance activities would be managed in bulk containers with secondary  
30 containment to ensure there is no release to the environment. Only oil acceptable for recycling  
31 would be placed in the bulk containers. Used oil not acceptable for recycling would be placed in a  
32 contained used oil tank for proper disposal.

33 Waste tires would be transported to an active offsite waste tire facility per A.R.S. 44-1304(D), and  
34 onsite waste tire storage would include fewer than 100 tires at all times.

1 Portable restroom facilities would be maintained by outside contractors, and accumulated human  
2 waste would periodically be collected and transported to an approved disposal site. No waste  
3 would be buried onsite.

4 KMC, LLC would develop a Spill Prevention, Control and Countermeasure (SPCC) Plan that  
5 describes regulated oil-based products and spill protection measures for the Project as part of the  
6 Final MRPO. Only minor servicing of mobile equipment (greasing and periodic fueling) would be  
7 conducted at the mine site on BLM lands, limiting the potential for used oil or diesel fuel spills.  
8 Oil changes and other maintenance would occur on adjacent private land. KMC, LLC would have  
9 a fuel tank onsite that would hold 10,000 gallons of diesel fuel. This SPCC Plan would be prepared  
10 in accordance with the 40 CFR Part 112, Oil Pollution Prevention, and is required because the  
11 KMC, LLC facility would store greater than 1,320 gallons of oil and petroleum products above  
12 ground. The SPCC would describe the procedures followed by KMC, LLC to prevent, control, and  
13 mitigate releases of oil and petroleum products to the environment. Spill response kits would be  
14 maintained to ensure that pollutants are prevented from entering into washes. Any pollutants  
15 generated by mining or transportation activities would be properly disposed in accordance with  
16 applicable regulations.

#### 17 **2.1.8 Fire Prevention**

18 The Project is located within the Phoenix District Fire Management Zone, administered by the  
19 BLM Phoenix District Office. The fire program within this zone is responsible for the protection  
20 of nearly 2.4 million acres of BLM public lands (BLM 2010). BLM has identified a variety of fuel  
21 types within this region, including the Sonoran Desert ecosystem, grass lands, desert oak/chaparral  
22 with intermixed manzanita, desert shrub and ponderosa pine. Fire season usually begins in  
23 mid-March and ends in early September. The Phoenix District Fire Management Zone is a full  
24 participant in the Central West Arizona Interagency Fire Management Zone.

25 KMC, LLC would comply with all applicable state and federal fire laws and regulations and would  
26 maintain all reasonable measures to prevent and suppress fires at the Project. KMC, LLC would  
27 identify and maintain policies that apply best management practices for fire prevention, which  
28 includes no parking of vehicles on top of vegetation, smoking permitted in designated areas only,  
29 proper removal of vegetation, and proper storage and containment of fuels and other ignitable  
30 materials.

31 Handheld and large equipment (e.g. saws, tractors) used for vegetation clearing would be equipped  
32 with spark arresters and maintained in proper working condition. Planning and prevention of fires  
33 is also managed through the appropriate handling and storage of fuels, inspections and  
34 recordkeeping, spill prevention and response procedures, proper use of safety equipment, resource  
35 management training, and fire prevention training.

1 KMC, LLC would have two 18,000-gallon water storage tanks onsite for dust suppression that  
2 would also be available to assist in firefighting operations. KMC, LLC would ensure that all mobile  
3 equipment be equipped with fire extinguishers, hand tools, and first aid kits. During extended  
4 periods of time of non-operation or seasonal closure, all equipment and supplies would be removed  
5 from the BLM lands within the Project Area.

6 The National Fire Protection Association (NFPA) established NFPA 10, which is the Standard for  
7 Portable Fire Extinguishers. NFPA 10 mandates the type, size, placement, and minimum number  
8 of extinguishers required for each building and vehicle. Fire extinguishers would be installed in  
9 accordance with this standard during operation.

10 Initial fire response will conform to current fire training recommendations and safety regulations.

11 The Prescott Dispatch Center is the interagency focal point for the mobilization of resources.

12 KMC, LLC would coordinate with local law enforcement and fire departments to provide 24-hour  
13 access as needed for emergency response.

## 14 **2.1.9 Transportation**

### 15 ***2.1.9.1 Onsite Mine Transportation***

16 Mine related onsite traffic would consist of 40-ton mine haul trucks, up to 25-ton transport haul  
17 trucks, water trucks, and employee traffic. Temporary onsite access routes within the mine  
18 footprint would be planned for minimum width needed (14 to 25 feet in width) for safe operations  
19 and would follow natural contours where practicable to minimize cut and fill. The mine haul road  
20 within the mine footprint would be approximately 50 feet wide. A grader would perform  
21 maintenance on the access roads to the Project area as needed. Roads would be maintained for safe  
22 passage. Maintenance would include blading and grading ruts, bumps, and washouts created by  
23 seasonal storms. No new access routes into the Project area are anticipated.

24 Access to the Project area would be controlled by an automatic gate, in accordance with 43 CFR  
25 3715 (Use and Occupancy Under Mining Laws). The gate would be locked after working hours.  
26 Fencing and signage would be used to limit access to operation areas from back roads and trails in  
27 compliance with MSHA regulations. Traffic and safety signs would also be affixed to the gate  
28 consistent with requirements of the BLM under 43 CFR 3715 (Use and Occupancy Under Mining  
29 Laws) and Mine Safety and Health Administration (MSHA). Vehicle speed would be restricted  
30 for safety and dust control. Speed limits and maximum vehicle weight would be posted at the  
31 entrance/exit.

32 HQP would be sold onsite and loaded directly into customer's trucks. Loaders would be used onsite  
33 to load the transport haul trucks from the existing stockpiles. Once the crushing, screening, and  
34 loading has occurred onsite, contractor or customer trucks would be used to haul the HQP offsite to

1 secondary processing (milling) plants. KMC, LLC, contractors, and customers would comply with  
2 all legal load limits for the State of Arizona by requiring entry and departure weights with a scale  
3 system.

#### 4 **2.1.9.2 Offsite Transportation**

5 Mine related offsite traffic would primarily consist of up to 25-ton transport haul trucks for the  
6 transport of HQP product and employee traffic. KMC, LLC would only serve customers that are  
7 equipped with Class 8 commercial trucks, having a gross weight of 33,000 pounds or more,  
8 registered with the state of Arizona and licensed with a federal Class A or B Commercial Driver  
9 License (CDL). KMC, LLC's vendor compliance program will require evidence of registration and  
10 licensing as well as certificates naming KMC, LLC as additionally insured.

11 Lee Engineering, LLC, a licensed traffic engineer, completed a Traffic Impact Statement (TIS)  
12 regarding the increased truck traffic, driveway design, and safe ingress and egress to and from the  
13 Project area (Lee Engineering 2018). The Public Works Department of Yavapai County has  
14 reviewed and concurred with the findings of the Traffic Impact Statement prepared by Lee  
15 Engineering, LLC (Cherry 2018).

16 The total daily vehicle estimate of inbound and outbound traffic during full production is 210  
17 vehicles, 160 transport haul trucks and 50 vehicles for employee traffic including water trucks for  
18 dust suppression (Lee Engineering 2018).

19 Appropriate transport haul truck crossing signage would be installed 475 feet prior to the Project  
20 driveway, and the mine access road would be paved from the mine area to the ingress-egress point  
21 at Iron Springs Road to safely accommodate truck traffic entering and exiting the Project. KMC,  
22 LLC will continue to coordinate with Yavapai County and the Arizona Department of  
23 Transportation as needed to ensure appropriate and required measures are taken for traffic safety.

24 The Haul Routes that would be used in support of the Proposed Action are as follows and depicted  
25 in **Figure 8**:

- 26 1. **Haul Route 1** – Iron Springs Road from the mine entrance to SR 89 via Kirkland Valley  
27 Road, and to U.S. Route 93 via SR 89.
- 28 2. **Haul Route 2** – Iron Springs Road from the mine entrance to the Hillside area via Yava  
29 Road.
- 30 3. **Haul Route 3** – Iron Springs Road from the mine entrance to SR 89 north of Prescott via  
31 Williamson Valley Road and Pioneer Parkway.

32 Two of the three haul routes identified funnel traffic to a larger arterial network: Haul Route 1  
33 conveys traffic south to U.S. Route 93, identified as a principal arterial road, while Haul Route 3  
34 conveys traffic north to Williamson Valley Road and Pioneer Parkway, roads classified as minor

1 arterial roads. Haul Route 2 terminates in Hillside based on the assumption that the product  
2 transported to Hillside would be loaded on to the railway for further transport to market.

### 3 **2.1.10 Reclamation**

4 Consistent with the H-3809-1 Surface Management Handbook (BLM 2012) and the H-3042-1  
5 Solid Minerals Reclamation Handbook (BLM 1992), the Reclamation Plan would be updated or  
6 appended to reflect other agency permits or authorizations, final designs, or certain stipulations, as  
7 more specific and detailed engineering designs or information become available.

8 According to 43 CFR part 3809, reclamation means taking measures (following disturbance of  
9 public lands caused by mining operations) to meet applicable performance standards and achieve  
10 closure conditions required by BLM. Components of reclamation include, where applicable:

- 11 • Regrading and reshaping the land where needed to a 3H:1V slope;
- 12 • Placing growth medium and establishing self-sustaining vegetation;
- 13 • Removing or stabilizing buildings, structures, or other support facilities;
- 14 • Removing all equipment and other infrastructure, including fences;
- 15 • Providing for post-mining monitoring, maintenance, or treatment.

16 Reclamation and closure of the mine area would include:

- 17 • Recontouring the slope angles to a minimum of 3H:1V to ensure stable slopes that would  
18 reduce erosion,
- 19 • Regrading and revegetating the reclaimed surfaces, and
- 20 • Maintaining and constructing drains and retention ponds as practicable for stormwater  
21 management.

22 To facilitate long-term stability, revegetation, and erosion protection, steep slopes would be  
23 regraded where possible to achieve the desired slope that would provide for a structurally and  
24 erosionally stable surface. Recontouring would enhance natural drainage in selected areas, as  
25 needed. Supplemental erosion protection may be applied where necessary. The footprints of the  
26 regraded facilities are depicted in **Figures 4 and 7**. Existing slopes subject to excessive erosion or  
27 with insufficient vegetative cover would be regraded to a minimum 3H:1V, covered with  
28 overburden material, and planted with a BLM-approved seed mix. Where side slopes have been  
29 confirmed to be stable and no cover is required, no regrading or recontouring is planned.

30 A reclamation cost estimate would be submitted to the BLM upon approval of the Final MRPO in  
31 accordance with 43 CFR 3809.401(d).

1 **2.1.10.1 Removal of Equipment and Facilities**

2 Generally, the strategy for reclamation and closure of equipment and facilities would include:

- 3 • Removing temporary instrumentation and equipment, utilities, and unneeded access roads;
- 4 and
- 5 • Reclaiming disturbed surfaces by ripping and/or covering and reseeding.

6 **2.1.10.2 Road Closure**

7 The main entrance road would remain in use during the post-closure period to provide access for  
8 post closure land uses.

9 Closure of roads that are not needed for post-closure access would involve demolishing fill while  
10 maintaining satisfactory drainage. The abandoned road surfaces would be scarified by ripping, if  
11 necessary. Where needed, rock or earthen berms and water bars would be placed to prevent  
12 vehicular access and reduce erosion. The road corridors would be reclaimed by treatment with a  
13 mulch/seed mix to promote revegetation.

14 **2.1.10.3 Revegetation**

15 Generally, initial seedbed preparation on flatter surfaces would include ripping or discing the  
16 surface along contours. Conventional seeding techniques (including drill and broadcast) would be  
17 used as appropriate depending on soil/cover characteristics and landform. Hydroseed, hydromulch,  
18 and tackifier may be used on slopes that are not suitable for conventional seeding. Mulch may be  
19 applied to minimize erosion and promote moisture retention where appropriate.

20 If needed, soil on the Project area would be tested to determine if amendments need to be applied  
21 to adjust the soil balance to optimize the potential for successful revegetation.

22 Revegetation would require site-appropriate, BLM-approved native seed mixtures. A diverse  
23 native plant community would be targeted through the definition of seed mixtures and application  
24 rates. The seed mix list would be reviewed before revegetation activities are initiated to confirm  
25 the availability of the seeds, and the list would be adjusted as needed. The seed mix and mulch  
26 materials would be certified by the revegetation contractor to be relatively weed free. Revegetation  
27 areas would be seeded after cover placement and at the appropriate time of the year for optimum  
28 seed germination and plant growth.

29 The seed mix would be designed to meet the following criteria:

- 30 • Native non-invasive species that have a high compatibility with existing surroundings;
- 31 • Species and plant type diversity to promote a sustainable vegetative cover throughout the  
32 dramatic seasonal changes and other climate related variances; and

- 1 • Species and plant type diversity to promote a variety of germination periods and seasonal
- 2 growth.

3 **2.1.11 Environmental Protection Measures**

4 KMC, LLC would comply with BLM’s terms and conditions related to the specific mining and  
5 reclamation activities to prevent unnecessary or undue degradation of public lands by complying  
6 with the performance standards found in 43 CFR § 3809.415 and 3809.420, as applicable, and with  
7 other federal, State, and local laws.

8 KMC, LLC would commit to the following environmental protection measures listed in **Table 2-2**.  
9 The measures are derived from the general requirements established in 43 CFR § 3809.420, as  
10 applicable, as well as other federal and state water and air quality regulations and industry BMPs  
11 to avoid impacts to the environment.

**Table 2-2. KMC, LLC Committed Environmental Protection Measures**

Resource	Control	Environmental Protection Measure
Transportation	Best Management Practices	KMC, LLC would enforce a vendor compliance program, requiring customers to provide evidence of vehicle registration and a Class A or B Commercial Driver’s License (CDL).
		KMC, LLC would continue to coordinate with Yavapai County and Arizona Department of Transportation as needed to ensure appropriate and required measures are taken for traffic safety.
	Signage	KMC, LLC would install appropriate haul truck crossing signage before the mine site driveway, and the access road would be paved to assist safe highway ingress and egress.
Air Quality	Dust Abatement	Water would be routinely sprayed from a water tanker onto mine roadways, and a combination of misters, spray bars, and flanges would be used as needed in the crushing operations for dust suppression.
		Speed limits for operating equipment would be enforced to reduce fugitive dust.
		Vegetation clearing would be kept to the minimum necessary for mining to retain stabilized soils and reduce fugitive dust.
		KMC, LLC would require all trucks hauling HQP from the mine to be covered.
		Concurrent reclamation would be completed where possible to control dust.
		KMC, LLC would provide annual air monitoring and reporting in accordance with federal and state regulations and the ADEQ Air Quality General Permit to meet the following objectives of 43 CFR 3809.401(b): <ul style="list-style-type: none"> <li>• to demonstrate compliance with an approved plan and other Federal or state environmental laws and regulations;</li> <li>• to provide early detection of potential problems; and</li> <li>• to supply information that will assist in directing corrective actions should they become necessary.</li> </ul>
Emissions	All mining equipment would be fitted with manufacturer standard emission controls to reduce emissions below the EPA mandated threshold levels.	

**Table 2-2. KMC, LLC Committed Environmental Protection Measures**

Resource	Control	Environmental Protection Measure
Soils	Erosion Control	KMC, LLC would mine the material in 15-ft benches and keep vegetation clearing to a minimum to retain stabilized soils.
		KMC, LLC would use rock mulch, drainage swales, berms, and retention basins within the mine site to limit erosion.
		Direct runoff of water used for dust control would be limited to the extent practicable and would not cause downstream erosion or flooding.
		KMC, LLC would implement BMPs for erosion and sediment control measures identified in the SWPPP. The effectiveness of erosion control measures would be monitored during the mining operation.
		KMC, LLC would employ interim revegetation where practicable to stabilize slopes that are expected to remain in place until final reclamation.
	Reclamation	Reclamation would be conducted consistent with the H-3809-1 Surface Management Handbook (BLM 2012) and the H-3042-1 Solid Minerals Reclamation Handbook (BLM 1992).
Reclamation and closure of the mine area would include: <ul style="list-style-type: none"> <li>• Recontouring the slope angles to a minimum of 3H:1V to ensure stable slopes that would reduce erosion;</li> <li>• Regrading and revegetating the reclaimed surfaces, and</li> <li>• Maintaining and constructing drains and retention ponds as practicable for stormwater management.</li> </ul>		
Water Quality	Spill Prevention	KMC, LLC would develop and implement an SPCC Plan to manage storage and usage of oil-based products during operations. Only minor servicing of mobile equipment (greasing and periodic fueling) would be conducted at the mine site on BLM lands, limiting the potential for used oil or diesel fuel spills. Oil changes and other maintenance would occur on adjacent private land. Spill response kits shall be maintained to ensure that pollutants are prevented from entering into washes. Any pollutants generated by mining or transportation activities shall be properly disposed in accordance with applicable regulations.
		KMC, LLC would use a double-walled storage tank with built-in secondary containment and interstitial monitoring to prevent leakage of fuel in accordance with the SPCC Plan. Protective barriers and berms would prevent accidental damage from vehicles to the above-ground fuel tank.
	Stormwater Controls	A SWPPP would be developed in accordance with the Arizona MSGP for Mineral Mining and Dressing, Sector J, and implemented to control sedimentation from disturbance associated with mine activities. BMPs would be installed to manage stockpile areas and other disturbed surfaces. Sediment control structures could include, but not be limited to fabric and/or hay bale filter fences, siltation or filter berms, and down gradient drainage channels to control storm water.
	Project Design	All mining activities would be located 50-feet or more from any potential water of the U.S.
		An at grade crossing of a tributary to Copper Basin Wash would be protected with concrete to allow for safe crossing during rain events and prevent erosion of the wash.
		Clean groundwater would be used for dust abatement and would not cause downstream erosion nor flooding nor cause an exceedance of applicable water quality standards.

**Table 2-2. KMC, LLC Committed Environmental Protection Measures**

Resource	Control	Environmental Protection Measure
Public Safety	Fire Management	KMC, LLC would prohibit parking of vehicles on top of vegetation and permit smoking in designated areas only.
		KMC, LLC would ensure that equipment used for vegetation clearing would be equipped with spark arresters and maintained in proper working order. KMC, LLC, would properly remove cleared vegetation to reduce excess fire fuels.
		KMC, LLC would maintain proper storage and containment of fuels and other ignitable materials.
		All mobile equipment would be equipped with fire extinguishers, hand tools, and first aid kits.
		KMC, LLC would coordinate with local law enforcement and fire departments to provide 24-hr access as needed for emergency response.
		Two 18,000-gallon water storage tanks onsite for dust suppression would be available to assist in firefighting operations.
		During extended periods of time of non-operation or seasonal closure, all equipment and supplies would be removed from the BLM lands within the Project Area.
		Fire extinguishers would be installed in accordance with National Fire Protection Association 10 mandates during operation
	Security	Access to the mine would be controlled by an automatic gate that would be locked after working hours. Fencing and signage would be used to limit access to operation areas from back roads and trails in compliance with MSHA regulations.
Vegetation	Reclamation	KMC, LLC would use BLM-approved native seed mixtures when reseeding reclaimed areas to help establish a diverse native plant community. The seed mix list would be reviewed before revegetation activities are initiated to confirm the availability of the seeds, and the list would be adjusted as needed. The seed mix and mulch materials would be certified by the revegetation contractor to be relatively weed free. Revegetation areas would be seeded after cover placement and at the appropriate time of the year for optimum seed germination and plant growth.
		Roads not needed for post-closure access would be reclaimed. The abandoned road surfaces would be scarified by ripping, if necessary. Where needed, rock or earthen berms and water bars would be placed to prevent vehicular access and reduce erosion. The road corridors would be reclaimed by treatment with a mulch/seed mix to promote revegetation.
	Noxious Weed Prevention	KMC, LLC would clear weeds and fire fuels from its private lands adjacent to BLM lands and implement weed control measures for all unpaved areas consistent with the BLM Phoenix District's Integrated Weed Management Program (IWMP).
		KMC, LLC would coordinate with the BLM to control any invasive weeds in compliance with the BLM Phoenix District's IWMP.

**Table 2-2. KMC, LLC Committed Environmental Protection Measures**

Resource	Control	Environmental Protection Measure
Wildlife	Project Design	KMC, LLC would clear vegetation only in areas necessary for mining and ancillary facilities.
		KMC, LLC would employ interim revegetation where practicable to begin habitat restoration before final reclamation.
		KMC, LLC would use existing roads to the maximum extent possible and keep surface impacts to a minimum to reduce habitat modification.
		Speed limits for operating equipment would be enforced to reduce wildlife mortality.
		KMC, LLC would limit mine operations to occur between dusk and dawn and avoid illumination of adjacent habitat to reduce effects to light-sensitive species.
		To the extent possible, KMC, LLC would avoid clearing vegetation during the migratory bird-nesting season from March 1 <sup>st</sup> – August 1 <sup>st</sup> . If clearing activities are required for operation during the bird-nesting season, KMC, LLC would perform a clearance survey to check the area for active nests. Any active nests encountered would be avoided until the birds have fledged.
	Noise Abatement	Levels of noise would be reduced or eliminated during periods when the greatest nuisance is perceived, typically during nighttime hours.
		High-profile rock outcrops, which serve as a natural noise attenuator, would be left in place along the western and southwestern sides of the proposed mine area to reduce the effects to adjacent habitat and wildlife corridors.
		Mine vehicles and equipment would be maintained in proper operating condition and would be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, engine enclosures, etc.).
Cultural	Project Design	KMC, LLC has worked with BLM to develop physical protection measures that would ensure integrity of the historic properties. The Proposed Action has been modified to provide a 50- to 100-ft avoidance buffer from cultural resources sites that have been recommended as eligible for listing under the NRHP.
		KMC, LLC would protect any previously unknown cultural or paleontological sites encountered during mining by immediately suspending operations temporarily at that site, notifying BLM, and coordinating with BLM before resumption of operations.
		KMC, LLC would place an earthen berm around the edge of the area of potential effect (APE) in the vicinity of the rock shelters; with a buffer of 50 to 100 feet from the edge of eligible cultural resource site boundaries. In addition to providing a physical barrier to separate the proposed mining activity from the historic properties, the earthen berm would be contoured on the exterior side (facing the sites) to preserve the setting and re-seeded with native vegetation to ensure that erosion is kept to a minimum. The height of the earthen berm and re-seeding would be based on Mine Safety and Health Administration standards and would not intrude on the surrounding skyline, which includes a view of Kirkland Peak as well as a number of promontories within higher elevations of the Bradshaw Mountains. An additional fence would be constructed below the rock shelter sites along Copper Basin Wash to ensure an additional level of site protection and public safety.

**Table 2-2. KMC, LLC Committed Environmental Protection Measures**

Resource	Control	Environmental Protection Measure
Visual	Reclamation	Reclamation would be implemented to disguise mining disturbance and restore the land to a condition suitable for post-mine multiple use and sustained yield.
	Project Design	Mining operations are planned in a location so it would not be visible from most of Iron Springs Road and, as the mine is deepened, would be progressively less visible from distant, higher elevation vantage points.

## 1    **2.2    No Action Alternative**

2    Under the No Action Alternative, the BLM would not approve the MRPO, and subsequent  
3    proposed disturbances associated with development of the Project as described in the Draft MRPO  
4    would not occur on BLM-administered lands. The No Action Alternative does not meet the  
5    purpose and need for action because it would not respond to KMC, LLC's Draft MRPO to develop  
6    and mine the HQP within the Project area. Other than issues associated with economic and  
7    environmental benefits associated with the Project, the No Action Alternative would avoid  
8    environmental impacts that are inherent in the Proposed Action. The Project area would continue  
9    to be subject to existing land uses under the FLPMA, surface management regulations (43 CFR  
10    3809), and occupancy regulations (43 CFR 3715).

## 11    **2.3    Alternatives Considered but Eliminated from Detailed Analysis**

12    A number of alternatives to the MRPO were considered but eliminated from further detail after  
13    preliminary investigation. Alternatives can be eliminated if the alternative:

- 14        • Is ineffective (would not respond to the purpose and need).
- 15        • Is technically or economically infeasible (does not require a cost-benefit analysis or  
16            speculation about an applicant's costs and profits).
- 17        • Is inconsistent with the basic policy objectives for the management of the area (such as not  
18            in conformance with RMP).
- 19        • Implementation is remote or speculative.
- 20        • Is substantially similar in design to an alternative that is analyzed.
- 21        • Would have substantially similar effects to an alternative that is analyzed.

### 22    **2.3.1    Retain Original Mine Footprint**

23    KMC, LLC modified the original Project footprint dated June 22, 2017, to provide a 50- to 100-  
24    foot avoidance buffer from cultural resource sites that have been determined to be eligible for  
25    listing under the NRHP. The original 76-acre mine alternative is substantially similar to the  
26    Proposed Action with the exception that it does not minimize/avoid effects on cultural resources  
27    and, therefore, it is eliminated from detailed analysis.

1    **2.3.2 Transportation Options Considered Based on Scoping Comments**

2    As described in **Section 1.1**, the mining related activities on KMC, LLC’s privately-owned lands  
3    and Project transportation system are non-federal connected actions to the Project. The BLM will  
4    evaluate the effects of these activities as part of the Project, but the BLM is not required to develop  
5    or present the purpose and need for a non-federal connected action, nor is the BLM required to  
6    consider alternatives for the non-federal connected actions. However, there were some alternatives  
7    to the transportation system that came from scoping comments that the BLM addresses as follows.

8    During public scoping, two alternative haul routes were suggested and these routes (Haul Routes 2  
9    and 3; **Figure 8**) are being evaluated in the transportation effects analysis portions of this Draft EA.

10   During public scoping, use of BNSF Railway from the Kirkland Junction Rail Yard approximately  
11   1.5 miles south of the mine entrance was suggested. The rail yard at Kirkland junction is a  
12   maintenance site, where BNSF Railway stages equipment required for maintenance activities  
13   along the adjacent rail lines. The rail yard at Kirkland junction was not constructed as a loading  
14   facility and would require construction of a spur, interchanges, and loading structures to outfit the  
15   site as a loading station. While constructing a rail spur and interchange may be technologically  
16   feasible from an engineering perspective, it is not economically feasible as the construction of rail  
17   spur would require extensive earth work to adjust the grade of the rail line for loading as well as  
18   building a railway siding and loading facility. The implementation of this option would require  
19   truck transport from the mine to the rail yard. The likelihood for the potential use of this option by  
20   KMC, LLC in the future is speculative at this time.

1    **3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL**  
2    **CONSEQUENCES**

3    **3.1 Introduction**

4    **Chapter 3** identifies and describes the current condition of the human environment which may be  
5    affected by the Proposed Action or No Action Alternative. The Affected Environment is the same  
6    for both alternatives.

7    **Chapter 3** also describes the potential direct (caused by the action, same time and place) and  
8    indirect (caused by the action, but later in time or further in distance) effects to resources that may  
9    result from the Proposed Action or No Action Alternative, and identifies the potential mitigation  
10   and monitoring needs associated with specific resources.

11   Cumulative effects are addressed in **Chapter 4**.

12   Resource impact analyses conducted for this EA consider both context and intensity.

13   *Context* is the significance of an action and must be analyzed in several contexts such as society  
14   as a whole (human, national), the affected region, the affected interests, and the locality.  
15   Significance varies with the setting of the proposed action. (40 CFR 1508.27 (a)).

16   *Intensity*: refers to the severity of impact (40 CFR 1508.27 (b)). This EA uses the terms moderate,  
17   minor, or negligible in describing the intensity of effects (**Table 3-1**).

18    **Table 3-1. Standard Definitions of Impact and Resource Impact Descriptions for Intensity**

EA Term	Definition
No Impact	Would not cause changes in the baseline condition of the resource.
Minor or Negligible	Impacts would occur, but resource would retain existing character and overall baseline conditions.
Moderate	Impacts would occur, but resource would partially retain existing character. Some baseline conditions would remain unchanged.

19   **3.2 Supplemental Authorities**

20   Appendix 1 of BLM’s NEPA Handbook (H-1790-1) identifies supplemental authorities that are  
21   subject to requirements specified by statute or executive order and must be considered in all BLM  
22   environmental documents (BLM 2008). **Table 3-2** lists the elements that must be addressed in all  
23   environmental analyses and indicates whether the Proposed Action or No Action Alternative affect  
24   those elements.

**Table 3-2. Supplemental Authorities\***

Note: Resources shaded in gray are discussed further in the Draft EA.

Resource	Present Yes/No	May be Affected Yes/No	Rationale for Not Analyzing Resources in Detail
Air Quality	Y	Y	Carried forward for analysis. See <b>Section 3.5</b> .
Areas of Critical Environmental Concern	N		Resource Not Present.
Cultural Resources	Y	N	<p>Six cultural resource sites were identified during survey of the 165-acre Project area (EPG 2018); four of these sites have been determined to be eligible for listing on the National Register of Historic Places (NRHP). Of the four eligible sites, three of these sites are prehistoric cultural sites with rock shelters, artifacts, and one site with petroglyphs and one is a historic cultural site, the Kirkland Tuff Quarry from previous mining.</p> <p>On September 1, 2017, the BLM initiated consultation under the NHPA with the Arizona State Historic Preservation Office (SHPO) (BLM 2017). Based on revisions to the Project, on May 15, 2018 updated consultation information was provided to the SHPO with the final delineation of the APE, determination of eligibility, and determination of effect (BLM 2018a). The BLM determined that the APE is the 165-acre Project area. The BLM also determined that the off-site transportation network was not a part of the Project's APE as there would be no effect to cultural resource sites. On June 4, 2018, the BLM received concurrence from SHPO, including the following:</p> <ol style="list-style-type: none"> <li>1. The SHPO concurred in the BLM's determination of site eligibility;</li> <li>2. The SHPO concurred in the BLMs determination that the Project would have "no adverse effect" to eligible sites within the Project area; and</li> <li>3. The SHPO concurred in the BLMs determination that there is no potential to affect historic properties along the proposed transportation routes (SHPO 2018).</li> </ol> <p>BLM has worked with KMC, LLC to develop physical protection measures that will ensure integrity of the historic properties. BLM will require that an earthen berm be placed adjacent to cultural resource sites that have been recommended as eligible for listing under the NRHP. In addition to providing a physical barrier to separate the proposed mining activity from the historic properties, considerations for preserving the setting were evaluated as well. As a result, BLM has decided that the earthen berm would be contoured on the exterior side (facing the sites) and re-seeded with native vegetation to ensure that erosion is kept to a minimum. The height of the earthen berm and re-seeding would be based on MSHA standards and will not intrude on the surrounding skyline, which includes a view of Kirkland Peak as well as a number of promontories within higher elevations of the Bradshaw Mountains. An additional fence would be constructed below one of the eligible sites along Copper Basin Wash to ensure an additional level of site protection and public safety.</p>

**Table 3-2. Supplemental Authorities\***

Note: Resources shaded in gray are discussed further in the Draft EA.

Resource	Present Yes/No	May be Affected Yes/No	Rationale for Not Analyzing Resources in Detail
Environmental Justice	N		The Project would not result in disproportionately high environmental impacts to minority or low-income populations. See <b>Section 3.11</b> .
Farm Lands (prime or unique)	N		There are no U.S. Department of Agriculture-designated unique or prime farmlands within the Project area.
Floodplains	N		There are no Federal Emergency Management Agency (FEMA) designated floodplains within the planned mine footprint (FEMA Flood Insurance Rate Map 04025C2400G). FEMA floodplain does occur within portions of the privately-owned lands that are part of the Project area, but activities proposed within those areas do not require a floodplain permit.
Invasive Plant Species and Noxious Weeds	Y	N	Although invasive plant species or noxious weeds may be present within the Project area, the Proposed Action would include best management practices to address the potential introduction of species and during the life of the mine KMC, LLC would follow an integrated weed management approach. See <b>Section 3.8</b> .
Migratory Birds	Y	Y	Carried forward for analysis. See <b>Section 3.9</b> .
Native American Religious Concerns	N		On April 16, 2018, the BLM-initiated consultation with the following tribes: Hualapai Tribe, Hopi Tribe, Salt River Pima-Maricopa Indian Community, Yavapai-Prescott Indian Tribe, and Pueblo of Zuni. The objective of the consultation letter sent to the tribes was to provide information on the Project and invite the tribe(s) to participate in a field visit to the Project Area. On May 3, 2018, BLM staff met with the cultural resources staff from the Yavapai-Prescott Tribe. On May 4, 2018, BLM staff met with the Tribal Historic Preservation Officer and the elders from the Hualapai Tribe. During the field visits, the BLM and tribes visited cultural sites and were provided information how the project design was modified in order to avoid impacts to the cultural sites. The tribes expressed interest in long-term monitoring of the cultural sites as vandalism has occurred to them in recent years.
Threatened or Endangered Species (animals)	N		The BLM has determined that the Project would have “no effect” on the yellow-billed cuckoo ( <i>Coccyzus americanus</i> ). EPG conducted a pedestrian survey of the Project area in 2015 and found there was no suitable habitat. The Project area has been visited by a BLM wildlife biologist and the riparian corridors that traverse the Project area were surveyed by BLM for yellow-billed cuckoo in June 2018 and none were detected. The mine disturbance area avoids impacts to riparian habitats. The BLM has found the riparian habitat near the mine is unsuitable for nesting as the vegetation is too sparse. Vegetation along the drainage that crosses the proposed mine entrance road that would be improved as part of the Proposed Action is sparse and unsuitable for nesting. There is no proposed or designated critical habitat for threatened or endangered species within the Project area.

**Table 3-2. Supplemental Authorities\***

Note: Resources shaded in gray are discussed further in the Draft EA.

Resource	Present Yes/No	May be Affected Yes/No	Rationale for Not Analyzing Resources in Detail
Threatened or Endangered Species (plants)	N		No threatened or endangered plant species occur within the Project area (EPG 2017).
Wastes, Hazardous or Solid	Y	N	The potential for accidental spills from equipment or motor vehicles would be addressed through Project best management practices and Spill Prevention, Controls, and Countermeasures plan as described in <b>Section 3.6</b> .
Water Resources	Y	Y	Carried forward for analysis. See <b>Section 3.6</b> .
Wetlands/Riparian Zones	Y	N	The Proposed Action would include improvements to an unpaved portion of road at a low water crossing which would not impact the overall functionality of the stream or adjacent riparian vegetation. A minimal amount of vegetation would be removed in order to accommodate the road improvements. No other impacts to riparian areas or wetlands are required. See <b>Sections 3.6 and 3.8</b> .
Wild and Scenic Rivers	N		Resource Not Present.
Wilderness/WSA	N		Resource Not Present.

1 \* See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered. Supplemental Authorities determined to  
2 be Not Present or Present/Not Affected need not be carried forward or discussed further in the document. Supplemental  
3 Authorities determined to be Present/May Be Affected may be carried forward in the document.

### 4 **3.3 Additional Resources Considered**

5 BLM specialists have evaluated the potential impact of the Proposed Action or No Action  
6 Alternative on these resources and documented their findings in **Table 3-3**. Resources or uses that  
7 may be affected by the Proposed Action or No Action Alternative are further described in this EA  
8 (BLM 2008).

**Table 3-3. Resources or Uses Other Than Supplemental Authorities**

Note: Resources shaded in gray are discussed further in the Draft EA.

Resource or Issue*	Present Yes/No	May be Affected Yes/No	Rationale
BLM Sensitive Species (animals)	Y	Y	Eleven (11) BLM sensitive wildlife species (four species of bats, five species of raptors, one amphibian, one invertebrate) could occasionally occur within the Project, and one, Arizona toad, has greater potential to occur in canyons and washes near the Project area (EPG 2017). Carried forward for analysis. See <b>Section 3.9</b> .
BLM Sensitive Species (plants)	N	Y	One BLM-sensitive plant has potential to occur within the Project area (EPG 2017). Carried forward for analysis. See <b>Section 3.8</b> .
Public Health & Safety	Y	Y	Carried forward for analysis. See <b>Section 3.14</b> .
Noise	Y	Y	Carried forward for analysis. See <b>Section 3.7</b> .
General Wildlife	Y	Y	Carried forward for analysis. See <b>Section 3.9</b> .
Lands and Realty	N		Resource Not Present.
Lands with Wilderness Characteristics	N		Resource Not Present.
Livestock Grazing	Y	Y	Carried forward for analysis. See <b>Section 3.13</b> .
Minerals	Y	Y	Carried forward for analysis. See <b>Section 3.10</b> .
Paleontological	N		No paleontological survey has been conducted, but extensive biological, cultural, and geological survey work has been conducted within the Project area to support the Kirkland Mine (Ninyo and Moore 2015, Sandwell-Weiss 2016, EPG 2017, EPG 2018), and no paleontological resources have been identified.
Recreation	Y	Y	Carried forward for analysis. See <b>Section 3.13</b> .
Socioeconomics	Y	Y	Carried forward for analysis. See <b>Section 3.11</b> .
Soils	Y	Y	Carried forward for analysis. See <b>Section 3.10</b> .
Transportation	Y	Y	Carried forward for analysis. See <b>Section 3.4</b> .
Vegetation	Y	Y	Carried forward for analysis. See <b>Section 3.8</b> .
Visual Resource Management	Y	Y	Carried forward for analysis. See <b>Section 3.12</b> .
Wild Horses and Burros	N		The Project area is not located within a Herd Management Area.

1 \* Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the  
2 document. Resources or uses determined to be Present/May Be Affected may be carried forward in the document.

### 3 3.4 Transportation

#### 4 3.4.1 Methodology and Analytical Assumptions

5 Lee Engineering, LLC (Lee Engineering 2018) evaluated the Proposed Action driveway design  
6 and ingress and egress at the access point at Iron Springs Road to determine if any modifications  
7 to signing, striping, or roadway characteristics would be needed to safely accommodate mining  
8 and transport traffic in the vicinity of the mine's driveway. In addition, Lee Engineering evaluated  
9 the anticipated travel routes of the transport haul trucks to identify any sensitive areas and  
10 determine the level of traffic change that could be associated with the Proposed Action. The  
11 findings of these evaluations are documented in the Kirkland Mine Traffic Impact Study (Lee

1 Engineering 2018) and Yavapai County Public Works concurred with the findings in of the Traffic  
2 Impact Study in March 2018. This report was published online as a part of the release of baseline  
3 studies on April 2, 2018.

4 WestLand Resources, Inc. (WestLand) evaluated the data provided in the TIS and provided a  
5 summary of the traffic counts for each of the three haul routes assuming 100 percent of the  
6 Proposed Action’s transportation needs at full production (WestLand 2018a). This assessment  
7 provides a worst-case estimate of impacts because, not one single route would incur 100 percent  
8 of traffic, but rather, Project traffic along the routes would vary, where 100 percent of the Project  
9 transportation needs would be divided between all three routes. Some combination of all three haul  
10 routes would ultimately be used to transport the HQP product from the Project to market, but at  
11 this time KMC, LLC does not know the distribution of the trucks along the haul routes that could  
12 be used to transport material. The need for transport of the material at full production is not  
13 anticipated to be required for five years, but this worst-case assessment assumes full production in  
14 year 1.

15 Arizona Department of Transportation (ADOT) road classifications are identified for each  
16 transportation haul route and the Annual Average Daily Traffic (AADT) ranges identified for those  
17 classifications are used to determine if the Proposed Action’s transportation needs exceed those  
18 AADT ranges.

### 19 **3.4.2 Affected Environment**

20 The Project is located just off the eastside of Iron Springs Road approximately 1.5 miles north of  
21 the junction with Kirkland Road (**Figure 8**). Iron Springs Road is a 2-way paved road that extends  
22 north approximately 6.5 miles to Skull Valley, and continues for another 8.5 miles north before  
23 turning east and extends approximately 8 miles before reaching Prescott, Arizona. The Project is  
24 approximately 4.5 miles northwest of the junction with AR 89 and Kirkland Road.

25 The transportation haul routes are under the jurisdiction of either Yavapai County or the Arizona  
26 Department of Transportation (ADOT). The ADOT has classified the majority of the three haul  
27 routes as major collectors (ADOT 2013). One segment along Haul Route 3 is classified as a minor  
28 arterial. Major collectors generally gather and funnel traffic from local roads to arterial networks.  
29 Two of the three haul routes identified funnel traffic to a larger arterial network: Haul Route 1  
30 conveys traffic south to U.S. Route 93, identified as a principal arterial road, while Haul Route 3  
31 conveys traffic north to Williamson Valley Road and Pioneer Parkway, roads classified as minor  
32 arterial roads. Major collectors offer more mobility than minor collectors and in general are longer  
33 in length, have lower connecting driveway densities, have higher speed limits, are spaced at greater  
34 intervals, have higher annual average daily traffic volumes (expressed as AADT), and may have  
35 more travel lanes than minor collectors. Minor arterials provide service for trips of moderate length  
36 and connect major and minor collectors to the larger arterial networks (FHWA 2013).

1 Both major collectors and minor arterials are further classified into rural and urban designations  
 2 based on if they are located within urban areas defined by ADOT. All roadways identified in the  
 3 three haul routes are classified as rural roadways, with the exception of portions of Williamson  
 4 Valley Road and Pioneer Parkway along Haul Route 3, that are located within the urban  
 5 designation of Prescott; therefore, these roads are classified as urban roadways (ADOT 2013).  
 6 Rural major collectors can range in AADT from 300-2,600 vehicles and urban major collectors  
 7 can range in AADT from 1,100-6,300 vehicles. Rural minor arterials range in AADT from 1,500-  
 8 6,000 vehicles and urban minor arterials range in AADT from 3,000-14,000 vehicles (FHWA  
 9 2013). In an urban context, minor arterials interconnect and augment the higher arterial system,  
 10 provide intracommunity continuity, and may carry local bus routes. In the rural settings, minor  
 11 arterials typically provide relatively high overall travel speeds with minimum interference to  
 12 through movement and are spaced to provide connectivity from developed areas and higher-level  
 13 arterial roadways.

14 Haul Route 2 terminates in Hillside based on the assumption that the product transported to  
 15 Hillside would be loaded on to the existing railway for further transport to market.

16 Existing conditions along the Project haul routes are described by Lee Engineering (2018). Five  
 17 sensitive receptors were identified by Lee Engineering along the haul routes (2018). Six additional  
 18 sensitive receptors are identified for the traffic analysis. These receptors include the Church of Jesus  
 19 Christ of Latter Day Saints and residences adjacent to the Project area on Iron Springs Road,  
 20 residences located 0.4 miles to 1 mile north of the Project Area just off of Iron Springs Road, and  
 21 Peeples Valley School, Granite Mountain Hotshots Memorial State Park, and First Baptist Church  
 22 all located along SR 89 (**Table 3-4; Figure 8**).

23 **Table 3-4. Sensitive Receptors along the Three Haul Routes**

Sensitive Receptor	Haul Route
1. Skull Valley Elementary School	Haul Route 3
2. Kirkland Elementary School	Haul Routes 1 and 2
3. Hillside Elementary School	Haul Route 2
4. Abia Judd Elementary School and Granite Mountain Middle School	Haul Route 3
5. Skull Valley Cemetery	Haul Route 3
6. Church of Jesus Christ of Latter Day Saints	Haul Routes 1, 2 and 3
7. Peeples Valley School	Haul Route 1
8. Granite Mountain Hotshots Memorial State Park	Haul Route 1
9. First Baptist Church	Haul Route 1
10. Residences north of the Proposed Action	Haul Route 3
11. Residences west of the Proposed Action	Haul Route 1

24 Vehicles traveling on Haul Route 3 would travel by camping, recreational and residential areas  
 25 associated with Skull Valley and Prescott National Forest. There are numerous elevation and  
 26 horizontal curve sections along Haul Route 3, which would limit the speed of trucks that are full.  
 27 With limited passing areas, motorists would be required to travel behind these slower moving

1 vehicles until passing conditions present themselves (Lee Engineering 2018). An alternative to  
2 Haul Route 3 using SR 89 through the Wilhoit area north of the Kirkland Valley Road intersection  
3 is restricted to vehicles less than 40 feet in length, excluding the use of this route by transportation  
4 haul trucks.

### 5 **3.4.3 Environmental Consequences**

#### 6 **3.4.3.1 Proposed Action**

7 The total daily vehicle estimation of inbound and outbound traffic during full production would  
8 be 210 vehicles, 160 transport haul trucks and 50 vehicles for employee traffic including water  
9 trucks for dust suppression (Lee Engineering 2018). This estimate assumes that 25-ton  
10 transportation haul trucks would be used due to market demand and the economy of material  
11 transport.

12 This traffic impact analysis is conservative and has been prepared as a bounding analysis. It is  
13 based on the assumption that 100 percent of all the Proposed Action's traffic generated at full  
14 production would travel on only one of the three routes when in fact, the Proposed Action's traffic  
15 would travel on some combination of all three of the routes to transport the mined material. Traffic  
16 impacts associated with the Proposed Action would be incremental and long term (40 years), and  
17 would result in minor to moderate impacts, even given the worst-case scenario that is analyzed for  
18 the Proposed Action. Given existing traffic counts and the existing condition of infrastructure  
19 along roads that would be used to transport the mined material, minor impacts are anticipated along  
20 SR 89, Kirkland Valley Road, Williamson Valley Road and Pioneer Parkway, and moderate  
21 impacts are anticipated along Iron Springs Road and Yava Road.

22 The 2019 increase in traffic associated with the Proposed Action **would not** result in exceedance  
23 of any ADOT road classification AADT (**Table 3-5**). Projected daily traffic for 2040 under the  
24 Proposed Action **would exceed** the ADOT road classification AADT for Iron Springs Road, which  
25 is a portion of Haul Routes 1, 2 and 3 (**Table 3-6**).

1 **Table 3-5. Year 2019 (Opening Year) Projected Traffic Conditions along Haul Route 1, 2, and 3**

Haul Route	Portion of Haul Route (ADOT Road Classification)	Estimated No Action 2019 Projected Daily Traffic (Total Vehicles)	Worst Case Proposed Action 2019 Projected Daily Traffic (Total Vehicles)	ADOT Road Classification AADT Range	
				Low	High
1	Iron Springs Road: Mine Entrance to Kirkland Valley Road * (Rural Major Collector)	1,730	1,915	300	2,600
	Kirkland Valley Road to SR 89 ** (Rural Major Collector)	1,216	1,389	300	2,600
	SR 89 to U.S. Route 93** (Rural Major Collector)	1,413	1,586	300	2,600
2	Iron Springs Road: Mine Entrance to Yava Road * (Rural Major Collector)	1,730	1,915	300	2,600
	Yava Road to Hillside Road ** (Rural Major Collector)	719	892	300	2,600
3	Iron Springs Road: Mine Entrance to Williamson Valley Road * (Rural Major Collector)	1,730	1,915	300	2,600
	Williamson Valley Road and Pioneer Parkway to SR 89 * (Urban Minor Arterial)	6,338	6,523	3,000	14,000

2 Note: The range of increase provided for each haul route include 100 percent of the estimated Project traffic. The  
3 estimates presented are intended to be maximum worst-case estimates for each haul route.

4 \* Traffic increases associated with the mine was assumed to be 185 vehicle trips (includes 160 truck trips and 25  
5 passenger vehicle trips) for this portion of the haul route.

6 \*\* Traffic increases associated with the mine was assumed to be 173 vehicle trips (includes 160 truck trips and 13  
7 passenger vehicle trips) for this portion of the haul route.

1 **Table 3-6. Year 2040 Projected Traffic Conditions along Haul Route 1, 2, and 3**

Haul Route	Portion of Haul Route (ADOT Road Classification)	Estimated No Action 2040 Projected Daily Traffic (Total Vehicles)	Worst Case Proposed Action 2040 Projected Daily Traffic (Total Vehicles)	ADOT Road Classification AADT Range	
				Low	High
1	Iron Springs Road: Mine Entrance to Kirkland Valley Road * (Rural Major Collector)	2,732	2,917	300	2,600
	Kirkland Valley Road to SR 89 ** (Rural Major Collector)	1,836	2,009	300	2,600
	SR 89 to U.S. Route 93 ** (Rural Major Collector)	2,232	2,405	300	2,600
2	Iron Springs Road: Mine Entrance to Yava Road * (Rural Major Collector)	2,732	2,917	300	2,600
	Yava Road to Hillside Road ** (Rural Major Collector)	1,085	1,258	300	2,600
3	Iron Springs Road: Mine Entrance to Williamson Valley Road * (Rural Major Collector)	2,732	2,917	300	2,600
	Williamson Valley Road and Pioneer Parkway to SR 89 * (Urban Minor Arterial)	10,010	10,195	3,000	14,000

2 Note: The range of increase provided for each haul route include 100 percent of the estimated Project traffic. The  
3 estimates presented are intended to be maximum worst-case estimates for each haul route.

4 \* Traffic increases associated with the mine was assumed to be 185 vehicle trips (includes 160 truck trips and 25  
5 passenger vehicle trips) for this portion of the haul route.

6 \*\* Traffic increases associated with the mine was assumed to be 173 vehicle trips (includes 160 truck trips and 13  
7 passenger vehicle trips) for this portion of the haul route.

8 Impacts on the sensitive receptors along the haul routes (identified in **Table 3-4**) as a result of traffic  
9 noise are discussed in **Section 3.7.3**.

10 Appropriate truck crossing signage would be installed 475 feet prior to the Project driveway, and  
11 the mine access road would be paved from the mine site to the ingress-egress point at Iron Springs  
12 Road to safely accommodate truck traffic entering and exiting the site.

13 KMC, LLC will continue to coordinate with Yavapai County and ADOT as needed to ensure  
14 appropriate and required measures are taken for traffic safety.

15 **3.4.3.2 No Action Alternative**

16 Under the No Action Alternative, the BLM would not approve the MRPO, and increases in traffic  
17 associated with the Proposed Action would not occur. The BLM-administered land within the  
18 Project area would continue to be subject to existing and potential future land uses under the FLPMA,  
19 surface management regulations (43 CFR 3809), and occupancy regulations (43 CFR 3715).

1 Projected daily traffic for 2040 under the No Action Alternative exceeds the ADOT road  
2 classification AADT range for Iron Springs Road, which under the Proposed Action would include  
3 a portion of Haul Routes 1, 2, and 3 (**Table 3-6**).

## 4 **3.5 Air Quality**

### 5 **3.5.1 Methodology and Analytical Assumptions**

6 Air quality issues raised during public scoping included questions regarding the HQP and its  
7 potential to contain airborne carcinogens. The BLM Hassayampa Field Office Locatable Minerals  
8 Program provided to the Arizona Department of Environmental Quality (ADEQ) Air Quality  
9 Division an explanation of geochemical assay results from HQP samples taken from the Project area.

10 Air emission calculations for PM<sub>10</sub> (less than 10 microns diameter) and PM<sub>2.5</sub> (less than 2.5  
11 microns diameter) associated with the Proposed Action's mining operations are estimated by  
12 Orizon, IPE (**Appendix A**).

### 13 **3.5.2 Affected Environment**

14 No asbestos minerals or erionite crystals, fibrous or otherwise, were identified within samples  
15 taken from the Project area (BLM 2018b). Only a very small quantity (generally less than 2 volume  
16 percent) crystalline silica was identified in the form of quartz (BLM 2018b). The risk of respirable  
17 crystalline silica (RCS) at the Project area is lower than at most mining and quarry operations  
18 (BLM 2018b). The majority of the material found at the Project area is volcanic ash, a type of  
19 silica that is not a known carcinogen. The volcanic ash would be mined as HQP as part of the  
20 Proposed Action. The BLM's report that was published online as a part of the release of baseline  
21 studies on April 2, 2018, provides further information and explanation of its findings.

22 Currently, the Project area contains an exposed stockpile of HQP remaining from previous mining  
23 activities. Some vegetation has grown over the stockpile, but the majority of the stockpile is  
24 exposed without vegetation or soil cover.

25 The EPA designates Yavapai County, which includes the Project area, does not occur within a  
26 non-attainment area with respect to the NAAQS for ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen  
27 dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (dust; PM<sub>10</sub> and PM<sub>2.5</sub>), and lead (Pb)  
28 (**Figure 9**).

29 The closest air monitoring station to the Project area is located in Prescott, Arizona near the  
30 Prescott Pioneer Park, approximately 17 miles northeast of the Project area. This monitoring  
31 station monitors O<sub>3</sub>.

32 Amendments to the Clean Air Act establish Class I, II, and III areas, where emissions of particulate  
33 matter and sulfur dioxide are to be restricted. The restrictions are most severe in Class I areas and

1 are progressively more lenient in Class II and III areas. The Project area is located approximately  
2 44 miles from the nearest Class I area, Sycamore Canyon Wilderness, located northeast of the  
3 Project area.

4 A summary of Yavapai County’s annual PM<sub>10</sub> and PM<sub>2.5</sub> emissions per the National Emissions  
5 Inventory (EPA 2014) is provided in **Table 3-7**.

6 **Table 3-7. 2014 Emissions Inventory Data for PM<sub>10</sub> and PM<sub>2.5</sub> in Tons per Year in Yavapai County**

Sector Source	PM <sub>10</sub> (tons/year)	PM <sub>2.5</sub> (tons/year)
Agriculture	740.2	151.8
Commercial Cooking	76.1	70.5
Dust	16,417.8	1,761.6
Fires	879.5	745.3
Fuel Combustion	285.3	266.7
Industrial Processes	9,084.3	1,323.3
Miscellaneous Non-Industrial NEC (Not Elsewhere Classified)	12.7	10.1
Mobile	516.3	368.6
Waste Disposal	351.6	290.1
<b>Subtotal</b>	<b>28,363.8</b>	<b>4,988.3</b>

7 **3.5.3 Environmental Consequences**

8 **3.5.3.1 Proposed Action**

9 Even though the risk of respirable crystalline silica (RCS) at the Project area is lower than at most  
10 mining and quarry operations, it is possible to create trace, loftable RCS from the Proposed Action.  
11 The Proposed Action would include industry standard dust controls to protect workers and the  
12 public, and dust opacity would be actively monitored by the ADEQ to protect the public from this  
13 minor risk (BLM 2018b).

14 Under the Proposed Action, KMC, LLC would mine for HQP in an area of approximately 88 acres  
15 by ripping and excavating the material. The HQP would be crushed and screened onsite with a  
16 portable crusher-screen-stacker to generally two-inch minus products for sale to customers as  
17 described for the stockpiled resource. Air quality impacts associated with the Proposed Action  
18 would be primarily from fugitive dust generation by vehicles and equipment during operations and  
19 from vehicle emissions. Mining activities that have the potential to release regulated pollutants  
20 include the following:

- 21 • Road dust emissions and tailpipe emissions at the mine site and from haulage and
- 22 occasional support vehicle travel along the access roads,
- 23 • Additional wind-blown dust erosion emissions from the disturbed stockpile or disturbed
- 24 mine area.

1 The estimated annual particulate (PM<sub>10</sub> and PM<sub>2.5</sub>) emissions generated by proposed operational  
 2 activities are summarized in **Table 3-8** and detailed in **Appendix A**. Emissions associated with  
 3 the transportation network were not estimated, but are expected to be minor because the  
 4 transportation network consists of only paved roads and transportation haul trucks would be  
 5 covered pursuant to ADOT requirements.

6 **Table 3-8. Summary of Potential Annual Proposed Action Mine Emissions (Appendix A)**

Activity		Potential Emissions (tons/year)	
		PM <sub>10</sub>	PM <sub>2.5</sub>
Mine Processing Point Source Emissions	Feed Hopper	0.13	0.02
	Crusher	0.14	0.03
	Screens	0.56	0.04
	Conveyor Transfer Points	0.05	0.01
	Radial Stacker Transfer to Storage Pile	0.01	0.00
<i>Subtotal</i>		<i>0.88</i>	<i>0.10</i>
Quarry Operations Fugitive Emissions	Loading Run of Mine Material into Haul Trucks	0.13	0.02
	Run of Mine Batch Drop to Storage Pile	0.13	0.02
<i>Subtotal</i>		<i>0.26</i>	<i>0.04</i>
Storage Pile Fugitive Emissions	Run of Mine Stockpile	0.02	0.02
	Finished Stockpiles	0.001	0.001
<i>Subtotal</i>		<i>0.02</i>	<i>0.02</i>
Unpaved Road Fugitive Emissions	Quarry Haul Trucks (40-ton capacity)	0.37	0.04
	Transport Haul Trucks (25-ton capacity)	1.01	0.10
	Quarry Loader Travel (6-ton capacity)	0.06	0.01
	Plant Loader Travel (6-ton Capacity)	0.31	0.03
<i>Subtotal</i>		<i>1.76</i>	<i>0.18</i>
<b>Total Annual Potential Emissions</b>		<b>2.92</b>	<b>0.33</b>

7 Fugitive and point source emissions associated with the development and operation of the mine  
 8 under the Proposed Action would be minor and long term, having the greatest degree of impact to  
 9 receptors located immediately adjacent to the mine operations and to receptors located  
 10 immediately along the traffic network. The total annual potential fugitive and point source  
 11 emissions from the Proposed Action for PM<sub>10</sub> and PM<sub>2.5</sub> are 0.010 percent and 0.007 percent of  
 12 the Yavapai County totals (using the available 2014 data from Yavapai County).

13 During a bulk sampling program and equipment demonstration in September 2017, the Air Quality  
 14 Division of ADEQ confirmed that the particulate fugitive emissions from that demonstration were  
 15 within the standards of a General Permit (Class II Air Quality Permit). Therefore, the Proposed  
 16 Action would require coverage under a General Permit with the Air Quality Division of ADEQ.  
 17 All General Permit terms and conditions would be followed and the Proposed Action would

1 comply with all emission limits and ambient air quality standards and monitoring would be  
2 conducted to ensure NAAQS are being met.

3 Emissions of fugitive dust from disturbed surfaces would be minimized by utilizing appropriate  
4 control measures including surface application of water to roadways and process areas, speed  
5 limits controls for operating equipment, and using covered transportation haul trucks. Concurrent  
6 reclamation would be completed where possible to control dust.

7 All equipment would be fitted with standard emission controls to reduce emission to below the  
8 EPA mandated threshold levels.

9 The Proposed Action would include annual air monitoring and reporting in accordance with federal  
10 and state regulations, and the ADEQ Air Quality General Permit to meet the following objectives  
11 of 43 CFR 3809.401(b):

- 12 1. to demonstrate compliance with an approved plan and other Federal or state environmental  
13 laws and regulations;
- 14 2. to provide early detection of potential problems; and
- 15 3. to supply information that will assist in directing corrective actions should they become  
16 necessary.

17 KMC, LLC would implement BMPs to control dust emissions from wind erosion during  
18 excavation, crushing, screening, weighing, and transportation of material. BMPs include mining  
19 the material in 15-foot benches and keeping vegetation clearing to a minimum necessary for  
20 mining to retain stabilized soils and reduce fugitive dust. Vegetation clearing would occur in areas  
21 that are planned for immediate mining. Water would be used for dust control on mine roads and  
22 water misters would be used on the crusher-screen-stack to reduce dust during the crushing and  
23 screening process. The material would be loaded into covered trucks to transport to market.

24 Concurrent reclamation and seeding on an established schedule would reduce the total acreage of  
25 exposed materials that may be susceptible to wind erosion, thereby reducing possible dust  
26 emissions. Final reclamation would ensure that the disturbed surfaces are recontoured and  
27 revegetated with a BLM-approved seed mix. These areas would be revegetated after cover  
28 placement and at the appropriate time of the year for optimum seed germination and plant growth.

29 Given the Proposed Action's compliance with the standards of a General Permit and the proposed  
30 monitoring and best management practices that would be used to reduce impacts to air quality,  
31 impacts to air quality associated with the Proposed Action would be negligible or minor.

1 **3.5.3.2 No Action Alternative**

2 Under the No Action Alternative, the BLM would not approve the MRPO, and impacts to air  
3 quality and mitigation and monitoring associated with the Proposed Action would not occur. The  
4 BLM-administered land within the Project area would continue to be subject to existing and  
5 potential future land uses under the FLPMA, surface management regulations (43 CFR 3809), and  
6 occupancy regulations (43 CFR 3715).

7 The existing exposed stockpile and disturbed areas from previous operations would remain as is  
8 and would not be reclaimed. This exposed stockpile and disturbed areas from previous operations  
9 would continue to contribute to fugitive dust emissions during high wind events.

10 **3.6 Water Resources**

11 **3.6.1 Methodology and Analytical Assumptions**

12 Plateau Resources LLC (Plateau) evaluated the use of the two wells located in Skull Valley as a  
13 water supply for the Project. Plateau assessed: (a) the condition of the wells; (b) the physical and  
14 legal availability of water from the wells; (c) water quality characteristics; and (d) hydrologic  
15 effects from pumping the wells.

16 Impacts on surface water resources are evaluated in the context of surface disturbances and  
17 applicable permitting requirements and best management practices that would be implemented as  
18 part of the Proposed Action.

19 **3.6.2 Affected Environment**

20 **3.6.2.1 Groundwater**

21 The Project area is located in the eastern portion of the Bill Williams River basin, within the Skull  
22 Valley subbasin (**Figure 10c**). Groundwater in the eastern part of the basin infiltrates primarily in  
23 basin fill valleys bounded by mountain ranges with fractured volcanic rocks. An important water-  
24 bearing unit in the Copper Basin area east of Skull Valley is a 1,000-foot thick layer of volcanic  
25 rocks separated from the overlying basin-fill deposits by a 35-foot thick confining bed of well-  
26 cemented clay. This water-bearing unit has reportedly high well yields in the upper 350 to 400  
27 feet. The upper 350 to 400 feet of these volcanic units may produce more than 2,000 gallons per  
28 minute (ADWR 2009).

29 KMC, LLC would use existing irrigation wells to supply water for dust suppression. The wells are  
30 located north of the Project area on two ranches in Skull Valley (**Figure 10c**). One ranch is in  
31 Section 4 of Township 13 North, Range 4 West (“Section 4 Ranch”) and the other ranch is in  
32 Section 9 of the same township (“Section 9 Ranch”). Both ranches are privately-owned and KMC,

1 LLC would obtain water from their wells through acquisition of real property or contractual  
2 arrangement.

3 Historic to recent measurements indicate that groundwater depths beneath Skull Valley remain  
4 shallow, with depths typically less than 50 feet. Groundwater depths beneath Skull Valley have  
5 historically declined an average of 0.06 to 0.18 feet per year (Plateau 2018).

6 Water quality data indicate that groundwater in the Skull Valley aquifer on and near the ranches is  
7 (a) fresh (non-brackish), (b) slightly alkaline, (c) very hard, (d) oxygenated, and (e) from a  
8 relatively uniform and stable source (Plateau 2018).

### 9 **3.6.2.2 Surface Water**

10 The Project area is located in the Lower Skull Valley Wash (U.S. Geological Survey [USGS]  
11 Hydrological Unit Code [HUC] 12) within the Bill Williams River watershed (HUC 6) and near  
12 the confluence of a few major drainage contributors to the watershed, including the Copper Basin  
13 Wash, Kirkland Creek, and Skull Valley Wash (**Figure 10a**). The Project area is just north of the  
14 confluence of Copper Basin Wash, a southwest trending drainage originating in the Bradshaw  
15 Mountains to the northeast, with Skull Valley Wash. There are portions of perennial stretches  
16 within the Copper Basin Wash upstream of the Project area within the foothills of the Bradshaw  
17 Mountains, likely originating as spring discharges from crystalline rocks (ADWR 2009).

18 Intermittent and perennial springs issue primarily from the volcanic and crystalline rocks,  
19 respectively, and are subject to seasonal variations in precipitation. The discharges of the  
20 intermittent springs measured by the USGS in 1979 ranged from less than 1 to 27 gallons per  
21 minute and most of the perennial springs ranged from 1 to 36 gallons per minute (ADWR 2009).  
22 Stream gauge data has not been collected within Copper Basin Wash. Stream gauge data collected  
23 from 1973 through 1983 in Kirkland Creek near Kirkland (Station 9424470) recorded mean annual  
24 flows per year as 7,961 acre-feet. Two unnamed tributaries to Copper Basin Wash, trending  
25 southwest, traverse the northwest and southeast corners of the Project area (**Figure 10b**). These  
26 drainages display “ordinary high water mark” (OHWM) characteristics, but the jurisdictional  
27 status of these potential “waters of the United States” has not yet been determined by the U.S.  
28 Army Corps of Engineers (ACOE). These drainages are not impacted by the mine footprint.

## 29 **3.6.3 Environmental Consequences**

### 30 **3.6.3.1 Proposed Action**

#### 31 **Groundwater**

32 Except for dust control, the Proposed Action is a dry process and does not consume water. The  
33 maximum water demand for dust suppression is 35,000 gallons per day (“gpd”) with an average  
34 demand of 28,800 gpd. Assuming an averaged 5-day work week, this equals 23 to 28 acre-feet

1 (“AF”) of water use each year over the projected 40-year mine life. As described in **Section 3.6.2.1**,  
2 this water would come from two ranch wells in Skull Valley, 3 to 7 miles from the Project area.

3 Plateau (2018) describes the condition of the source wells, including the physical availability of  
4 water to be used as a source for Project dust suppression, the local aquifer characteristics, historic  
5 changes in groundwater levels, well yields and drawdown, and an estimate of groundwater in  
6 storage. Plateau (2018) also presents groundwater quality data for Skull Valley and the source  
7 wells and evaluates the effects of the Proposed Action’s water use on local springs and streams  
8 and other wells in the valley.

9 During the last 100 years, an average of approximately 1,000 AF of groundwater has been  
10 consumed each year in Skull Valley for agricultural and domestic uses (Plateau 2018). The  
11 maximum, annual water demand at the mine is expected to total 28 AF or the equivalent of  
12 irrigating about 10 acres of pasture during the 6-month growing season (Plateau 2018).  
13 Considering this difference and observed year-to-year variations in irrigated acreage, it is not  
14 expected that any measurable effect on springs and streams in Skull Valley would result from the  
15 Proposed Action (Plateau 2018).

16 The Proposed Action is not expected to substantially affect groundwater quantity in Skull Valley.  
17 Specific capacity and aquifer transmissivity values for the area indicate that, if a ranch well is  
18 pumped at the mine’s maximum water demand, it will result in less than 1 to 2 feet of drawdown  
19 outside of the ranch boundaries (Plateau 2018). It is unlikely that this level of drawdown could be  
20 distinguished from observed groundwater fluctuations caused by local variations in irrigated  
21 acreage and/or changes in climate (Plateau 2018). There is more than sufficient groundwater in  
22 storage to meet long-term water demands of the Proposed Action and ongoing existing uses.  
23 Plateau (2018) estimates that the current volume of recoverable groundwater in the recent alluvium  
24 alone totals from 1,800 to 4,500 AF near the Section 9 Ranch and from 900 to 2,300 AF near the  
25 Section 4 Ranch.

26 Groundwater quality in Arizona is regulated under ADEQ’s Aquifer Protection Permit (APP)  
27 program while groundwater quantity is regulated through the ADWR. ADEQ specifies 24 types  
28 of facilities under A.R.S. § 49-250 as exempt from requiring an APP. The Proposed Action’s  
29 overburden stockpiles and stormwater retention basins are exempted from permitting under the  
30 ADEQ’s APP program. The excavated mining overburden would remain onsite within the  
31 footprint of the mine and would not be subject to any chemical or leaching agent, and the  
32 overburden would be used in the reclamation process. The Proposed Action’s surface  
33 impoundments within the mine area would be used solely to contain stormwater runoff.

34 Comparison of past and recent sampling results with water quality standards indicates that well  
35 water from the ranches proposed for use would be suitable for dust control and potable use at the  
36 mine (Plateau 2018).

1 The Proposed Action is not within an ADWR designated Active Management Area (AMA) or  
2 Irrigation Non-expansion Area (INA). Because the Proposed Action would use clean groundwater  
3 for dust suppression and processes environmentally benign HQP in its operations, it would not  
4 release pollutants into the aquifer or vadose zone.

### 5 *Surface Water*

6 Project impacts on surface water resources would be limited to one access road crossing of an  
7 ephemeral drainage that is potentially jurisdictional under Section 404 of the Clean Water Act  
8 (CWA) within the Project area and would comply with CWA Section 404 Nationwide permitting  
9 terms and conditions and BLM's authority under the FLPMA, surface management regulations  
10 (43 CFR 3809), and occupancy regulations (43 CFR 3715). An at-grade crossing would be  
11 reinforced with concrete to allow for safe crossing during rain events and prevent erosion of the  
12 drainage (**Figure 10b**). This crossing would likely qualify for a Nationwide Permit (NWP) 14 for  
13 Linear Transportation Projects (82 FR 1987). No activities within the mine itself are expected to  
14 result in impacts to potentially jurisdictional wetlands or waters of the United States under the CWA.

15 The Proposed Action would disturb approximately 88 acres. The mine boundaries have been  
16 adjusted to maintain a minimum 50-foot separation between disturbed areas and the major washes  
17 in northern and southern portions of the Project area. All stormwater (or water used for dust  
18 suppression) within footprint of the mine (contact water) would be contained within the mine area.  
19 It is anticipated that stormwater collected within the retention basin would percolate naturally into  
20 the ground through existing fissures in the HQP deposit (Burch Consulting Services, LLC 2018).

21 All stormwater that flows outside the footprint of the mine (non-contact water) would be diverted  
22 away from the mine to the extent possible. Drainage control would be achieved through a  
23 combination of contouring slopes to promote sheet flow and constructing stormwater diversion  
24 channels. Diversion channels would be designed to convey the 100-year, 24-hour storm event. It  
25 is important to note that the mine boundaries have been adjusted to maintain a minimum 50-foot  
26 separation between disturbed area and the major washes.

27 At buildout, there are five watersheds outside of the project's disturbance limits that contribute  
28 flows to the interior of the disturbance limits. These watersheds are mapped in **Figure 7**. Rain that  
29 falls within the disturbance limits would be retained in one or more retention basins to contain the  
30 runoff volumes from the 100-year, 24-hour rainfall event. In total, the basins would provide  
31 maximum storage for 1,172,700 cubic feet of water.

32 The Proposed Action would require a Multi-Sector General Permit (MSGP) for mining sector J  
33 for the Arizona Pollutant Discharge Elimination System (AZPDES) program with an attendant  
34 stormwater pollution prevention plan (SWPPP) required by ADEQ. The proposed mining  
35 operation is not located within active drainage channels or floodplains. Best Management Practices  
36 (BMPs) would be installed to manage stockpile areas and other disturbed surfaces. Sediment control

1 structures could include, but no be limited to fabric and/or hay bale filter fences, siltation or filter  
2 berms, and downgradient drainage channels in order to prevent unnecessary or undue degradation.

3 Direct runoff of water used for dust control shall be limited to the extent practicable and shall not  
4 cause downstream erosion or flooding nor cause an exceedance of applicable water quality  
5 standards.

6 The Proposed Action would require a Spill Prevention, Control and Countermeasure (SPCC) Plan  
7 that describes regulated oil-based products and spill protection measures for the Project area. A  
8 fuel tank would be stored onsite that would hold 10,000 gallons of diesel fuel. The SPCC Plan  
9 would be prepared in accordance with the 40 CFR Part 112, Oil Pollution Prevention and is  
10 required because the Proposed Action would require storage greater than 1,320 gallons of oil and  
11 petroleum products above ground. The Proposed Action would include procedures to prevent,  
12 control, and mitigate releases of oil and petroleum products to the environment within the Project  
13 area; those procedures would be described in the SPCC.

#### 14 *No Action Alternative*

15 Under the No Action Alternative, the BLM would not approve the MRPO, and impacts to water  
16 resources associated with the Proposed Action would not occur. The Project area would continue  
17 to be subject to existing and potential future land uses under the FLPMA, surface management  
18 regulations (43 CFR 3809), and occupancy regulations (43 CFR 3715).

19 Groundwater would continue to be pumped from individual existing wells for existing and  
20 potential future uses. At current groundwater depths and assuming that water levels beneath the  
21 ranches continue to decline at historic rates (an average of 0.06 to 0.18 feet per year), there would  
22 still be sufficient water in the Skull Valley aquifer for at least 100 years if groundwater demands  
23 in the area do not substantially change (Plateau 2018).

## 24 **3.7 Noise**

### 25 **3.7.1 Methodology and Analytical Assumptions**

26 This analysis will use a noise model to assess the noise impacts from mining operations  
27 (crusher/screener, excavator, articulated dump truck, front end loader, bull dozer) on sensitive  
28 noise receptors in proximity to the Project area. The model will also be used to assess noise impacts  
29 from Project-related transportation haul trucks on sensitive receptors along the Project haul routes.

30 The model uses ISO 9613-2 (ISO 1996) calculation methods for modeling mining noise, and the  
31 Federal Highway Administration's Traffic Noise Model for roadway noise. These models account  
32 for the geometric relationship of the noise sources and receptors, sound wave diffraction due to  
33 topography, ground impedance, and atmospheric attenuation to calculate the resulting sound level  
34 at each receptor due to all noise sources.

1 Noise modeled for the years 2019 and 2040 using projected traffic from WestLand (2018a) for the  
 2 roadway models, and the mining equipment that would be used in the Proposed Action as identified  
 3 in the Draft MRPO (**Table 3-9**). **Table 3-9** also shows the sound power level (SWL) used in the  
 4 model, and the source of the sound power level. The sound power (W) is the total acoustic power  
 5 generated by the source in watts; the sound power level (SWL) in dBA is equal to  $10 \cdot \log_{10} \left( \frac{W}{W_0} \right)$ ,  
 6 where  $W_0$  is 1 picowatt. The noise model uses the source sound power level and site conditions  
 7 such as geometry and terrain characteristics to calculate the sound pressure level (SPL) at each  
 8 receiver.

9 **Table 3-9. Mining Noise Sources**

Equipment	Quantity		Unit Sound Power Level (dBA*)	Data Source
	2019	2040		
Caterpillar D7-D10	1	4	116	Caterpillar Specifications
Caterpillar 120 to 160	1	1	107	
Caterpillar 320 to 5110	1	1	106	
Caterpillar 725 - 740	1	2	110	
Caterpillar 950 to 960	2	4	109	
Caterpillar 613 Water Wagon	1	1	110	
Ford F350	1	1	113	FHWA (2006)
Crusher	1	1	132	Bauer and Babich (2007), Banash et al. (2015)

10 \* decibels, A-weighted

11 The total sound power level for all mining sources was 132 dBA for 2019, and 133 dBA for 2040.  
 12 Since most of the sound power is from crushing/screening, the noise source was modeled at the  
 13 planned location of the crusher during initial operations. In addition to mining and roadway noise,  
 14 the model includes a 35-dBA background noise level, which is common for rural residential areas  
 15 (USEPA 1978).

16 Since mining activities will occur during daylight hours, the noise model results represent an  
 17 average daytime sound level.

18 There are no federal regulations that limit overall environmental noise levels, or local or state  
 19 ordinances that set noise threshold limits, but several federal agencies have established guidelines  
 20 that are either advisory or apply in narrow circumstances. To give a sense of scale to the results,  
 21 **Table 3-10** shows common activities and associated noise levels.

1

**Table 3-10. Examples of Sound Sources and Typical Sound Levels**

Description of Sound Source (receiver distance from source)	Sound Level (dBA)
Threshold of pain	140
Jet flyover (1,000 feet)	120
Rock band (15 feet)	110
Gas lawn mower (3 feet)	100
Food blender (3 feet)	90
Noisy urban daytime	80
Vacuum cleaner (10 feet)	70
Normal speech (3 feet)	67
Heavy traffic (300 feet)	60
Dishwasher next room	50
Urban nighttime	40
Quiet bedroom at night	30
Rural nighttime	25
Threshold of hearing	0

2

Source: ADOT 2008

### 3.7.2 Affected Environment

4 The terrain within the Project area is expected to provide attenuation of sound. The rock outcrops  
5 and hoodoos would act as sound barriers to areas west of the mining and reclamation operation.

6 Sensitive noise receptors in proximity of the proposed mining and reclamation activities include the  
7 Church of Jesus Christ of Latter Day Saints adjacent to the Project area on Iron Springs Road, the  
8 residence adjacent to the Project area on Iron Springs Road, and the closest residence to the mine  
9 within the residential development north of the Project area (**Figure 11**).

10 Existing conditions along the Project haul routes are described by Lee Engineering (2018). Nine  
11 sensitive receptors were identified along the haul routes (Lee Engineering 2018) as shown in  
12 **Figure 8** and described in **Table 3-4**.

13 The typical noise level away from traffic is around 35 dBA for rural residential areas (USEPA 1978).  
14 For the specific receptor locations shown in **Figure 11**, average daytime sound level is close to the  
15 values listed in **Section 3.7.3.2** (Environmental Consequences: No Action Alternative) for 2019.

1    **3.7.3 Environmental Consequences**

2    **3.7.3.1 Proposed Action**

3    **Table 3-11** shows the projected daytime noise levels for the Proposed Action Alternative for the  
 4 years 2019 and 2040. The location of the receptors is shown on **Figure 8**. Receptors 6 and 11  
 5 would have the highest projected sound levels, both in 2019 and 2040, due to the proximity of  
 6 these receptors to planned mining and existing and projected traffic. Receptor 8 would have the  
 7 third highest projected sound levels, both in 2019 and 2040, due to existing and projected traffic  
 8 noise along SR 89. The highest projected increases in sound level resulting from the Proposed  
 9 Action as compared to the No Action Alternative would be at three receptors (Receptors 6, 10, and  
 10 11), with increases in sound levels in both 2019 and 2040 ranging from 11.4 dBA to 18.8 dBA.  
 11 Planned mining activities would increase the sound level at these nearby receptors to a greater  
 12 extent than the other receptors because sound attenuates with distance. Increased truck traffic  
 13 generally has a minor effect on all receptors with increases in sound levels between the Proposed  
 14 Action and No Action Alternative ranging from 0.1 dBA to 2.6 dBA.

15                    **Table 3-11. Projected Daytime Noise Levels for the Proposed Action**

Receptor	Projected Sound Level (dBA)		Change from No Action Alternative Sound Level (dBA)	
	2019	2040	2019	2040
1. Skull Valley Elementary School	44.0	45.3	+1.4	+1.1
2. Kirkland Elementary School	50.9	53.4	+1.3	+2.0
3. Hillside Elementary School	41.8	42.5	+2.6	+2.0
4. Abia Judd Elementary School and Granite Mountain Middle School	53.1	54.3	+0.6	+0.5
5. Skull Valley Cemetery	38.9	39.7	+1.0	+0.8
6. Church of Jesus Christ of Latter Day Saints	66.8	67.8	+11.4	+15.1
7. Peeples Valley School	42.2	43.2	+2.0	+1.5
8. Granite Mountain Hotshots Memorial State Park	58.4	61.7	+0.1	+1.4
9. First Baptist Church	50.3	51.9	+2.1	+1.7
10. Residences north of the Proposed Action	55.1	56.1	+16.5	+18.8
11. Residences west of the Proposed Action	64.0	65.0	+14.7	+14.7

16  
 17    **3.7.3.2 No Action Alternative**

18    Under the No Action Alternative, noise associated with the Proposed Action would not occur. The  
 19 BLM-administered lands within Project area would continue to be subject to existing and potential  
 20 future land uses under the FLPMA, surface management regulations (43 CFR 3809), and  
 21 occupancy regulations (43 CFR 3715).

1 **Table 3-12** shows the projected daytime noise levels for the No Action Alternative for the years  
2 2019 and 2040. The location of the receptors is shown in **Figure 11**.

3 **Table 3-12. Projected Daytime Noise Levels for the No Action Alternative**

Receptor	Projected Sound Level (dBA)	
	2019	2040
1. Skull Valley Elementary School	42.6	44.2
2. Kirkland Elementary School	49.6	51.4
3. Hillside Elementary School	39.2	40.5
4. Abia Judd Elementary School and Granite Mountain Middle School	52.5	53.8
5. Skull Valley Cemetery	37.9	38.9
6. Church of Jesus Christ of Latter Day Saints	55.4	52.7
7. Peeples Valley School	40.2	41.7
8. Granite Mountain Hotshots Memorial State Park	58.3	60.3
9. First Baptist Church	48.2	50.2
10. Residences north of the Proposed Action	38.6	37.3
11. Residence west of the Proposed Action	49.3	50.3

## 4 **3.8 Vegetation**

### 5 **3.8.1 Methodology and Analytical Assumptions**

6 The vegetation section includes a discussion of impacts to general vegetation and special status  
7 species.

8 Direct impacts to vegetation are quantified as an acreage of surface disturbance. Indirect effects  
9 are qualitatively discussed.

### 10 **3.8.2 Affected Environment**

11 The Project area elevation ranges from approximately 4,020 feet above mean sea level (amsl) to  
12 4,240 feet amsl, with the highest elevation occurring near the northeast corner of the Project area.  
13 The Project area is located within the Central Highlands transition zone, located between the Basin  
14 and Range Lowlands and Colorado Plateau Uplands Provinces (Chronic 1983). This transition  
15 zone is characterized by rugged mountains of igneous, metamorphic, and sedimentary rocks. The  
16 Project area is located in the Skull Valley area near the confluence with Kirkland Creek, west of  
17 the Bradshaw Mountains and north east of the Weaver Mountains.

18 Broad-scale vegetation mapping in the vicinity of the Project area identified the biotic community  
19 as Interior Chaparral (Brown 1982; **Figure 12**). Site-specific investigation found that the Project  
20 area is largely characterized by Interior Chaparral with patches of Semidesert Grassland and  
21 riparian vegetative communities (EPG 2017). One invasive plant species was noted within the

1 vicinity of the Project area; saltcedar (*Tamarix sp.*) was noted in Copper Basin Wash, south of the  
2 Project area.

3 An ephemeral wash traverses the northern portion of the Project area and supports Sonoran scrub  
4 oak (*Quercus turbinella*), hollyleaf redberry (*Rhamnus ilicifolia*), alderleaf mountain mahogany  
5 (*Cercocarpus montanus*), Stansbury cliffrose (*Purshia stansburiana*), and broom snakeweed  
6 (*Gutierrezia sarothrae*).

7 The riparian corridor along an ephemeral wash traversing the southern portion of the Project area  
8 contains mesoriparian plant species including Fremont's cottonwood (*Populus fremontii*) and  
9 tamarisk (*Tamarix sp.*). Desert willow (*Chilopsis linearis*) is also dominant within portions of this  
10 riparian corridor.

11 The upland portion of the Project area where the mine is proposed supports Interior Chaparral,  
12 with some characteristics of Semidesert Grassland vegetation. Common species include curly-  
13 mesquite (*Hilaria belangeri*), broom snakeweed, velvet mesquite (*Prosopis velutina*), juniper  
14 (*Juniperus spp.*), and catclaw acacia (*Senegalia greggii*). A monoculture of Stansbury cliffrose  
15 (with few other herbaceous plants) occurs on the existing stockpile within the Project area.

16 No threatened or endangered plant species have the potential to occur within the Project area (EPG  
17 2017). Two BLM sensitive plant species, the California flannelbush (*Fremontodendron*  
18 *californica*) and Pima Indian mallow (*Abutilon parishii*), have some potential to occur within the  
19 Project area (EPG 2017 and WestLand 2018b).

### 20 **3.8.3 Environmental Consequences**

#### 21 **3.8.3.1 Proposed Action**

22 The Proposed Action may impact individuals of California flannelbush or Pima Indian mallow,  
23 both BLM sensitive plant species, but is not likely going to result in a trend toward listing or loss  
24 of viability of either species.

25 The Proposed Action will result in the removal of 88 acres of Interior Chaparral with patches of  
26 Semi-desert grassland upland vegetation within previously disturbed and open vegetated areas on  
27 BLM lands. Additional minor disturbances would occur as a result of ancillary facilities on 5-acres  
28 of adjacent privately-owned land. The mine access on privately-owned lands would require some  
29 minor removal of xeroriparian vegetation for road improvements and the construction of a culvert  
30 at one wash crossing.

31 Fugitive dust would occur as a result of Proposed Action, though dust is largely deposited closest  
32 to the source, and attenuates with distance. For example, dust loads along unpaved haul ways  
33 decreases exponentially with distance, such that more than 70 percent of total dust is deposited  
34 within approximately 30 feet of the road, and more than 90 percent within 30 meters (Walker and

1 Everett 1987). In addition, dust can affect the growth processes of vegetation and alter the structure  
2 of plant communities in an area (Farmer 1993). Due to the localized nature of the Proposed Action,  
3 and the implementation of dust control practices as described in **Section 3.5** (Air Quality), the  
4 effects of dust on vegetation is anticipated to be minimal.

5 Effects of the Proposed Action would be mitigated through the implementation of reclamation and  
6 revegetation activities, consistent with the H-3809-1 Surface Management Handbook (BLM 2012)  
7 and the H-3042-1 Solid Minerals Reclamation Handbook (BLM 1992), and use of best  
8 management practices to prevent the spread of noxious weeds.

9 Under the Proposed Action, KMC, LLC associated mining activities include clearing vegetation  
10 and increased use of heavy equipment and trucks to transport material may provide the opportunity  
11 for invasive, noxious weeds to establish and spread. KMC, LLC would implement weed control  
12 measures for all unpaved areas and coordinate with the BLM to control any invasive weeds that  
13 may be found within the Project area in compliance with the BLM Phoenix District's Integrated  
14 Weed Management Program (IWMP).

### 15 **3.8.3.2 No Action Alternative**

16 Under the No Action Alternative, the BLM would not approve the MRPO, and vegetation impacts  
17 and eventual reclamation associated with the Proposed Action would not occur. The BLM-  
18 administered land within the Project area would continue to be subject to existing and potential  
19 future land uses under the FLPMA, surface management regulations (43 CFR 3809), and  
20 occupancy regulations (43 CFR 3715).

## 21 **3.9 Wildlife**

### 22 **3.9.1 Methodology and Analytical Assumptions**

23 This section includes a discussion of impacts to general wildlife and special status species.

24 Environmental Planning Group, LLC (EPG) performed a biological evaluation (BE) of the  
25 Proposed Action analyzing special status species protected by the U.S. Fish and Wildlife Service  
26 (USFWS) under the Endangered Species Act (ESA) and species identified by BLM as sensitive<sup>3</sup>.  
27 WestLand performed screening analyses for BLM sensitive species listed for the Phoenix District  
28 that were not addressed by EPG (2017), Arizona Game and Fish Department's (AGFD) Species  
29 of Greatest Conservation Need (SGCN), and migratory bird species (WestLand 2018b).

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<sup>3</sup> EPG evaluated species identified as potentially occurring in the Phoenix District Office from the BLM's 2017 sensitive species list for their potential presence in Yavapai County and in the general vicinity to the Project area.

1    **3.9.2   Affected Environment**

2    **3.9.2.1   Special Status Species**

3    Eleven BLM sensitive wildlife species (four species of bats, five species of raptors, one amphibian,  
4    one invertebrate) have potential to occur within the Project area (EPG 2017 and Westland 2018b).  
5    Two of the five raptor species that have potential to occur within the Project area, the golden eagle  
6    (*Aquila chrysaetos*) and the bald eagle (*Haliaeetus leucocephalus*), are also protected under the  
7    Bald and Golden Eagle Protection Act. Preferred habitat is not present for any of these species  
8    except for the amphibian; there is some greater potential for the Arizona toad (*Anaxyrus*  
9    *microscaphus*) to occur in canyons and washes within the Project area (EPG 2017).

10   A total of 30 SGCN species were analyzed (WestLand 2018b). Of the species assessed, 18 were  
11   determined to have no potential to occur. Those 12 SGCN species with a reasonable potential to  
12   occur include:

<b>Common Name</b>	<b>Scientific Name</b>
Arizona Bell’s vireo	<i>Vireo bellii arizonae</i>
Arizona black rattlesnake	<i>Crotalus cerberus</i>
Arizona night lizard	<i>Xantusia arizonae</i>
Common nighthawk	<i>Chordeiles minor</i>
Gila spotted whiptail	<i>Aspidoscelis flagellicauda</i>
Gila woodpecker	<i>Melanerpes uropygialis</i>
Lincoln's sparrow	<i>Melospiza lincolni</i>
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>
Sonoran desert toad	<i>Incilius alvarius</i>
Sonoran whipsnake	<i>Coluber bilineatus</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Yellow warbler	<i>Setophaga petechia</i>

13   **3.9.2.2   Migratory Birds**

14   The primary laws and regulations specifically addressing impacts to migratory birds are described  
15   in or derived from the Migratory Bird Treaty Act (MBTA) of 1918, as amended, and Executive  
16   Order 13186, signed by President Clinton on January 10, 2001, which placed procedural  
17   requirements on the analysis of federal actions on the conservation of migratory birds and their  
18   habitats.

19   A total of 26 migratory bird species were analyzed (WestLand 2018b). Of those assessed, 8 were  
20   determined to have a reasonable potential to occur. Those eight species include:

<b>Common Name</b>	<b>Scientific Name</b>
Bell's vireo	<i>Vireo bellii</i>
Bendire's Thrasher	<i>Toxostoma bendirei</i>
Black-chinned sparrow	<i>Spizella atrogularis</i>
Costa's hummingbird	<i>Calypte costae</i>
Gila woodpecker	<i>Melanerpes uropygialis</i>
Gray vireo	<i>Vireo vicinior</i>
Lucy's warbler	<i>Leiothlypis luciae</i>
Prairie falcon	<i>Falco mexicanus</i>

1    **3.9.2.3    General Wildlife**

2    Several mammal species use chaparral and grassland vegetation as habitat; smaller mammals  
3    include eastern cottontail (*Sylvilagus floridanus*), cliff chipmunk (*Tamias dorsalis*), white-footed  
4    mouse (*Peromyscus leucopus*), rock mouse (*P. difficilis*), and white-throated woodrat (*Neotoma*  
5    *albigula*). Game species expected to occur within the Project area include mule deer (*Odocoileus*  
6    *hemionus*), javelina (*Tayassu tajacu*), and Gambel's quail (*Callipepla gambelii*). Nesting scrub-  
7    adapted avian species likely to occur include bushtit (*Psaltriparus minimus*), canyon wren  
8    (*Catherpes mexicanus*), canyon towhee (*Melospiza fusca*), rufous-crowned sparrow (*Aimophila*  
9    *ruficeps*) and black-chinned sparrow (*Spizella atrogularis*). Common reptiles may include side-  
10    blotched lizard (*Uta stansburiana*), western threadsnake (*Leptotyphlops humilis*); and whipsnake  
11    (*Masticophis* sp.).

12    The two riparian corridors traversing the northern and southern portions of the Project area provide  
13    opportunity for wildlife movement.

14    **3.9.3    Environmental Consequences**

15    **3.9.3.1    Proposed Action**

16    The two riparian corridors traversing the northern and southern portions of the Project area that  
17    provide opportunity for wildlife movement would not be impacted by the surface disturbance  
18    associated with the Proposed Action.

19    Potential project-related impacts on wildlife would include permanent and temporary  
20    displacement; habitat loss, degradation, and fragmentation; and noise disturbance. Approximately  
21    88 acres of upland habitat would be impacted; these areas likely include foraging areas, burrows,  
22    cavities, shelter sites, and nests, for individual wildlife species. However, these impacts are not  
23    likely to have population-level effects on species that are expected to occur within the Project area.

24    Potential project-related impacts on wildlife would include those described above as well as  
25    individual mortality. These impacts would be site-specific, minor, and long term. Individual  
26    mortality could occur through collisions with and crushing by vehicles and equipment,

1 entombment of animals in burrows, destruction of foraging areas, cavities, shelter sites, and nests  
2 in areas where ground disturbance would occur. The increase in traffic associated with the  
3 transport of HQP as part of the Proposed Action, may result in an increase in wildlife mortality,  
4 but those impacts would be only incremental to those impacts associated with existing traffic. The  
5 Proposed Action may impact individuals of wildlife species, including BLM sensitive species with  
6 the potential to occur within Project area, but it would not cause impacts that would result in a  
7 trend toward listing or loss of viability of any of these species.

8 The Project activities could result in noise disturbance to individual migratory birds that are nesting  
9 in or around the Project area. Noise can have negative impacts on bird behavior, communication,  
10 and survival (Barber et al. 2010). Birds often avoid noisy areas due to reduced habitat quality, thus  
11 influencing the occupancy of an area and altering community structure (Habib et al. 2007). Noise  
12 can also disturb nesting activities of breeding birds; however, the manner in which different species  
13 respond to noise varies widely as some birds have been known to become habituated to higher  
14 noise levels (Brown et al. 1999). Studies have shown that distance to disturbance is important in  
15 determining effects on a species (Grubb and King 1991). Noise attenuates with distance and as a  
16 result of shielding. Therefore, as distance increases from the source of the noise and terrain  
17 provides shielding, a decrease in noise levels and impacts to birds occurs. Therefore, it is  
18 anticipated that the effects of noise on migratory birds will be limited to individuals nesting and  
19 foraging close to noise sources.

20 Although we know of no studies that have comprehensively tested for an effect of traffic on bird  
21 mortality while controlling for all confounding variables, it is clear that vehicular traffic can result  
22 in avian mortalities (e.g., Loss et al. 2014) and influences bird behavior (e.g., Parris and Schneider  
23 2008) and occupancy in habitats adjacent to roads (e.g., Goodwin and Shriver 2011). The thresholds  
24 above which an increase in traffic volume might impact avian species likely varies by species and  
25 environmental conditions. The incremental increase in traffic volume as a result of the Proposed  
26 Action worst case scenario is 210 vehicles per day resulting in a 2.9 to 24.1 percent increase along  
27 three haul routes. This relatively minor to moderate increase above the current traffic volume may  
28 have impacts on individual migratory birds, but would not have population-level effects.

29 Fugitive dust would occur as a result of Proposed Action, and, dust can affect the growth processes  
30 of vegetation and alter the structure of plant communities in an area, indirectly affecting migrating  
31 bird species (Farmer 1993). Due to the localized nature of the Proposed Action, and the  
32 implementation of dust control practices as described in **Section 3.5** (Air Quality), the effects of  
33 dust on migratory bird species of concern and their habitat is anticipated to be minimal. Effects  
34 are expected to be limited to individuals nesting and foraging close to dust sources.

35 Upon permanent cessation of mining activities associated with the Proposed Action, disturbed  
36 areas will be stabilized and reclaimed in accordance with the reclamation plan described in the

1 Draft MRPO. To minimize impacts to wildlife resources within the Project area, KMC, LLC would  
2 implement the following measures:

- 3 • Clear vegetation only in those areas necessary for mining and ancillary facilities.
- 4 • To avoid destruction of active migratory bird nests, vegetation removal will occur between  
5 August 2 and February 28 to avoid the nesting season.
- 6 • If vegetation is to be removed during the nesting season (March 1 – August 1), the area to  
7 be cleared of vegetation will be searched for active nests (nests containing eggs or young).  
8 If an active nest is discovered, it will be avoided until the young have fledged. If an active  
9 nest must be relocated to continue mining operations, KMC, LLC will obtain the required  
10 permits from the USFWS and follow the terms and conditions of the permit.
- 11 • Employ interim revegetation where practicable to stabilize slopes that are expected to  
12 remain in place until final reclamation.
- 13 • Use existing roads to the maximum extent possible.
- 14 • Keep surface impacts to the minimum that is required to provide safe equipment access  
15 and crew working areas.
- 16 • Maintain prudent speed limits.
- 17 • Limit mine operations to occur between dawn and dusk to avoid the illumination of  
18 adjacent habitat areas to reduce effects to light-sensitive species.

### 19 **3.9.3.2 No Action Alternative**

20 Under the No Action Alternative, the BLM would not approve the MRPO, and impacts to wildlife,  
21 including special status species associated with the Proposed Action would not occur. The BLM-  
22 administered land within the Project area would continue to be subject to existing and potential  
23 future land uses under the FLPMA, surface management regulations (43 CFR 3809), and  
24 occupancy regulations (43 CFR 3715).

## 25 **3.10 Minerals and Soils**

### 26 **3.10.1 Methodology and Analytical Assumptions**

27 The impacts to soils are quantified as an acreage of surface disturbance associated with the mine.  
28 Indirect effects are qualitatively discussed. Effects of the Proposed Action would be mitigated  
29 through the implementation of reclamation activities and use of best management practices to  
30 prevent erosion.

### 31 **3.10.2 Affected Environment**

#### 32 **3.10.2.1 Minerals**

33 Mineral and energy resources in the general area include locatable and leasable minerals. The  
34 regional landscape surrounding the Project area is moderately rugged terrain, with some cliffs,

1 ridges, and peaks mostly composed of older, metamorphosed Precambrian basalt, tonalite, and  
2 granite overlain with sedimentary and volcanic rocks (DeWitt et al. 2008). The bedrock within the  
3 Project area consists of stratified Miocene volcanic tuff and basalt. The tuff is a tan to white,  
4 thick-bedded to massive crystal-lithic to lithic tuff in excess of 250 feet thick that dips gently to  
5 the northeast. The tuff is exposed at the surface over most of the Project area. In the northern and  
6 northeastern portion of the Project area, the tuff is overlain by a dark gray basalt that can vary in  
7 thickness up to 30 feet (Ninyo and Moore 2015; **Figure 13**).

8 Portions of the Project area have been heavily disturbed by historical mining activities. Mining has  
9 been conducted at this location since the late 1800s. Per the Arizona Department of Mines and  
10 Mineral Resources website, the area has been known variously throughout its history as the  
11 Arizona Tufa (“Magic Mountain”) Property, Ryneerson Quarry, Kirkland Tuff Quarry, Maverick  
12 Mine, Kitty Litter Mine, and Capital Quarry. In 1958, the Ryneerson family leased the quarry to  
13 Capital Quarries to provide dimensioned stone for construction of the Arizona State Capital  
14 Building; it is estimated that the builders may have used up to 1,000 tons during this operation. In  
15 1979, Kitty Litter Mine began shipping oil absorbent material from the mine that was producing  
16 approximately 1,200 tons of tuff per month. The mine was closed in 1985 and the equipment was  
17 removed. A stockpile that remains covers approximately 2.6 acres of the Capital Seven lode claim  
18 (Figures 2 and 3), and contains approximately 48,000 tons of HQP.

19 The HQP deposit within the Project area is the subject of an uncommon variety determination  
20 under the Common Varieties Act (30 U.S.C §§ 611-615). On April 20, 2017, BLM made the  
21 determination that the HQP subject to the Project is a locatable mineral and subject to 43 CFR  
22 3809 regulations and BLM Handbook 3809-1 (BLM Reference No. AZA-36808).

23 Ninyo & Moore (2015) conducted a geologic site reconnaissance, mapping the geologic conditions  
24 on the KMC, LLC Homestead and Capital Association placer claims. An exploratory drilling  
25 program was developed to test HQP samples for consistency in the high quality of the HQP  
26 deposits through the Project area. A drilling program consisting of ten drill holes was authorized  
27 by the BLM in December 2015 and conducted in February and March of 2016 to determine the  
28 extent of the entire HQP deposit within the lode mining claims (AZA 36808). The holes varied in  
29 depth from 40 to 100 feet. The drilling program was summarized in the Sandwell-Weiss (2016)  
30 geological report.

31 From September 18, 2017, to October 6, 2017, KMC, LLC conducted a bulk sampling and  
32 equipment demonstration at the mine site. Equipment used to collect and process the bulk samples  
33 was consistent with equipment identified for use as part of the Proposed Action. Seven bulk  
34 samples were collected, crushed, and screened onsite. Data and information collected during the  
35 demonstration confirmed the efficacy of the Proposed Action and revealed geotechnical  
36 characteristics of the HQP pertinent to mining and processing methods.

1 **3.10.2.2 Soils**

2 There are no prime or unique farmlands within the Project area. Two NRCS soil classifications  
3 occur within the Project area; Rockland (RO), a non-soil unit with a high percentage of rock  
4 outcrop and Venezia-Thunderbird complex (VtE) with 15 to 40 percent slopes (NRCS 2017,  
5 **Figure 14**).

6 **3.10.3 Environmental Consequences**

7 **3.10.3.1 Proposed Action**

8 **Minerals**

9 Under the Proposed Action, KMC, LLC would excavate, screen, and offload approximately 23.4  
10 million tons of HQP over approximately 40 years for commercial use. Based on the proposed  
11 reclamation plan, there would be no unmanageable change to existing geology and, because no  
12 hazardous waste or deleterious substances would be produced and the geological materials onsite  
13 are environmentally benign, the Proposed Action would not affect the health and safety of the  
14 environment. There are deposits of other potentially minable materials or resources within the  
15 Project area, but there are no other proposals for mining these materials or resources; therefore,  
16 these materials or resources would not be affected by the Proposed Action.

17 **Soils**

18 The Proposed Action will disturb approximately 88 acres of surface including soils within the mine  
19 footprint.

20 **3.10.3.2 No Action Alternative**

21 Under the No Action Alternative, the BLM would not approve the MRPO, and there would be no  
22 impacts to soils or minerals associated with the Proposed Action. The BLM-administered land  
23 within the Project area would continue to be subject to existing and potential future land uses under  
24 the FLPMA, surface management regulations (43 CFR 3809), and occupancy regulations (43 CFR  
25 3715). The existing stockpile and other previously disturbed areas would remain in place and  
26 would not be reclaimed.

27 **3.11 Socioeconomics**

28 **3.11.1 Methodology and Analytical Assumptions**

29 Issues raised during scoping included the potential negative effects of aesthetics, dust, and noise  
30 on property values within the vicinity of the Project area; potential impacts to local businesses,  
31 industry, and tourism, and impacts to local tax revenues. This section addresses historical and  
32 recent socioeconomic conditions in Yavapai County that would be affected by the Proposed Action  
33 and No Action Alternative. The area analyzed includes regional (Yavapai County) and local

1 community settings including nearby Census Designated Places (CDPs) and cities where  
2 socioeconomic data is available.

3 **3.11.2 Affected Environment**

4 The Project area is located within rural Yavapai County and is not within any designated areas  
5 where census data is readily available. Local CDPs surrounding the Project area and adjacent to  
6 proposed transportation haul routes include Wilhoit, Peoples Valley, Yarnell, Congress,  
7 Williamson, and Prescott City (**Figure 8**). The Project area vicinity is rural in character and  
8 sparsely populated. **Table 3-13** summarizes estimated demographic data for 2016 within local  
9 CDPs and Yavapai County, where data is available.

10 **Table 3-13. Local and County Estimated Demographic Data for 2016 Including Population, Majority**  
11 **Population Percentage, Median Age, Median Household Income, Percent of Individuals Below the Poverty**  
12 **Level, and Civilian Labor Unemployment Rate**

Estimated 2016 Demographics *	Wilhoit Census Designated Place (CDP)	Peoples Valley CDP	Yarnell CDP	Congress CDP	Williamson CDP	Prescott City	Yavapai County
Population	922	488	575	1,247	5,207	41,090	218,586
Majority Population, White (%)	95.8%	98.4%	94.6%	96.3%	94.8%	93.5%	92.0%
Median Age	59	52	65	67	63	56	52
Median Household Income	\$32,206	\$43,125	\$28,750	\$38,830	\$66,366	\$48,259	\$46,638
Individuals below Poverty Level	18.2%	25.4%	17.6%	9.3%	4.7%	13.9%	14.0%
Civilian Labor Unemployment Rate	7.6%	5.7%	14.1%	8.2%	10.4%	9.0%	8.5%

13 \* Source Information: 2016 American Community Survey Estimates

14 The majority of the population within Yavapai County and the local CDPs are white ranging from  
15 92.0 to 98.4 percent of the total population. The median age ranges from 52 to 67 years old, the  
16 median household income ranges from \$28,750 to \$66,366, percentages of individuals living  
17 below the poverty level range from 4.7 to 25.4 percent, and the civilian labor force unemployment  
18 rate ranges from 5.7 to 14.1 percent. There are no Environmental Justice populations within the  
19 local communities as the majority of the population is white (non-minority) and live above the  
20 poverty line.

21 Five-year estimates of the labor industry within Yavapai County and the local CDPs from 2012 to  
22 2016 is summarized in **Table 3-14**.

1 **Table 3-14. Estimated Employment Percentages by Industry, 2012-2016 American Community Survey 5-Year**  
2 **Estimates**

Industry	Wilhoit CDP	Peoples Valley CDP	Yarnell CDP	Congress CDP	Williamson CDP	Prescott City	Yavapai County
Civilian employed population 16 years and over	244	149	110	302	1,542	14,522	82,934
Agriculture, forestry, fishing and hunting, and mining	2.9%	14.1%	0.0%	4.3%	4.5%	0.4%	2.5%
Construction	14.3%	6.0%	0.0%	16.2%	2.2%	5.0%	7.7%
Manufacturing	7.0%	0.0%	0.0%	0.0%	5.7%	3.8%	5.4%
Wholesale trade	0.0%	4.0%	0.0%	0.0%	3.0%	1.4%	1.8%
Retail trade	14.3%	16.8%	3.6%	14.6%	10.5%	11%	12.7%
Transportation and warehousing, and utilities	10.7%	8.7%	11.8%	0.0%	2.2%	4.5%	4.3%
Information	2.5%	0.0%	2.7%	3.0%	0.0%	1.4%	1.5%
Finance and insurance, and real estate and rental and leasing	3.3%	6.0%	8.2%	5.3%	9.9%	5.1%	4.7%
Professional, scientific, and management, and administrative and waste management services	10.7%	10.1%	25.5%	5.0%	16.8%	12.1%	10.0%
Educational services, and health care and social assistance	16.0%	18.8%	3.6%	16.6%	22.6%	31.2%	24.5%
Arts, entertainment, and recreation, and accommodation and food services	6.6%	3.4%	16.4%	30.8%	7.8%	13.0%	13.2%
Other services, except public administration	8.6%	2.0%	19.1%	2.0%	5.1%	4.9%	6.8%
Public administration	3.3%	10.1%	9.1%	2.3%	9.7%	6.3%	4.9%

3 The largest industries in Yavapai County are education, health care, and senior assistance services  
4 at 24.5 percent, followed by arts, entertainment, recreation, accommodations, and food services at  
5 13.2 percent (**Table 3-14**). The highest paying industries are mining, quarrying, oil, and gas  
6 extraction (\$50,977), utilities (\$50,203), and professional, scientific, tech services (\$37,120) (Data  
7 USA 2018).

8 The Weaver Mountains Chamber of Commerce has developed a Regional Strategic Economic  
9 Development Plan (2017) for the local region, representing Congress, Stanton/Octave, Glen Ilah,  
10 Yarnell, Peoples Valley, Kirkland Junction, Wagoner, Walnut Grove, Wilhoit, Kirkland, Hillside,  
11 and Skull Valley. This plan documents the economic priorities and goals of the region and  
12 generally describes current local amenities and opportunities for residents, businesses, and visitors  
13 including schools, churches, fire districts, water companies, restaurants, artists, crafts folk,  
14 antiques, ranches, cemeteries, historical societies, community gardens, community centers,  
15 professional services, hiking/walking trails, bicycle and motor cycle routes (Fostik-Amos and  
16 Thomas 2017).

1 The strategic economic development plan emphasizes tourism and business development plans  
2 that propose attracting retail, transportation services, lodging and accommodations, low-impact  
3 manufacturing, restaurants, health care services, and living facilities/services (Fostik-Amos and  
4 Thomas 2017).

5 The majority of the local CDPs near the Proposed Action and Yavapai County contain a growing  
6 and aging population that supports subsequent increase in housing units. **Table 3-15** summarizes  
7 trend data on population, median age, and number of housing units between 2000 and 2016,  
8 utilizing U.S. census data for year 2000 and year 2010 and an estimate for 2016 from the American  
9 Community Survey 5-Year Estimates.

10 **Table 3-15. 2000-2016 Population, Median Age, and Number of Housing Units**

Location	Population			Median Age			Housing Units		
	2000	2010	2016*	2000	2010	2016*	2000	2010	2016*
Wilhoit CDP	664	868	922	50	54	59	363	483	566
Peoples Valley CDP	374	428	488	57	63	52	320	338	366
Yarnell CDP	645	649	575	57	61	65	516	597	570
Congress CDP	1,717	1,975	1,247	60	63	67	1,070	1,226	1,055
Williamson CDP	3,776	5,438	5,207	51	58	63	1,718	2,779	2,984
Prescott City	33,938	39,843	41,090	48	54	56	17,144	22,159	22,417
Yavapai County	167,517	211,033	218,586	45	49	52	81,730	110,432	112,854

11 \*Source: U.S. Census Bureau, 2016 American Community Survey 5-Year Estimates

12 Between 2000 and 2016, the majority of local communities surrounding the Project area and  
13 Yavapai County sustained in increase in population, median age, and available housing units,  
14 except for Peoples Valley, Yarnell, and Congress.

15 Several residential properties are located less than 0.2 miles southwest of the Project area and  
16 between 0.4 and 1 mile north of the Project area. These residences include ranch properties, smaller  
17 residential acreages, single-family residents, and mobile homes. Based on recent sales and county  
18 assessments, property values within the nearby area are generally increasing based on rising  
19 limited property values (Yavapai County Assessor, 2018). Additionally, **Table 3-16** provides the  
20 median values for housing units within the local communities from 2009 through 2016. Generally,  
21 most communities home values fell during the recession from 2009 through 2012, but have begun  
22 to slowly recover, with the exception of Yarnell that has sustained steady decreases in median  
23 home values from \$186,000 in 2009 to the lowest value of \$118,000 in 2016. Most of the local  
24 communities sustained slight decreases in home values from 2013 to 2014, but have since  
25 maintained steady increases, except for Wilhoit and Peoples Valley with decreases of 2.4 percent  
26 and 5.5 percent between 2015 and 2016, respectively.

1 **Table 3-16. 2009-2016 Median Value of Owner-Occupied Housing Units**

Location	Median Value of Owner-Occupied Housing Units *							
	2009	2010	2011	2012	2013	2014	2015	2016
Wilhoit	\$146,200	\$123,000	\$105,500	\$90,000	\$85,600	\$83,700	\$87,500	\$85,400
Peeples Valley	\$154,500	\$120,800	\$151,200	\$112,500	\$121,200	\$115,400	\$133,800	\$126,400
Yarnell	\$186,000	\$195,500	\$163,800	\$161,000	\$156,800	\$139,100	\$126,400	\$118,000
Congress	\$148,400	\$146,400	\$134,200	\$117,600	\$119,400	\$112,100	\$124,400	\$143,700
Williamson	\$455,300	\$429,200	\$413,500	\$381,200	\$367,100	\$364,100	\$370,800	\$382,300
Prescott City	\$305,800	\$310,000	\$291,000	\$272,800	\$263,100	\$265,500	\$272,200	\$283,500
Yavapai County	\$232,700	\$231,000	\$216,900	\$199,200	\$184,100	\$181,100	\$188,200	\$199,300

2 \* Source: U.S. Census Bureau, 2016 American Community Survey 5-Year Estimates

3 **3.11.3 Environmental Consequences**

4 **3.11.3.1 Proposed Action**

5 As stated in **Section 3.11.2** (Affected Environment), based on recent sales and county assessments,  
6 property values within the Project area vicinity are generally increasing based on rising limited  
7 property values (Yavapai County Assessor, 2018). The Project area has been subject to previous  
8 mining activities as described in **Section 3.10.2**, and the Proposed Action will be adding to an  
9 existing mine feature within that landscape. Efforts to minimize impacts to property owners close  
10 to the Project area would include limiting mining activities from dawn to dusk and dust abatement  
11 measures. Noise associated with the Proposed Action is expected to result in minor to moderate  
12 impacts on surrounding sensitive receptors (depending on the distance of those receptors to the  
13 proposed mining operations), including residences closest to the Proposed Action as described in  
14 **Section 3.7** (Noise) and Project transportation needs would result in minor to moderate impacts  
15 on traffic (**Section 3.4** [Transportation]). Clean Air Act permitting requirements and best  
16 management practices would minimize and mitigate air quality impacts associated with the  
17 Proposed Action (**Section 3.5** [Air Quality]).

18 Under the Proposed Action, KMC, LLC would result in a maximum of 12 additional jobs within  
19 Yavapai County. These jobs would also result in indirect jobs (those that support the industry) and  
20 induced jobs (those that are a result of direct/indirect employees spending money in the  
21 community) associated with the additional employment.

22 The Proposed Action would also result in some amount of increased sales, payroll, use taxes  
23 generated by the Project, the Arizona Transaction Privilege Tax for Mineral Commodities, and  
24 property taxes from the privately-owned portion of the Project area.

25 **3.11.3.2 No Action Alternative**

26 Under the No Action Alternative, there would be no additional jobs or associated tax revenues  
27 associated with the Proposed Action. The No Action Alternative would not stimulate the local  
28 economy from the additional jobs associated with the Proposed Action’s mining operations. The

1 BLM-administered land within the Project area would continue to be subject to existing and  
2 potential future land uses under the FLPMA, surface management regulations (43 CFR 3809), and  
3 occupancy regulations (43 CFR 3715).

## 4 **3.12 Visual Resources**

### 5 **3.12.1 Methodology and Analytical Assumptions**

6 A seen/unseen visual analysis of the Proposed Action was conducted using post-construction  
7 topography to evaluate the impacts to the viewsheds within a 5-mile radius, within a 15-mile  
8 radius, and beyond a 15-mile radius (**Figures 15a and 15b**). The methodology uses the concept  
9 that if an area is visible from the disturbance area, then the disturbance area would be visible from  
10 that area.

11 The analysis was conducted using ArcGIS 10.1 software with a 3D Analyst extension within a 15-  
12 mile radius of the Project area. A U.S. Geological Survey 10-meter Digital Elevation Model  
13 (DEM) will be used to depict the existing ground topography.

14 Markers were digitally placed every 100 to 300 feet within the Proposed Action footprint. The  
15 percentage of markers visible across the surrounding landscape are presented graphically; this  
16 allows for the evaluation of potential visual impacts relative to a range of distances from the  
17 Proposed Action. Vegetation cover and manmade structures were considered in the analysis, and  
18 the observer's perspective was assumed to be 6 feet from the ground.

19 A visual simulation was prepared to illustrate post-Proposed Action view from the west side of  
20 Iron Springs Road at the mine access road (**Figure 16**).

### 21 **3.12.2 Affected Environment**

22 The Project area is delineated as Visual Resource Management (VRM) Class II (BLM 2010). The  
23 objective for BLM administered lands under VRM Class II is: "To retain the existing character or  
24 the landscape. The level of change to the characteristic landscape should be low. Management  
25 activities may be seen, but should not attract the attention of the casual observer. Any change must  
26 repeat the basic elements of *form, line, color, and texture* found in the predominant natural features  
27 of the characteristic landscape." VRM does not apply to privately-owned lands.

28 After approval of the RMP, a Visual Resource Inventory (VRI) was completed for the Project area  
29 (BLM 2011); the VRI was set at Class IV. The VRI class was set based on a combination of scenic  
30 quality, sensitivity level, and distance zones. Inventory classes are informational in nature and  
31 provide the basis for considering visual values in the RMP process. VRI classes do not establish  
32 management direction. Within the VRI class ranges of I - IV, areas inventoried as IV have the lowest

1 sensitivity levels. In the case of the Project area, the BLM completed the VRM classification prior  
2 to completing the VRI analysis.

3 Portions of the Project area have been disturbed by historical mining activities as described in  
4 **Section 3.10.2** (Minerals and Soils, Affected Environment). In general, the area is characterized  
5 by rugged mountains, low rolling hills, lava-capped mesas, and wide valleys. The Project area is  
6 located among low-rolling hills generally within the Skull Valley basin, but is strikingly different  
7 from the surrounding area in color, due to natural outcropping and previous mining and stockpiling  
8 of the Pozzolan materials. From an aerial view, the exposed Pozzolan is predominately white  
9 mottled with contrasting dark gray to brown basalt caps. A ridgeline of lighter-colored hoodoos  
10 lies just west of the mine footprint (**Figure 16**). The area is not heavily vegetated due to previous  
11 disturbance and nature of the biotic community.

12 The surrounding landscape is essentially rural with minimal development in the vicinity. Existing  
13 development within the vicinity of the Proposed Action includes sparsely dispersed ranching  
14 properties, mobile home and single-family residences, and agricultural fields. The majority of  
15 year-round or part-time residential observers would be limited to those residents located  
16 immediately southwest of the existing hoodoos and those residents located between 0.4 and 1 mile  
17 north of the Proposed Action. A few sparsely distributed residences are located adjacent to  
18 agricultural fields on the westside of Iron Springs Road between 1 and 3 miles northwest of the  
19 Proposed Action and nestled within the foothills of the Weaver Mountains approximately 5 miles  
20 to the southwest of the Proposed Action. The next largest group of residential observers are those  
21 located between 4.5 to 5.5 miles to the east in Wilhoit. Additionally, the area incurs short-term  
22 recreational users within the Prescott National Forest located approximately 4 miles to the  
23 northeast and transient observers driving along Iron Springs Road.

### 24 **3.12.3 Environmental Consequences**

#### 25 **3.12.3.1 Proposed Action**

26 Mining and surface disturbance activities associated with the Proposed Action would include  
27 temporary and permanent affects to the *form*, *lines*, and *color* of the landscape within the 88-acre  
28 disturbance footprint that would be visible to some nearby permanent to semi-permanent observers  
29 (**Figures 15a and 15b; Table 3-17**). Please note that the views described here are those resulting  
30 from the full build-out of the 88-acre mine, and those impacts would be gradually realized and  
31 reclaimed concurrently with mining operations over the 40-year life of mine. The Proposed Action  
32 would result in temporary visual impacts affecting the visual elements of *color* and *form* from the  
33 addition of mining equipment and on-site facilities required for operation of the mine. Mining  
34 equipment would be mobile and comply with safety measures regarding visibility; therefore, no  
35 visual mitigation such as painting equipment and facilities a specified color to blend with the  
36 surrounding landscape is proposed. There would be some periods of time during the life of the mine

1 when the mining equipment would be obscured from surrounding views by surrounding pit walls.  
 2 The Proposed Action would result in permanent visual impacts principally affecting the visual  
 3 element of *color* through the disturbance of existing vegetation and removal of the white-colored  
 4 Pozzolan and affecting the visual element of *form* through the excavation of material. These visual  
 5 impacts would be mitigated to some extent during reclamation. Reclamation of disturbed areas  
 6 would include recontouring the remaining land to mimic the surrounding topography and  
 7 revegetating the surface with native seed mixtures containing plant species that naturally occur in  
 8 the surrounding landscape. This is expected to result in sparse vegetation cover on the final reclaimed  
 9 area that would be similar to vegetative cover prior to surface disturbance.

10 Residences immediately southwest of the Project area would see between 3 and 25 percent of the  
 11 full build-out of the mine footprint within the foreground and middle ground of their views as these  
 12 areas are largely obscured by the row of hoodoos located west of the proposed mining activities.  
 13 Residences located 0.4 to 1 mile north of the Project area would see between 0 and 3 percent of  
 14 the full build-out of the mine footprint within the foreground of their views. Most of the residences  
 15 west of Iron Springs Road would not see disturbances associated with the Proposed Action. Most  
 16 of residences located within the 5-mile buffer would see between 0 and 3 percent of the full  
 17 build-out of the mine footprint within the foreground and middle ground of their views. There are  
 18 no residences located at the edge of the 5-mile buffer and outside of the 5-mile buffer that would  
 19 see the mine; however, residences driving along roads in the area may catch a brief glimpse of the  
 20 mine along some portions of existing roadways.

21 **Table 3-17. Summary of Visual Impacts**

Percent Visible	Percent of Area Visible Within 5 miles	Percent of Area Visible Within 15 miles	Percent of Area Visible Outside 15 miles
3 - 10	0.051	0.011	0.00088
10 - 25	0.014	0.007	0.00004
25 - 40	0.075	0.014	0.00021
40 - 50	0.006	0.003	0.00002
50 - 78	0.003	0.002	0.00005
<b>Total</b>	<b>0.150</b>	<b>0.038</b>	<b>0.00119</b>

22 The surrounding areas within the 15-mile buffer would see the largest portion of the mine (between  
 23 50 and 78 percent) in the background of their views. These areas are located along ridgeline of  
 24 hills directly west of the Project area and the along peaks of the Weaver Mountains that do not  
 25 contain any residences, or designated observation points (**Figure 15a**). This area is a mix of private  
 26 and State Land, so an occasional recreational user could hike and see surface disturbance from the  
 27 Proposed Action at these locations. Observers driving along Iron Springs Road would not be able  
 28 to see surface disturbance from excavation activities, but would briefly see the load-out and scaling  
 29 facilities located on KMC, LLC private land, adjacent to Iron Springs Road. These facilities on  
 30 KMC private land would be removed after reclamation. **Figure 16** provides a visual simulation of  
 31 views of the Proposed Action from west of Iron Springs Road at the mine access road.

1 Recreational users of the Prescott National Forest would not see the mine from any designated  
2 campgrounds; however, hikers may be able to observe up to 50 percent of the mine intermittently  
3 in the background while hiking along designated trails approximately 9 miles northeast of the mine  
4 (**Figure 15a**).

5 Reclamation of mined areas in the Project area would reduce the visual contrast of bare earth in the  
6 disturbed areas with adjacent vegetation. The reclaimed areas would be revegetated primarily with  
7 grass and forbs and patches of shrubs and trees. The reclaimed areas would still be visible but would  
8 not be as obvious a visual impact as the mining activities themselves. As disturbances are reclaimed,  
9 the landform and color contrast as well as the presence of mining would be lessened for those within  
10 view of the Proposed Action. Over time, the landscape views inclusive of reclaimed mining areas,  
11 would become a more acceptable part of the landscape.

#### 12 **3.12.3.2 No Action Alternative**

13 Under the No Action Alternative, there would be no impacts to visual resources associated with  
14 the Proposed Action. The existing surface disturbance within the Project area from previous  
15 mining activities would remain visible. The BLM-administered land within the Project area would  
16 continue to be subject to existing and potential future land uses under the FLPMA, surface  
17 management regulations (43 CFR 3809), and occupancy regulations (43 CFR 3715).

### 18 **3.13 Land Use**

#### 19 **3.13.1 Methodology and Analytical Assumptions**

20 Land use issues raised during scoping included effects on livestock grazing and recreational uses.

21 The impacts to livestock grazing uses are quantified as an acreage of surface disturbance associated  
22 with the Proposed Action compared to the acreage of grazing within the grazing allotments within  
23 the Project area. Impacts on recreational uses are qualitatively described and quantitatively  
24 described in the context of the area of publicly owned lands in AGFD Game Management Unit  
25 (GMU) 20A, where the Project area occurs.

#### 26 **3.13.2 Affected Environment**

27 Portions of the Project area have been disturbed by historical mining activities as described in  
28 **Section 3.10** (Minerals and Soils).

29 The Project area is located within an active grazing allotment (Foraker Allotment, No. 05017)  
30 (**Figure 17**).

31 There are no developed recreational facilities within the Project area. Dispersed recreational  
32 opportunities (i.e., hiking, bird watching, horseback riding) were described from within the Project

1 area by the public during scoping, mostly along the washes that traverse the northwestern and  
2 southeastern corners of the Project area.

3 The Prescott National Forest occurs approximately 3.6 miles northeast of the Project area (**Figure 15a**).

4 The Project area is within the AGFD GMU 20A, located in AGFD Region 3 out of Kingman and  
5 601 square miles in size with approximately 78 percent public lands. Game species expected to  
6 occur within the Project area include mule deer, javelina, and Gambel's quail.

### 7 **3.13.3 Environmental Consequences**

#### 8 **3.13.3.1 Proposed Action**

9 The Proposed Action would impact 88 acres within the Foraker Allotment; this represents an  
10 approximately 2 percent reduction in the area available for grazing within the Foraker Allotment.  
11 Given previous mining, there is little livestock grazing in the Project area. Fencing around the  
12 mine pit would prevent accidental trespass of livestock in the active mining area.

13 Impacts on hunting of mule deer, javelina, and quail is negligible; approximately 88 acres would  
14 be on BLM lands is only approximately 0.0004 percent of the public lands in GMU 20A. Portions  
15 of these lands would also be fenced and removed from public access. The surface disturbance  
16 associated with the Proposed Action would be mitigated through the implementation of  
17 reclamation and revegetation activities, and would eventually be re-opened to hunting.

18 The washes that traverse the northwestern and southeastern corners of the Project area have been  
19 identified as areas used by the local community for recreation. Those washes would not be directly  
20 impacted by the Proposed Action. Indirect impacts associated with noise would be expected to be  
21 attenuated by the surrounding terrain and riparian vegetation.

22 As described in **Section 3.12** (Visual Resources), recreational users of the Prescott National Forest  
23 would not see the mine from any designated campgrounds; however, hikers may be able to observe  
24 up to 50 percent of the mine intermittently while hiking along designated trails approximately 9  
25 miles northeast of the mine (**Figure 15a**).

#### 26 **3.13.3.2 No Action Alternative**

27 Under the No Action Alternative, the BLM would not approve the MRPO, and there would be no  
28 impacts on existing land uses associated with the Proposed Action. The BLM-administered land within  
29 the Project area would continue to be subject to existing and potential future land uses under the  
30 FLPMA, surface management regulations (43 CFR 3809), and occupancy regulations (43 CFR 3715).

## 31 **3.14 Public Health and Safety**

### 32 **3.14.1 Methodology and Analytical Assumptions**

1 This section will identify the measures the Proposed Action will include to ensure public health  
2 and safety at the mine site under MSHA and during the transport of the mine product to market  
3 under OSHA.

4 During the scoping process the public expressed concerns regarding the Proposed Action's  
5 potential to affect the risk of fire in the Project area and how the transportation associated with the  
6 Proposed Action may affect safety on the transportation haul routes.

### 7 **3.14.2 Affected Environment**

8 The Project area is located within the Phoenix District Fire Management Zone, administered by  
9 the BLM Phoenix District Office. The fire program within this zone is responsible for the  
10 protection of nearly 2.4 million acres of BLM public lands (BLM 2010). BLM has identified a  
11 variety of fuel types within this region, including the Sonoran Desert ecosystem, grass lands, desert  
12 oak/chaparral with intermixed manzanita, desert shrub and ponderosa pine. Fire season usually  
13 begins in mid-March and ends in early September. The Phoenix District Fire Management Zone  
14 is a full participant in the Central West Arizona Interagency Fire Management Zone.

15 The Prescott Dispatch Center is the interagency focal point for the mobilization of resources.

16 Cellular telephone service is available at the Project area for emergency and other  
17 communications. KMC, LLC employees would be trained in proper emergency response, incident  
18 reporting, and general health and safety issues as part of their initial and annual refresher MSHA-  
19 required training.

20 Transportation haul routes that would be used as part of the Proposed Action are described in  
21 **Section 3.4.2.**

### 22 **3.14.3 Environmental Consequences**

#### 23 ***3.14.3.1 Proposed Action***

##### 24 ***Mining Operation***

25 There are negligible anticipated impacts to public health and safety associated with the Proposed  
26 Action. Mine access will be gated and signed to alert the public of risks. Active mining operations  
27 will be fenced. Mining operations will be conducted in accordance with MSHA and BLM  
28 requirements under 43 CFR 3715 (Use and Occupancy Under the Mining Laws).

29 The Proposed Action would include compliance with all applicable state and federal fire laws and  
30 regulations and would maintain all reasonable measures to prevent and suppress fires. The  
31 following measures would be taken as part of the Proposed Action:

- 1 • KMC, LLC would identify and maintain policies that apply best management practices for  
2 fire prevention, including prohibiting parking of vehicles on top of vegetation, prohibiting  
3 smoking on site, proper removal of vegetation, and proper storage and containment of fuels  
4 and other ignitable materials.
- 5 • KMC, LLC would coordinate with local law enforcement and fire departments to provide  
6 24-hour access as needed for emergency response.
- 7 • Handheld and large equipment (e.g. saws, tractors) used for vegetation clearing would be  
8 equipped with spark arresters and maintained in proper working condition.
- 9 • Planning and prevention of fires would be managed through the appropriate handling and  
10 storage of fuels, inspections and recordkeeping, spill prevention and response procedures,  
11 proper use of safety equipment, resource management training, and fire prevention training.
- 12 • KMC, LLC would have two 18,000-gallon water storage tanks onsite for dust suppression  
13 that would also be available to assist in firefighting operations.
- 14 • KMC, LLC would ensure that all mobile equipment be equipped with fire extinguishers,  
15 hand tools, and first aid kits.
- 16 • During extended periods of time of non-operation or seasonal closure, all equipment and  
17 supplies would be removed from the BLM lands within the Project area.
- 18 • Fire extinguishers would be installed in accordance with National Fire Protection  
19 Association 10 mandates during operation.
- 20 • Initial fire response will conform to current fire training recommendations and safety  
21 regulations.

### 22 *Transportation*

23 KMC, LLC would only serve customers that are equipped with Class 8 commercial trucks registered  
24 with the state of Arizona and drivers licensed with a federal Class A or B Commercial Driver's  
25 License. KMC, LLC's vendor compliance program will require evidence of registration and  
26 licensing as well as certificates naming KMC, LLC as additionally insured. Transportation haul  
27 trucks would also be required to be covered to prevent emission of HQP dust along the haul routes.

28 The Proposed Action would result in a maximum 15.9-percent increase in total traffic volume on  
29 the haul route roadway segments and constitute anywhere between a 9.3-percent to a 128-percent  
30 increase in truck traffic volume for the 2040 horizon year condition (Lee Engineering 2018). Under  
31 the most conservative estimate, a maximum of 7 full trucks per hour would exit the mine (4 or less  
32 trucks per hour is more likely). Lee Engineering (2018) determined the minimum sight visibility  
33 requirements needed for safe stopping and intersection sight distances for vehicles at Iron Springs  
34 Road and the Proposed Action's ingress and egress point. Appropriate truck crossing signage  
35 would be installed 475 feet prior to the Project driveway, and the mine access road would be paved  
36 from the mine site to the ingress-egress point at Iron Springs Road to safely accommodate truck  
37 traffic entering and exiting the Project area.

1 KMC, LLC would continue to coordinate with Yavapai County and the Arizona Department of  
2 Transportation as needed to ensure appropriate and required measures are taken for traffic safety.

3 **3.14.3.2 No Action Alternative**

4 Under the No Action Alternative, the BLM would not approve the MRPO, and there would be no  
5 changes in public health and safety measures in the Project area. The BLM-administered land within  
6 the Project area would continue to be subject to existing and potential future land uses under the  
7 FLPMA, surface management regulations (43 CFR 3809), and occupancy regulations (43 CFR 3715).

## 1 **4.0 CUMULATIVE EFFECTS**

2 A cumulative effect is defined under NEPA as “the change in the environment which results from  
3 the incremental impact of the action, decision, or project when added to other past, present, and  
4 reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person  
5 undertakes such other action.” “Cumulative impacts can result from individually minor but  
6 collectively significant actions taking place over a period of time” (40 CFR Part 1508.7). Past,  
7 present, and reasonably foreseeable future actions are analyzed to the extent that they are relevant  
8 and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and/or  
9 alternatives may have an additive and significant relationship to those effects.

10 The cumulative impacts analysis was accomplished through the following three steps:

11 Step 1: Identify, describe, and map the Cumulative Effects Study Areas (CESAs) for each  
12 resource to be evaluated in this chapter.

13 Step 2: Define time frames, scenarios, and acreage estimates for cumulative impact analysis.

14 Step 3: Identify and quantify the location of potential specific impacts from the Proposed  
15 Action and No Action and compare these contributions to the overall impacts.

### 16 **4.1 Geographic Scope**

17 As required under the NEPA and the regulations implementing the NEPA, this chapter addresses  
18 those cumulative effects on the resources in the CESAs that could result from the implementation  
19 of the Proposed Action and No Action Alternative. The geographic extent of cumulative impacts  
20 varies by the type of resource and impact. The timeframes, or temporal boundaries, for those  
21 impacts may also vary by resource. Different spatial and temporal CESAs have been developed  
22 and are summarized in **Table 4-1**.

1

**Table 4-1. Cumulative Effects Study Areas**

Resource	Cumulative Effects Study Area	Approximate Area	Temporal Boundary
Transportation	The Proposed Action’s transportation haul routes depicted in <b>Figure 8</b>	85 miles of existing paved roads	40 years (Life of Project)
Air Quality	Yavapai County depicted in <b>Figure 18</b>	8,128 square miles	40 years (Life of Project)
Surface Water	HUC 12 watershed depicted in <b>Figure 10a</b>	67.5 square miles	40 years (Life of Project)
Groundwater	Skull Valley Subbasin depicted in <b>Figure 10c</b>	4.5 square miles	40 years (Life of Project)
Noise	Project area plus approximately one-half mile buffer and the Proposed Action’s transportation haul routes, which includes approximately 1,330 acres of public and private lands and approximately 83 miles of existing paved roads ( <b>Figure 19</b> )	1,330 acres plus 83 miles of existing paved roads (approximately 2 miles of the transportation haul routes occur within the one-half mile buffer)	40 years (Life of Project)
Vegetation	HUC 12 watershed depicted in <b>Figure 10a</b>	67.5 square miles	45 years (Life of Project plus 5 years for revegetation)
Wildlife	Project area plus approximately one-half mile buffer and the Proposed Action’s transportation haul routes, which includes approximately 1,330 acres of public and private lands and approximately 83 miles of existing paved roads ( <b>Figure 19</b> )	1,330 acres plus 83 miles of existing paved roads (approximately 2 miles of the transportation haul routes occur within the one-half mile buffer)	45 years (Life of Project plus 5 years for revegetation)
Minerals/Soils	HUC 12 watershed depicted in <b>Figure 10a</b>	67.5 square miles	45 years (Life of Project plus 5 years for revegetation)
Socioeconomics	Yavapai County depicted in <b>Figure 18</b>	8,128 square miles	40 years (Life of Project)
Visual Resources	Project area plus 5-mile radius	78.5 square miles	45 years (Life of Project plus 5 years for revegetation)
Land Use	Grazing: Foraker Allotment depicted in <b>Figure 17</b> Recreation: Public Lands within AGFD GMU 20A	Grazing: 4,600 acres Recreation: Approximately 469 square miles	40 years (Life of Project)
Public Health and Safety	Project area and Proposed Action’s transportation haul routes depicted in <b>Figure 8</b>	165 acres plus 85 miles of existing paved roads	40 years (Life of Project)

## 1 **4.2 Past and Present Actions**

2 Past and present actions are those actions contributing to the current condition of the resources  
3 found within the CESAs. These actions vary between each different CESA as defined for each  
4 resource (**Table 4-1**). Past and present actions that have contributed to the current condition of  
5 resources include activities such as:

- 6 • Mineral exploration, extraction, and/or development (past mining operations in the Project  
7 area, as described in **Section 3.10.2**) and known existing quarry and mining operations in  
8 Yavapai County depicted in **Figure 18**;
- 9 • BLM activities such as monitoring; wildlife surveys; vegetative and wildlife habitat  
10 improvement projects; invasive, non-native species control efforts; fire management  
11 activities;
- 12 • Public forms of multiple-use (gaining access to/from private or public lands, grazing uses,  
13 and dispersed recreation) across BLM lands; and
- 14 • Ranching and agricultural uses.

15 Historically, livestock grazing is known to have occurred since the 1930's under BLM permitting,  
16 although sheep and/or cattle grazing are likely to have been occurring in the area since the late  
17 1800's. Range improvements include allotment and pasture boundary fencing, water  
18 developments, and corrals.

19 Dispersed recreation has occurred throughout the CESAs. Recreational activities include: hiking,  
20 hunting, sightseeing, off-highway vehicle (OHV) use, and wildlife viewing. The BLM permits  
21 noncommercial and commercial recreation events through its Special Recreation Permit (SRP)  
22 program.

23 Most vehicle use in the CESAs occurs on existing paved roads on non-federal lands,  
24 BLM-designated tertiary roads, or two-track trails. OHV use is also permitted within the  
25 BLM-administered lands. Actual numbers of users per day or per year are not available, but  
26 generally speaking, the intensity of use is low and dispersed. Most use occurs from fall to spring.

27 Within the CESAs rights-of-way (ROW) have been issued for overhead transmission lines. There  
28 is no active mining on public lands in the CESAs.

29 CESAs that include the transportation haul routes have been subject to road improvements and  
30 maintenance and adjacent residential and commercial development, agricultural uses, and  
31 recreational activities, such as bicycling. The transportation haul routes are under the jurisdiction  
32 of either Yavapai County or ADOT.

33 Major past and present actions occurring in the CESAs and not subject to BLM decision-making  
34 include: agriculture including livestock grazing; industrial, residential and commercial

1 development; recreation; transportation; energy corridors and development; and mineral  
2 extraction. These activities are approved and/or regulated by local, state, and other federal laws,  
3 regulations and ordinances.

### 4 **4.3 Reasonably Foreseeable Future Actions**

5 This section analyzes resource management and development actions projected to occur.  
6 Projections, which have been developed for analytical purposes only, are based on current  
7 conditions and trends and represent an estimate of reasonably foreseeable future actions (RFFAs).

8 Natural and human-caused wildland fires are likely to occur in the future. Other reasonably  
9 foreseeable activities in the CESAs include BLM's administration of their grazing program,  
10 issuance of SRPs for non-commercial and commercial activities, and issuance of ROWs as  
11 requests are submitted to the BLM.

12 With respect to any other planned state or federal activities, there are no other known reasonably  
13 foreseeable actions planned for the Project area and vicinity, however, it is reasonable to expect  
14 some level of industrial, residential and commercial development; recreation; transportation;  
15 energy corridors and development; and mineral extraction uses in the region over the life of the  
16 Project.

17 Other foreseeable future developments that would have little effect on the Project area but that  
18 may affect traffic levels on the Proposed Action's transportation haul routes include increased  
19 traffic over the life of the mine as described in **Section 3.4.3**, and the expansion of tourism and  
20 new businesses as described in the Weaver Mountains Regional Strategic Economic Development  
21 Plan (Fostik-Amos and Thomas 2017).

### 22 **4.4 Analysis by Resource**

23 This section analyzes potential cumulative impacts from past, present, and RFFAs combined with  
24 the Proposed Action within the area analyzed for impacts in **Chapter 3**, specific to the resources  
25 for which cumulative impacts may be anticipated. Only those resources directly or indirectly  
26 affected by the Proposed Action or No Action Alternative are considered for cumulative effects.  
27 As determined in **Section, 3.14.3**, negligible impacts to public health and safety are anticipated  
28 under the Proposed Action or No Action alternatives would be abated through the use of best  
29 management practices and regulatory requirements; therefore, only negligible cumulative impacts  
30 to public health and safety when added to past and present actions, and RFFAs are anticipated.

1    **4.4.1   Transportation**

2    **4.4.1.1   Proposed Action**

3    The increase in traffic associated with the Proposed Action would be only incremental to the  
4    projected daily traffic counts under the No Action Alternative (**Table 3-8**), which account for  
5    increases anticipated given past and present actions and RFFAs.

6    **4.4.1.2   No Action Alternative**

7    Under the No Action Alternative, increases in traffic associated with the Proposed Action would  
8    not occur. Projected daily traffic estimations for 2040 under the No Action Alternative would  
9    exceed the ADOT AADT range for a major collector on Iron Springs Road (**Table 3-8**).

10   **4.4.2   Air Quality**

11   **4.4.2.1   Proposed Action**

12   As described in **Section 3.5.3**, fugitive and point source emissions associated with the development  
13   and operation of the mine under the Proposed Action would be minor, dispersed, and long term,  
14   having the greatest degree of impact to receptors located immediately adjacent to the mine  
15   operations and to receptors located immediately along the traffic network. The total annual  
16   potential fugitive and point source emissions from the Proposed Action for PM<sub>10</sub> and PM<sub>2.5</sub> are  
17   0.010 percent and 0.007 percent of the CESA (Yavapai County) totals (using the available 2014  
18   data from Yavapai County). RFFAs are expected to cause additional incremental and dispersed  
19   increases in fugitive and point source emissions in the CESA.

20   The Proposed Action would be regulated by the ADEQ under a Class II Air Quality permit and  
21   resource protection measures are included in the Proposed Action that would minimize the  
22   potential effects of fugitive dust on air quality. Reclamation proposed as part of the Proposed  
23   Action would gradually eliminate fugitive dust from wind erosion.

24   **4.4.2.2   No Action Alternative**

25   No impacts on air quality associated with mining activities are anticipated under the No Action  
26   Alternative; therefore, there are no cumulative impacts on air quality resulting from the No Action  
27   Alternative when added to past and present actions, and RFFAs.

1 **4.4.3 Water Resources**

2 **4.4.3.1 Proposed Action**

3 The Proposed Action is not expected to substantially affect groundwater quantity in Skull Valley.

4 It has been estimated that there is more than sufficient groundwater in storage to meet long-term  
5 water demands of the Proposed Action and ongoing existing uses (Plateau 2018). No RFFAs (as  
6 described in **Section 4.3**) have been identified that would substantially change the level of existing  
7 groundwater uses in the CESA.

8 Impacts from past and present actions within the 67.5-square mile surface water CESA have  
9 included those associated with agriculture including livestock grazing; residential and commercial  
10 development; transportation; energy corridors and development; and mineral extraction. RFFAs  
11 within this CESA that would impact surface water resources include future residential and  
12 commercial development and livestock grazing.

13 The Proposed Action would disturb 88 acres associated within the mine footprint, which is  
14 approximately 0.003 percent of the surface water CESA. This contribution would be localized and  
15 impacts would be minimized and mitigated with the implementation of BMPs, required and  
16 voluntary mitigation measures, and reclamation. Not all 88 acres associated with Proposed Action-  
17 related disturbance would be disturbed simultaneously and reclamation would occur concurrently,  
18 which would reduce impacts to the surface water CESA in terms of total cumulative acres of  
19 disturbance at one time.

20 **4.4.3.2 No Action Alternative**

21 Under the No Action Alternative, impacts to water resources associated with the Proposed Action  
22 would not occur. The Project area would continue to be subject to existing and potential future  
23 land uses under the FLPMA, surface management regulations (43 CFR 3809), and occupancy  
24 regulations (43 CFR 3715).

25 Groundwater would continue to be pumped from individual existing wells for existing and  
26 potential future uses. At current groundwater depths and assuming that water levels beneath the  
27 ranches continue to decline at historic rates (an average of 0.06 to 0.18 feet per year), there would  
28 still be sufficient water in the Skull Valley aquifer for at least 100 years if groundwater demands  
29 in the area do not substantially change (Plateau 2018).

30 **4.4.4 Noise**

31 **4.4.4.1 Proposed Action**

32 Given the general lack of substantial existing or future noise emitters within the CESA surrounding  
33 the proposed mining operations, cumulative impacts to noise from the implementation of the

1 Proposed Action would be negligible to moderate (depending on the distance from the noise that  
2 would be generated from the proposed mining operations). Noise impacts associated with the  
3 transport of the mined HQP along the Proposed Action's transportation haul routes would be minor  
4 and incremental to noise from existing and estimated future traffic.

#### 5 **4.4.4.2 No Action Alternative**

6 No impacts from noise associated with mining activities are anticipated under the No Action  
7 Alternative; therefore, there are no cumulative impacts from mining noise resulting from the No  
8 Action Alternative when added to past and present actions, and RFFAs.

9 There would be increases in noise associated with projected non-Project related traffic along  
10 transportation networks identified as the proposed haul routes under the Proposed Action. **Table**  
11 **3-12** shows the projected daytime noise levels for the No Action Alternative for the years 2019  
12 and 2040.

### 13 **4.4.5 Vegetation**

#### 14 **4.4.5.1 Proposed Action**

15 Impacts from past and present actions within the 67.5-square mile CESA have included those  
16 associated with agriculture including livestock grazing; residential and commercial development;  
17 transportation; energy corridors; and mineral extraction. RFFAs within the CESA that would  
18 impact vegetation include future residential and commercial development and livestock grazing.

19 The Proposed Action would disturb 88 acres associated with the mine footprint, which is  
20 approximately 0.003 percent of the CESA. This contribution would be localized and impacts  
21 would be minimized and mitigated with the implementation of BMPs, required and voluntary  
22 mitigation measures, and reclamation. Not all 88 acres associated with Proposed Action-related  
23 disturbance would be disturbed simultaneously and reclamation would occur concurrently, which  
24 would reduce impacts to vegetation in terms of total cumulative acres of disturbance at one time.

#### 25 **4.4.5.2 No Action Alternative**

26 No impacts to vegetation are anticipated under the No Action Alternative; therefore, there are no  
27 cumulative impacts to vegetation from the No Action Alternative when added to past and present  
28 actions, and RFFAs.

### 29 **4.4.6 Wildlife**

#### 30 **4.4.6.1 Proposed Action**

31 Impacts from past and present actions within the 1,330-acre CESA have included those associated  
32 with agriculture including livestock grazing; residential and commercial development;

1 transportation; energy corridors; and mineral extraction. RFFAs within the CESA that could  
2 impact wildlife include future residential development, recreation, and livestock grazing.

3 The Proposed Action would disturb 88 acres associated with the mine footprint, which is  
4 approximately 6.6 percent of the CESA. This contribution would be localized and impacts would  
5 be minimized and mitigated with the implementation of BMPs, required and voluntary mitigation  
6 measures, and reclamation. Not all 88 acres associated with Proposed Action-related disturbance  
7 would be disturbed simultaneously and reclamation would occur concurrently, which would  
8 reduce impacts to wildlife in terms of total cumulative acres of impacts to habitat at one time.  
9 Increases in wildlife road mortality due to the increased traffic associated with the Proposed Action  
10 would be incremental and minor.

11 Based on the above analysis and findings, incremental impacts to migratory birds as a result of the  
12 Proposed Action when added to the past and present actions and RFFAs are expected to be minor.

#### 13 **4.4.6.2 No Action Alternative**

14 No additional impacts to wildlife are anticipated under the No Action Alternative; therefore, there  
15 are no cumulative impacts to wildlife from the No Action Alternative when added to past and  
16 present actions, and RFFAs.

17 The increase in daily traffic under the No Action Alternative (**Table 3-8**) would result in  
18 incremental and minor increases in wildlife road mortality.

#### 19 **4.4.7 Minerals and Soils**

##### 20 **4.4.7.1 Proposed Action**

21 Impacts from past and present actions within the 67.5-square mile minerals and soils CESA have  
22 included those associated with agriculture including livestock grazing; residential and commercial  
23 development; transportation; energy corridors; and mineral extraction. RFFAs within this CESA  
24 that would impact minerals and/or soils include future residential and commercial development  
25 and livestock grazing.

26 The Proposed Action would disturb 88 acres associated within the mine footprint, which is  
27 approximately 0.003 percent of the CESA. This contribution would be localized and impacts  
28 would be minimized and mitigated with the implementation of BMPs, required and voluntary  
29 mitigation measures, and reclamation. Not all 88 acres associated with Proposed Action-related  
30 disturbance would be disturbed simultaneously and reclamation would occur concurrently, which  
31 would reduce impacts to the CESA in terms of total cumulative acres of disturbance at one time.

##### 32 **4.4.7.2 No Action Alternative**

1 No impacts to soils and minerals are anticipated under the No Action Alternative; therefore, there  
2 are no cumulative impacts to soils and minerals from the No Action Alternative when added to  
3 past and present actions, and RFFAs.

#### 4 **4.4.8 Socioeconomic**

##### 5 **4.4.8.1 Proposed Action**

6 Impacts from the Proposed Action on socioeconomics are considered to be long term (40 years),  
7 minor and beneficial, consisting of a maximum of 12 new jobs and associated indirect and induced  
8 jobs and tax revenues. Therefore, cumulative impacts to socioeconomics from the Proposed Action  
9 are considered to be negligible.

##### 10 **4.4.8.2 No Action Alternative**

11 No impacts to socioeconomics are anticipated under the No Action Alternative; therefore, there  
12 are no cumulative impacts to socioeconomics from the No Action Alternative when added to past  
13 and present actions, and RFFAs.

#### 14 **4.4.9 Visual Resources**

##### 15 **4.4.9.1 Proposed Action**

16 Only 0.003 percent of the CESA would be impacted by the Proposed Action (**Table 3-17**).  
17 Reclamation of mined areas in the CESA would reduce the visual contrast of bare earth in the  
18 disturbed areas with adjacent vegetation. The reclaimed areas would be revegetated primarily with  
19 grass and forbs and patches of shrubs and trees. The reclaimed areas would still be visible but  
20 would not be as obvious a visual impact as the mining activities themselves. As disturbances are  
21 reclaimed, the landform and color contrast as well as the presence of mining would be lessened  
22 for those within view of the Project area. Over time, the landscape views inclusive of reclaimed  
23 mining areas, would become a more acceptable part of the landscape. Cumulative impacts to visual  
24 resources would be long term but minor.

##### 25 **4.4.9.2 No Action Alternative**

26 No impacts to visual resources are anticipated under the No Action Alternative; therefore, there  
27 are no cumulative impacts to visual resources from the No Action Alternative when added to past  
28 and present actions, and RFFAs.

#### 29 **4.4.10 Land Use**

##### 30 **4.4.10.1 Proposed Action**

31 The Proposed Action would impact 88 acres within the Foraker Allotment; this represents an  
32 approximately 2 percent of the Foraker Allotment. Under the Proposed Action, rangeland

1 management and livestock grazing activities would continue to occur on approximately 310 of the  
2 405 acres of lands that occur on KMC, LLC mineral claims on BLM lands.

3 Up to approximately 90 acres of BLM lands, approximately 0.0004 percent of the CESA for  
4 recreation, would ultimately be excluded from dispersed recreational activities during the life of  
5 the mine, but recreation would still be possible along the riparian corridors that traverse the  
6 northern and southern portions of the Project area or CESA. Recreational opportunities would be  
7 present again once the mining operations and reclamation have been completed. Recreational  
8 opportunities would continue to exist on approximately 310 of the 405 acres of lands that occur  
9 on KMC, LLC mineral claims on BLM lands.

10 ***4.4.10.2 No Action Alternative***

11 No impacts to land use are anticipated under the No Action Alternative; therefore, there are no  
12 cumulative impacts to land use from the No Action Alternative when added to past and present  
13 actions, and RFFAs. Under the No Action Alternative, dispersed recreation and rangeland  
14 management and livestock grazing activities would continue to occur within the CESA.

## 5.0 PERSONS, GROUPS, AND AGENCIES CONSULTED

### 5.1 List of Preparers

The following individuals were involved in the preparation of this EA:

#### *Bureau of Land Management*

Name	Expertise	Resource(s)
Dr. Shelby Cave	Geologist/Project Manager	Minerals and Soils
Brian Buttazoni	NEPA Coordinator	Socioeconomics, Transportation, Air Quality
Chris McLaughlin	Archaeologist	Cultural Resources
Codey Carter	Wildlife Biologist	BLM Sensitive Species, General Wildlife, ESA Species
James Holden	Range Management Specialist	Livestock Grazing, Minerals and Soils, Vegetation
Tammy Pike	Outdoor Recreation Planner	Visual Resources
Penny Foreman	Outdoor Recreation Planner	Recreation

#### *Westland Resources, Inc.*

Name	Project Expertise
James A Tress, Jr.	Project Principal
Amanda Best	Project Manager
Maggie Blais	Environmental Permitting Specialist
Renee Witzke	GIS Consultant
Chuck Powell	Viewshed Analysis
Kirk Smith	Visual Simulation
Robert Archer	Noise analysis

### 5.2 Public Review

This draft EA has been made available to the public for review and comment for 60 days. Comments must be received by the close of business on September 4, 2018. The BLM sent notification of this document's availability to approximately 1,741 individuals, organizations, or agencies by postcard, and notification to 616 individuals, organizations, or agencies by email. All comments would be reviewed and categorized by the BLM. Although not required for an EA by regulation, an agency may respond to and summarize substantive and timely comments received as a part of the Final EA in an appendix (BLM 2008). Substantive comments would:

1. Question, with reasonable basis, the accuracy of the information in the EA;
2. Question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis;

3. Present new information relevant to the analysis;
4. Present reasonable alternatives other than those analyzed in the EA; and/or
5. Cause changes or revisions in one or more of the alternatives.

### **5.3 Tribes, Individuals, Organizations or Agencies Consulted**

#### *Tribes*

- Hualapai Tribe
- Hopi Tribe
- Salt River Pima-Maricopa Indian Community
- Yavapai-Prescott Indian Tribe
- Pueblo of Zuni

#### *Agencies*

- U.S. Environmental Protection Agency
- Arizona Department of Environmental Quality
- Yavapai County Public Works
- Arizona State Historic Preservation Office

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