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

American Gypsum Plan of Operations Modification Project
Preliminary Environmental Assessment
Eagle County, Colorado
April 2020
DOI-BLM-CO-N040-2020-0028-EA

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DOI-BLM-CO-N040-2020-0028-EA

AMERICAN GYPSUM PLAN OF OPERATIONS MODIFICATION PROJECT

PRELIMINARY ENVIRONMENTAL ASSESSMENT

United States Department of the Interior
Bureau of Land Management
Colorado River Valley Field Office
2300 River Frontage Road
Silt, Colorado 81652

April 2020

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LIST OF ACRONYMS

American Gypsum	American Gypsum Company, LLC
amsl	above mean sea level
APCD	Air Pollution Control Division
AO	Authorized Officer
AQRV	air quality-related value
BLM	Bureau of Land Management
BMP	Best Management Practices
Btu	British thermal unit
CAA	Clean Air Act
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CFR	Code of Federal Regulations
CO DRMS	Colorado Division of Reclamation and Mining Safety
CO DNR	Colorado Department of Natural Resources
CO DWR	Colorado Division of Water Resources
CRVFO	Colorado River Valley Field Office
DOI	Department of the Interior
dv	deciviews
EA	Environmental Assessment
EIS	Environmental Impact Statement
EP	emission point
EPA	U.S. Environmental Protection Agency
ERMA	Extensive Recreation Management Area
EU	emission unit
°F	degrees Fahrenheit
FHWA	Federal Highway Administration
FLIGHT	Facility Level Information on Greenhouse Gases Tool
FLPMA	Federal Land Policy and Management Act
GHG	greenhouse gas
GIS	geographic information system

GWP	global warming potential
HAP	hazardous air pollutants
HUC	Hydrologic Unit Code
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
I-70	Interstate 70
KOP	key observation point
Mine	Eagle-Gypsum Mine
MM	million
MT	metric tons
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PM	particulate matter
ppm	parts per million
PSD	Prevention of Significant Deterioration
RFF	Reasonably Foreseeable Future
RMP	Resource Management Plan
ROD	Record of Decision
SHPO	State Historic Preservation Office
SPCC	Spill Prevention Control and Countermeasure
tpy	tons per year
TR	Technical Revision
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGCRP	U.S. Global Change Research Program

VOC	volatile organic compound
VRM	visual resource management

1 Purpose and Need

1.1 Introduction and Background

The American Gypsum Company (American Gypsum) has proposed an expansion of its operating Eagle-Gypsum Mine (the Mine) in west central Eagle County, Colorado. Currently, 500,000 to 600,000 tons of gypsum ore are mined each year at the Mine to support the adjacent wallboard manufacturing plant (plant or wallboard plant) in Gypsum, Colorado. The Mine has been active since 1984. American Gypsum became the Mine operator in 2002 and has been mining gypsum from the Upper Pit since 2007. American Gypsum currently holds permitted mining reserves in areas designated as the Upper Pit and Lower Pit. The Mine's Lower Pit is located on land owned by American Gypsum (patented mining claims), whereas other infrastructure such as the Upper Pit, gypsum stockpile, and most access roads and sediment ponds, are located on land managed by the Bureau of Land Management (BLM), Colorado River Valley Field Office (CRVFO) (Figure 1).

The CRVFO received American Gypsum's revised 2019 proposed Plan of Operations Modification (Plan Modification) in September 2019. Upon BLM's 30-day review, which was completed October 8, 2019, the Plan Modification was deemed sufficiently complete to initiate the National Environmental Policy Act (NEPA) process. The CRVFO has determined that an Environmental Assessment (EA) is required for review of the proposed Plan Modification. The analysis uses an issue-based approach, addressing only the relevant issues. Using an issue-based approach on EAs allows the BLM interdisciplinary team to "focus on the actual issues to be analyzed in an EA, rather than an encyclopedic look at the affected environment and unaffected resources (Edmonds n.d. [2018])."

To facilitate ongoing mining and production at its wallboard manufacturing plant, the American Gypsum Plan Modification proposes an expansion of the Mine that would 1) deepen and expand the existing Upper Pit and 2) develop the new East Pit; in addition, the Plan Modification would 3) assess the constructed location of existing sediment pond M601 at a more accessible and suitable location than originally planned (the project). The project encompasses parts of sections 28, 29, 32, and 33, Township 4 South, Range 85 West, all in 6th Principal Meridian in Eagle County, Colorado (see Figure 1). The project area comprises proposed new disturbance in the permit area and in the proposed permit expansion area as well as the constructed location of sediment pond M601. Production at the Mine would continue according to current mining methods. The project would increase the permit area from 830.2 acres to 929.4 acres (an increase of 99.2 acres). In addition to proposed new disturbance in the permit area and in the proposed permit expansion area, the Plan Modification includes one previously developed sediment control feature that was not approved at its current location by the CRVFO prior to construction. This feature is part of the Proposed Action within this EA.

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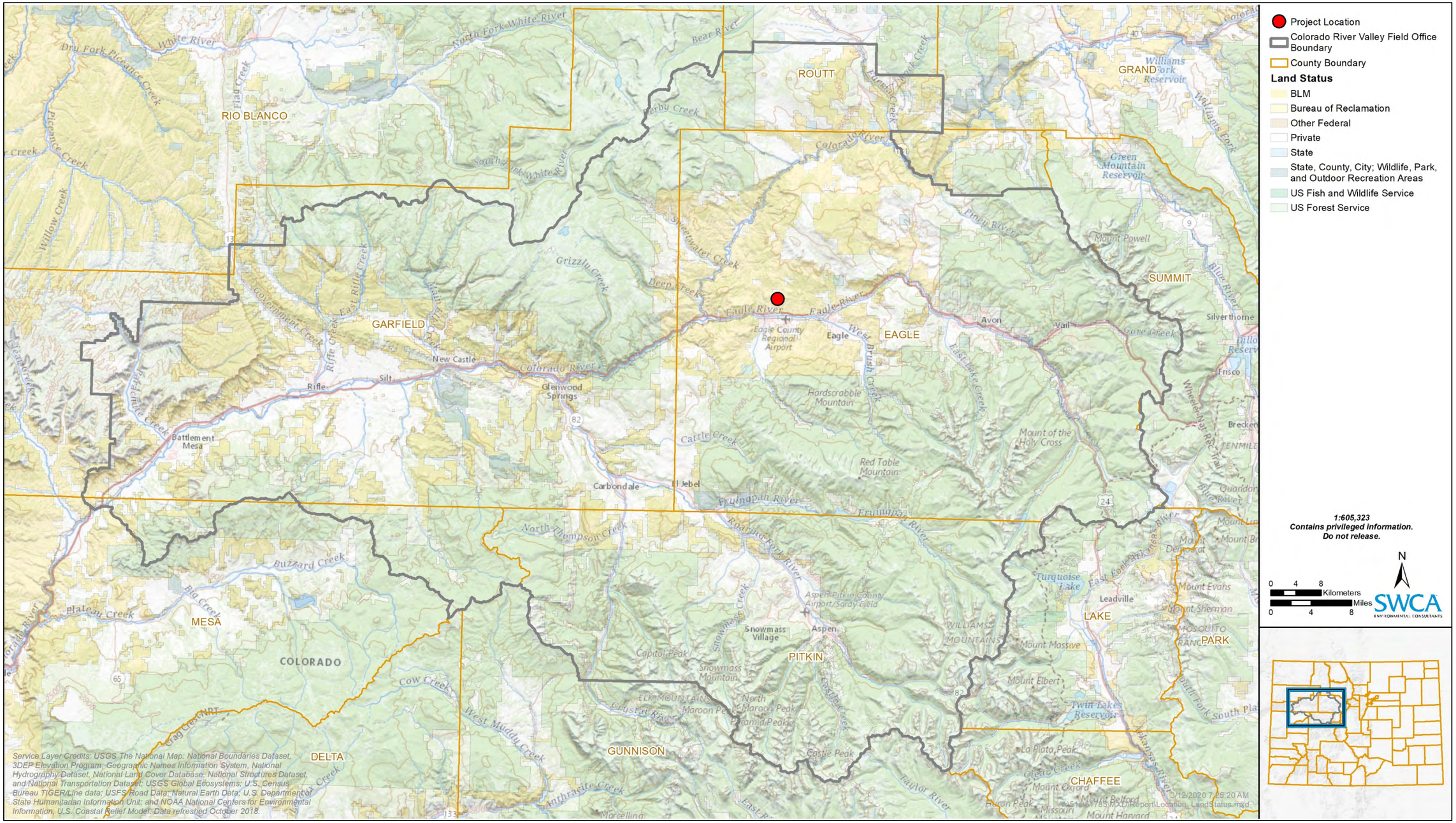

Figure 1. Location map.

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1.2 Identifying Information

Title: Eagle-Gypsum Mine Plan of Operations Modification

Environmental Assessment Number: DOI-BLM-CO-N040-2020-0028-EA

Type of Project: Plan of Operations Modification

Location of the Proposed Action: 6th Principal Meridian, sections 28, 29, 32, and 33, Township 4 South, Range 85 West

Case File Number: COC072973

Name and Location of Preparing Office: Bureau of Land Management, Colorado River Valley Field Office, 2300 River Frontage Road, Silt, Colorado 81652

Applicant: American Gypsum Company, 70 Highway 6, Gypsum, Colorado 81637

1.3 Purpose and Need for Action

The purpose of the Proposed Action is to evaluate the applicant's proposal within the Project Area to help meet the current and anticipated future demands for gypsum consistent with the statutory right of American Gypsum to explore for and develop mineral resources on federally administered land under the General Mining Law of 1872, as amended, and with other laws and regulations including the CRVFO Approved Resource Management Plan of 2015. The Proposed Action arises from the national and international demand by the construction industry for gypsum resources. American Gypsum's purpose and need is to develop mineral resources in the project area that can support the U.S. economy and bring to market needed commodities.

1.4 Decision to be Made

Based on the analysis contained in this EA, the Authorized Officer (AO) will decide whether to approve (Proposed Action) or deny (No Action) American Gypsum's proposed Plan Modification, and if the decision is to approve it, under what terms and conditions. Under NEPA, the BLM must determine if there are any significant environmental impacts associated with the Proposed Action warranting further analysis beyond an EA.

1.5 Conformance with BLM Land Use Plan

The Plan Modification is subject to and has been reviewed for conformance with the 2015 CRVFO Resource Management Plan (RMP) (43 Code of Federal Regulations [CFR] 1610.5, BLM 1617.3). The analysis in this EA tiers into and incorporates by reference the information and analysis contained in the CRVFO RMP, approved maintenance changes, and the Final Environmental Impact Statement (EIS) Record of Decision (ROD).

Gypsum is a locatable mineral. The following RMP minerals goals and objectives support development of locatable minerals:

- MIN-GOAL-02. Provide opportunities for development of locatable minerals, mineral materials, and non-energy leasable minerals while preventing unnecessary and undue degradation.
- MIN-OBJ-02. Facilitate environmentally sound exploration and development of locatable minerals, salable minerals/mineral materials, and non-energy leasable minerals.
- MIN-MA-05. All BLM-managed lands are open to mineral entry and development (locatable minerals) under the General Mining Law of 1872 unless already withdrawn or designated as wilderness. Locatable mineral exploration and development on BLM-managed lands would be regulated under 43 CFR 3800 (BLM 2015).

It is the policy of the BLM as derived from various laws, including the Federal Land Policy and Management Act of 1976 (FLPMA), to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs.

1.6 Public Involvement

The BLM uses a scoping process to identify potential significant issues in preparation for impact analysis. The principal goals of scoping are to identify issues, concerns, and potential impacts that require detailed analysis. Scoping is both an internal and external process. Internal scoping of the Plan Modification was initiated on October 8, 2019. An EA kick-off meeting was held November 12, 2019, at the BLM CRVFO in Silt, Colorado. The scoping notice was posted on the BLM's on-line e-Planning site (https://go.usa.gov/xpJaU), and external scoping was initiated on January 6, 2020.

A public scoping meeting was held January 22, 2020, in Gypsum, Colorado. Three members of the public attended the meeting, and six public comment letters were received during the scoping period. Public comments received are summarized as follows:

- Air quality – As the region gets warmer and drier due to human-caused climate change, it will become more critical for the Mine to suppress dust and to continue monitoring for compliance with state and federal standards.
- Mud and dust in the Town of Gypsum – The road into Gypsum gets extremely muddy due to the haul trucks; the street sweeper is insufficient at handling this if operated only once per week; other or additional measures may be needed.
- Dust from the Mine – During the warmer months, dust is a problem. It blows beyond the Mine eastward and creates an unhealthy environment.
- Create better recreation opportunities – Fees should be used to improve recreation in the area.

Letters requesting comment on the Plan Modification were sent to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Ute Indian Tribe, and the Colorado State Historic Preservation Office (SHPO) on February 11, 2020. No response letters have been received to date.

1.7 Determination of Resource Issues

The Council on Environmental Quality Regulations state that NEPA documents "must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). While many issues may arise during scoping, not all the issues raised warrant analysis in an EA. Issues will be analyzed if 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts.

The following resources were determined either not to be present in the project area or not affected to the degree that detailed analysis is required in this EA: BLM Natural Areas; Archaeological Resources; Designated Areas (National Historic Trails, Wild and Scenic Rivers, Areas of Critical Environmental Concern, Wilderness Study Areas, and Wilderness Areas); Prime and Unique Farmlands; Fuels and Fire Management; Geology, Minerals, and Energy Production; Invasive Plants, Noxious Weeds, and Vegetation; Lands and Access; Lands with Wilderness Characteristics; Rangeland and Health standards; Paleontology; BLM Sensitive Plants; Threatened, Endangered, Proposed, or Candidate Plants; Soils; Vegetation excluding U.S. Fish and Wildlife Service (USFWS) designated Species and BLM Sensitive Species; Wastes (hazardous or solid); Groundwater Quality; Municipal Watershed and Drinking Water Source Protection; Streams, Riparian Wetlands, and Floodplains; Surface Water Quality, Water Rights, or Waters of the U.S.; Wild horses and Burros; Migratory Birds including Raptors; Fish; Non-USFWS Designated Wildlife; BLM Sensitive Wildlife; Threatened, Endangered, Proposed, or Candidate Wildlife; and Woodlands or Forestry.

1.7.1 Resource Issues Identified for Analysis

Through internal and external scoping, the following resource issues were identified for detailed analysis in this EA:

- Air Quality
    - How would the Plan Modification's mining of gypsum reserves in the Upper Pit and East Pit affect air quality?
    - How would dust from haul trucks delivering gypsum to the wallboard manufacturing plant under the Plan Modification affect the Town of Gypsum?
- Water Resources
    - How would the Plan Modification affect hydrologic conditions within the disturbed area and outside of it?
    - How would groundwater be affected by mining activities under the Plan Modification?
- Comprehensive Trails and Travel Management/Recreation
    - How would the Plan Modification affect travel routes and recreation use in the area?
- Socio-Economics
    - How would the Plan Modification affect the economy of Eagle County?

- Visual Resources
    - How would the Plan Modification affect views from the Interstate 70 (I-70) corridor and from the towns of Gypsum and Eagle?

1.7.2 Resource Issues Eliminated from Detailed Analysis

BLM considered several issues raised during internal and external project scoping. After review of available information, the interdisciplinary team determined that the following issues did not have the potential to be significantly impacted by the Proposed Action and No Action alternative and it is not necessary to make a reasoned choice between alternatives. Therefore, the issues listed in Table 1-1 have been considered but dismissed from detailed analysis.

Table 1-1. Issues Considered but not Analyzed in Detail

Issue	Issue Statement	Rationale
Cultural: Native American Religious Concerns	Are there tribal concerns with the Plan Modification?	No tribal concerns have been identified to date.
Environmental Justice	Would low-income or minority populations of Gypsum or Eagle County be disproportionately impacted by the Plan Modification?	An analysis was conducted using U.S. Census Bureau 2018 data (U.S. Census Bureau 2019a). Eagle County meets the criteria (5 percentage points greater than the State of Colorado) for having a minority population (Hispanic). The county does not meet the threshold for a low-income environmental justice population (U.S. Census Bureau 2019b). Although Eagle County has a greater than 5 percentage points population of Hispanic residents when compared to the state of Colorado, no adverse impacts were found to disproportionately impact this environmental justice community. No tribal concerns have been identified to date. BLM has considered all input from persons or groups regardless of age, income status, race, or other social or economic characteristics as documented in this EA.
Extensive Recreation Management Area (ERMA)	How would mining activities under the Plan Modification affect the Gypsum Hills ERMA?	The ERMA is outside the Mine permit area. The ERMA provides multiple recreation opportunities including 4×4 driving, hiking, dispersed camping, and hunting. The proposed mine expansion would not change or alter the existing recreation opportunities or affect the overall physical, social or operational recreation setting characteristics of the ERMA. Should the proposed expansion be approved, no portion of the ERMA would be disturbed by mining activities. Because the proposed project does not extend onto ERMA lands and because existing recreation opportunities would not be appreciably altered, the ERMA would not be impacted to the extent that detailed analysis is required in this EA.
Livestock Grazing	How would mining activities under the Plan Modification impact grazing allotments?	All of the BLM lands in the mine permit area and the proposed permit expansion area are within the Blowout grazing allotment (08643), in the Greenhorn Pasture. This allotment has a total acreage of approximately 20,012 acres and is authorized for grazing of 1,600 sheep in the fall and 815 sheep in the spring. The management category is *Maintain*. There would be no conflicts with grazing and the expansion of the mine because the grazing animals do not typically use this area of the allotment because it has less desirable forage than other areas available on the allotment and there is no water nearby. For these reasons, livestock grazing is not an issue that requires detailed analysis in this EA.

2 Alternatives

2.1 No Action (Alternative A)

Under the No Action alternative, the proposed Plan Modification would not be approved by the BLM and American Gypsum would not proceed with expansion activities at this time. Mining at the Eagle-Gypsum Mine would continue under current approvals until the current mine plan was fully developed and the mineable ore was used up. Sediment pond M601 would remain in its constructed location and BLM would issue a separate decision for this action.

Currently approved mining activities are planned to resume in the Lower Pit in 2020 and are anticipated to continue until accessible gypsum is exhausted in approximately 7 years (American Gypsum 2019). Currently approved mining activities in the Upper Pit will last approximately 10 years. Once the gypsum ore is exhausted in approximately 17 years (depending upon ore quality encountered), the wallboard plant in Gypsum would likely shut down unless another source of gypsum ore could be found that would be economically feasible to transport to the plant.

2.2 Proposed Action (Alternative B)

The proposed expansion would be a continuation of current mining activities. Currently, 500,000 to 600,000 tons of gypsum ore are mined each year. The Mine has active mining within two areas, referred to as the Lower Pit and the Upper Pit. The proposed mining activities would increase the disturbance footprint of the Upper Pit, would include development of a new pit referred to as the East Pit, and would involve construction of new haul roads to service the proposed pit expansion (Figure 2). Additionally, the Plan Modification addresses the constructed location of existing sediment pond M601, which was built at a more accessible and suitable location than originally planned. The Lower Pit is located on land owned by American Gypsum, while all other infrastructure such as the Upper Pit, sediment pond M601, gypsum stockpiles, inert intraburden/overburden storage, and access roads, are located on land managed by the BLM CRVFO.

Expansion of the Upper Pit and opening of the East Pit would allow production to continue at the current rate for an estimated additional 40 years. The ore produced within the current Mine permit area and proposed permit expansion area (see Figure 2) would continue to be processed off-site at American Gypsum's wallboard manufacturing plant in Gypsum.

Sediment pond M601 would be maintained at its current location (see Section 2.2.2).

The entire Plan Modification (American Gypsum 2019) is available for review at the BLM CRVFO. Selected Plan Modification drawings are included in Appendix A.

2.2.1 Access to the Mine

The Mine can be accessed by taking the Gypsum exit from I-70 north approximately ¼-mile up Trail Gulch Road (Eagle County Road No. S-51). Navigational signage indicating "Gypsum Mine Private" is posted at the Mine entrance, intended to discourage the general public from accessing the Mine. Figure 2 shows the roads used to access the proposed mining activities included herein (I-70, Trail Gulch Road, and mine access roads).

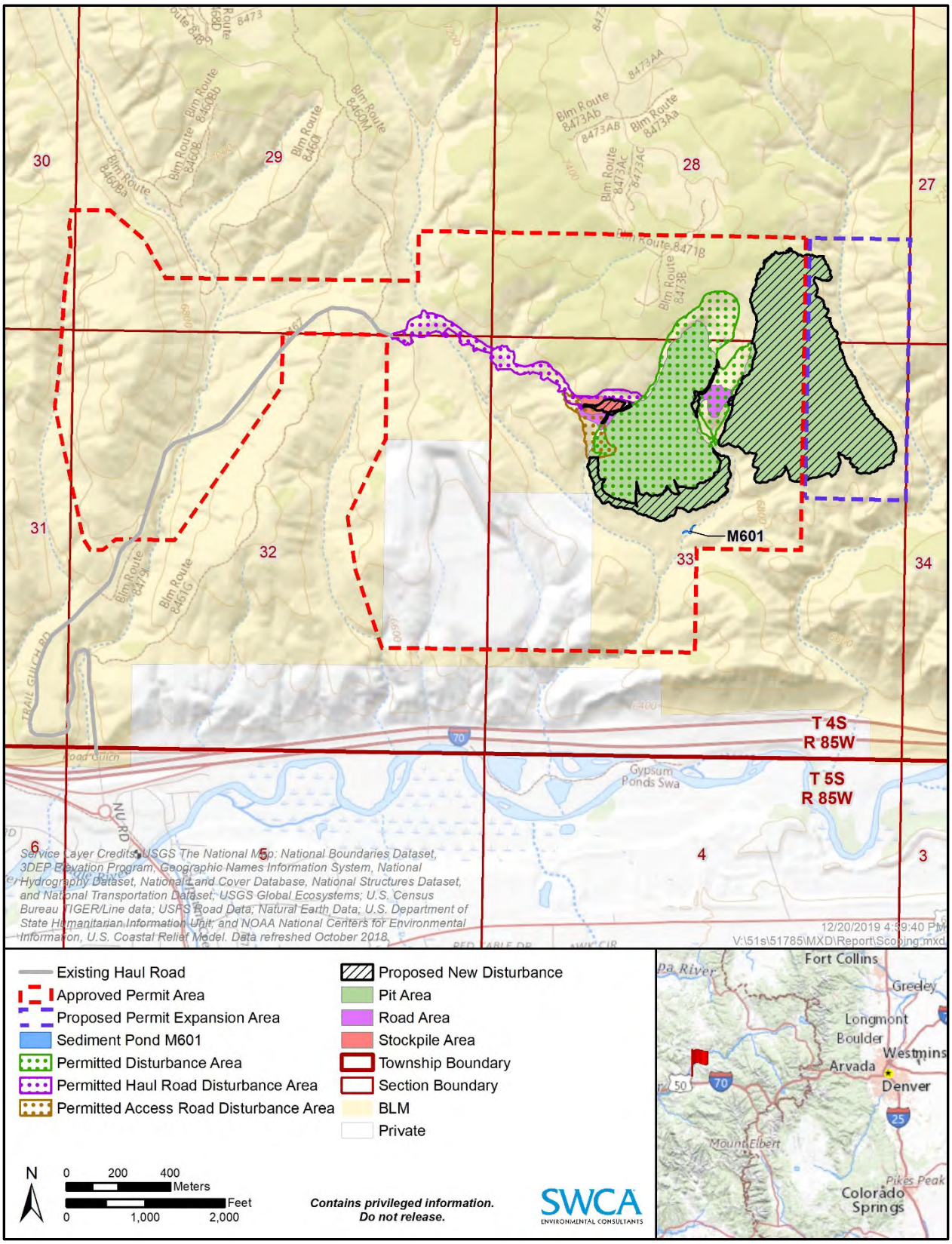

Figure 2. Features of the Proposed Action.

2.2.2 Previously Developed Feature Requiring Approval

Sediment pond M601 shown below in Figure 3 and a portion of the access road were constructed in 2006. The sediment pond was designed and constructed according to accepted engineering practice; the pond was approved by the Colorado Division of Reclamation, Mining and Safety (CO DRMS) and constructed at a more accessible and suitable location than originally planned. The M601 constructed pond location and crest elevation differ slightly from the information provided to the CO DRMS. This adjustment requires review under NEPA and thus the constructed location is being analyzed in this EA.

Figure 3. Overview of sediment pond M601, view facing southwest.

The existing sediment ponds consist of the following:

- Dams (constructed from local fill materials) less than 18 feet high to create a stilling basin/pond.
- An 18-inch-diameter perforated corrugated steel pipe riser to decant pond water downstream via an 18-inch corrugated steel outlet pipe constructed under the dam.
- Riprap-lined stilling basin/plunge pool where the 18-inch corrugated steel outlet pipe terminates (for erosion protection).

- Emergency spillway excavated into native ground and lined with riprap.
- A 12-foot-wide access road (constructed using cut-to-fill methods) between the ponds with a turnaround area near sediment pond M601.

The ponds were created by constructing dams from indigenous fill material. Juniper and pinyon trees removed during vegetation clearing were stockpiled outside the construction area for use in future reclamation. Spillways were excavated into native ground. Spillways are lined with riprap (approximately 1 foot deep) for erosion protection. The corrugated steel standpipes were constructed with a surrounding gravel pack and wire mesh screens to prevent clogging. The corrugated steel standpipe outlets and spillways are protected against erosion with riprap splash pads. The ponds were constructed more than 10 years ago and no significant issues with performance (such as erosion, cracks, leaks, etc.) have been noted. BLM and CO DRMS have inspected the ponds annually with no significant exceptions.

The ponds are used to temporarily store stormwater runoff from the site, including disturbance areas from haul roads. Surface water and sediment accumulate in the ponds, where sediment can settle. Water either evaporates or flows out the decant standpipe after sediment settles. The ponds are cleaned out (i.e., excess sediment removed) on an as-needed basis.

The relocated sediment pond M601 was no larger than the design in the original location; access into the relocated structure was temporary with minimal disturbance and along very flat terrain.

2.2.3 Ongoing and Proposed Mining

2.2.3.1 Expansion of the Upper Pit

The Upper Pit (Figure 4) would be expanded by about 11.6 acres to the south of its currently approved limits, and mining of gypsum and intraburden from the Upper Pit would continue for approximately 14 years. The Upper Pit footprint would be expanded to a pit floor elevation of 6,760 feet above mean sea level (amsl), with 1 horizontal to 1 vertical pit face slopes and 10-foot-wide flat benches constructed every 40 vertical feet of development. To accommodate the southern extent of the Upper Pit, a portion of the existing Upper Pit 6900 access road would be mined out and the road alignment would be modified by constructing a new road northeast of the Upper Pit 6900 access road. Once the Upper Pit floor reaches an elevation of 6,760 feet amsl, the pit configuration would be modified to increase the pit depth without impacting the overall footprint. This would create interior benches to an ultimate pit floor elevation of 6,560 feet amsl.

Progressive backfilling in the northern reaches of the Upper Pit would accommodate construction of a road to access the East Pit. The road construction would use previously disturbed, unreclaimed areas wherever possible. The Upper Pit would continue to be backfilled with inert overburden or intraburden from the Upper Pit and East Pit.

Upon completion of proposed operations, the Upper Pit would be reclaimed according to the approved 2002 Plan of Operations Modification reclamation plan as supplemented by the proposed 2019 Plan of Operations Modification. Reclamation includes final backfilling, creation of the final roughened reclamation surface at 2.5 horizontal to 1 vertical slopes (or flatter),

regrading haul roads, placing stored growth material, and hydroseed/hydro-mulching with an approved and certified weed-free seed mix.

Figure 4. View from Upper Pit highwall toward Town of Gypsum; reclaimed area in foreground.

2.2.3.2 Development of East Pit

The approximately 83-acre East Pit would be developed over approximately 40 years, including clearing and grubbing, stockpiling suitable growth medium, overburden removal, and mining gypsum/intraburden. The Mine permit area boundary would be expanded by 99.2 acres onto American Gypsum's unpatented mining claims to accommodate development of the East Pit. An average overburden depth of 20 feet would be removed from the East Pit footprint. The East Pit would be excavated to an anticipated pit floor elevation of 6,900 feet amsl. Overburden and intraburden would be hauled to new road construction areas, on-site storage, or to inactive pit areas for progressive reclamation. Additional drilling may be required to further explore the gypsum depth.

Mine reclamation would be ongoing throughout the period of active mining, as overburden and intraburden are used to backfill mined-out areas of the pit. Upon completion of proposed operations, the East Pit would be reclaimed according to the reclamation plan (see Upper Pit expansion, above).

Mining would continue according to current mining methods. Site preparation for mining involves vegetation clearing and removal with suitable surface growth medium separated and stored in stockpiles. Large materials, such as tree trunks and rocks, are stored separately. Overburden, the non-economic material that often lies on top of the ore, is removed and stored in stockpiles. Stored materials including overburden, intraburden, and suitable growth media and vegetation obtained while stripping the land surface, are used during concurrent or final reclamation. No overburden is expected to be encountered in the Upper Pit area because the pit is being actively mined and overburden was removed in the early stages of mining. At the site of the proposed East Pit, overburden ranges in depth from 0 to 82 feet, with an average depth of 20 feet, based on drilling data. Estimated soil, waste, and minable materials summary is shown in Table 2-1.

Table 2-1. Soil, Waste, and Mineable Material Summary

Material	Thickness (feet)	Quantity (million tons) [1]	Details on Use, Stockpiling, or Method of Disposal
Growth Medium	From 3 inches to 2 feet; assumed average of 6 inches	0.4	Salvageable material would be stockpiled (if necessary) and used for progressive reclamation
Overburden (East Pit)	From 0 to 82 feet, assumed average of 20 feet	2.1	Used to construct the East Pit Access Road (overburden removal would be accessed via existing roads until the East Pit Access Road is constructed)
Intraburden – Upper Pit [2]	Varies	10.0	Material used for Upper Pit progressive reclamation, access road construction, or placed/stockpiled within inactive portions of the Lower Pit and Upper Pit for final reclamation
Mineable Material (Gypsum) – Upper Pit [3]	Varies	6.7	Gypsum used at American Gypsum's plant to manufacture wallboard
Intraburden – East Pit	Varies	19.7	Material used for East Pit progressive reclamation, access road construction, or stockpiled within inactive portions of the Upper Pit and East Pit for final reclamation
Mineable Material (Gypsum) – East Pit	Varies	13.2	Gypsum used at American Gypsum's plant to manufacture wallboard

[1] Calculated volumes converted to tonnages using 100 pounds per cubic foot (pcf) for growth medium and 130 pcf for overburden, intraburden, and gypsum.
[2] Upper Pit material summaries do not include mining the Upper Pit to the approved limits, assumed to correlate with a pit floor elevation of 6,900 feet amsl.
[3] Material summaries include development associated with the proposed Upper Pit expansion below 6,900-foot elevation.

During mining, a rotomill continuous milling machine grinds shallow layers (approximately 6 inches thick) of gypsum and intraburden (inert, non- economic material that is between layers of gypsum ore) (see cover photo).

Front-end loaders separate the mined material into in-pit stockpiles, where it is loaded into 25-ton over-the-road haul trucks and shipped to the plant, on-site gypsum stockpiles, or intraburden/overburden storage areas. Characteristics of each of these materials are shown in Table 2-2.

Table 2-2. Characterization Methods

Material	Characterization Method
Waste rock (intraburden)	Less than 85% gypsum as defined by a combined moisture test during exploration
Ore (gypsum)	Greater than 85% gypsum as defined by a combined moisture test during exploration
Pit backfill rock (intraburden)	See waste rock (intraburden)
Cap/cover materials (growth medium)	Visual observations and historical information

The mining methods used at the Mine create pit walls with a 1 horizontal to 1vertical inter-bench slope. Pit benches (approximately 10 feet wide) are created every 40 vertical feet as the pit depth progresses. Intraburden removed would be used to construct access roads and/or used as backfill material for progressive reclamation activities in the Upper Pit and East Pit. Longitudinal sections of the Upper Pit and East Pit are shown in the Plan Modification drawings 7 and 9 (American Gypsum 2019).

Drilling and blasting have been used only twice during the life of mine to manage small areas of hard anhydrite. If drilling and blasting were to be required, it would be subcontracted. No blasting materials or equipment would be stored on-site; blasting materials would only be on-site temporarily during blasting programs. Proper approvals would be obtained, and any required notifications made prior to blasting. Estimated use of rotomilling versus drilling and blasting for the Upper Pit expansion and East Pit development are shown in Table 2-3. No underground operations are anticipated for the Upper Pit and East Pit.

Table 2-3. Mining Method Summary

Type or Mining Method	Quantity of Material Removed (tons)	Estimated Area of Surface Disturbance (acres)
Upper Pit – rotomilling [1]	15.0	11.58
Upper Pit – drilling/blasting [1]	1.7	0.12
East Pit – rotomilling	29.6	81.76
East Pit – drilling/blasting	3.3	0.83
Total	**49.6**	**94.29**

[1] Upper Pit material summaries and acreages do not include mining the Upper Pit to the approved permit boundary, assumed to correlate with a pit floor elevation of 6,900 feet amsl.

2.2.4 Haul Roads

Approximately 0.08 mile of new road would be constructed to access the expanded Upper Pit. Approximately 0.3 mile of new road would be constructed to access the new East Pit, although most of this (all but 0.02 mile) would be removed as the East Pit is mined. The total haul route from the pits to American Gypsum's wallboard plant, including existing and newly constructed roads, would be approximately 3.49 miles from the western edge of the East Pit (internal pit roads excluded). The total haul route from the pits to American Gypsum's wallboard plant,

including existing and newly constructed roads, would be approximately 3.5 miles from the western edge of the proposed East Pit (internal pit roads excluded).

2.2.5 Mine Administration

The Mine office would remain in its current location north of the Lower Pit. No additional utilities such as power, water, or communication lines would be needed for the proposed Mine expansion.

2.2.6 Summary of Surface Disturbance and Equipment

Table 2-4 describes the disturbances that would occur under the Plan Modification. Because sediment pond M601 was constructed in 2006 at a slightly different location than planned, and because the disturbance associated with the construction was less than or equivalent to planned disturbance, this feature is not included in the below table.

Table 2-4. Proposed Surface Disturbance Summary

Facility	Operational Disturbance (acres) [1]			Post-Reclamation Disturbance (acres) [1]		
	Permitted [2]	Proposed (New)	Total	Permitted [2]	Proposed (New)	Total
New disturbance – BLM						
Upper Pit expansion	43.7	10.0	53.7	47.2	11.6	58.8
East Pit	0.5	82.1	82.6	0.6	85.3	85.9
Upper Pit 6900 access road modification [3]	1.0	0.2	1.2	1.1	0.2	1.3
East Pit access road	1.0	0.2	1.2	2.1	0.1	2.2
Growth medium stockpile	1.1	1.1	2.2	1.1	1.1	2.2
Total	47.3	93.6	140.9	52.1	98.3	150.4
Grand Total				**254**	**98.3**	**352.3**

[1] Overlapping areas between pits, roads, and stockpiles were typically accounted for in pit and stockpile areas.
[2] Permitted disturbance includes disturbance areas within permit approvals that will be disturbed as part of the proposed modification.
[3] Upper Pit access road modification only includes changes to the Upper Pit 6900 access road (BLM 2019; CO DRMS 2019).

The equipment types and number of vehicles used would not change for the proposed project. Mining activity is described in three phases: Site Development, Operation, and Reclamation. Equipment currently in use at the Mine is described in Table 2-5.

Table 2-5. Anticipated Equipment by Phase

Equipment	Location [1]	Manufacturer	Size	Quantity	Model Year
Operational – Upper Pit					
Rotomill	Current operating pit (varies)	Wirtgen	220SM	1	2017
Rotomill	Current operating pit (varies)	Wirtgen	2200SM	1	2005
Front end loader	Current operating pit (varies)	CAT	980	2	2017, 2007
Tracked excavator	Staging area	CAT	328DL	1	2014
Truck/trailer with bottom dump	Staging area	MACK	CHU613	5	2015-2017
Truck/trailer with bottom dump	Staging area	International	HX520	1	2018/2016
Articulated dump truck	Staging area	CAT	730	1	2015
Reclamation – Upper Pit					
Tracked excavator	Staging area	CAT	328DL	1	2014
Bulldozer	Staging area	CAT	D9	1	1987
Articulated dump truck	Staging area	CAT	730	1	2015
Site development – East Pit					
Tracked excavator	Staging area	CAT	328DL	1	2014
Bulldozer	Staging area	CAT	D9	1	1987
Articulated dump truck	Staging area	CAT	730	1	2015
Operational – East Pit					
Rotomill	Current operating pit (varies)	Wirtgen	220SM	1	2017
Rotomill	Current operating pit (varies)	Wirtgen	2200SM	1	2005
Front end loader	Current operating pit (varies)	CAT	980	2	2017, 2007
Tracked excavator	Staging area	CAT	328DL	1	2014
Truck/trailer with bottom dump	Staging area	MACK	CHU613	5	2015-2017
Truck/trailer with bottom dump	Staging area	International	HX520	1	2018/2016
Articulated dump truck	Staging area	CAT	730	1	2015
Reclamation – East Pit					
Tracked excavator	Staging area	CAT	328DL	1	2014
Bulldozer	Staging area	CAT	D9	1	1987
Articulated dump truck	Staging area	CAT	730	1	2015
Other					
Water truck	Staging area	International	7600	1	2016
Fuel/lube truck	Staging area or current operating pit (varies)	International	4900	1	1999
Repair truck	Staging area	GMC	5500	1	2005

Equipment	Location [1]	Manufacturer	Size	Quantity	Model Year
Grader	Staging area	CAT	143H	1	1996
Pickup trucks	Staging area	Ford	F250	3	2002, 2015, 2016
Generator	Mine office/staging area	Multi Quip	70 kw	1	2015
Generator	Varies – active pit development Area	Wanco	30 kw	1	2016

[1] For mobile equipment, location refers to where equipment is parked at the end of shift.

2.2.7 Maintenance and Monitoring

During mining, roads would be sprayed with water and surfactant, such as magnesium chloride or lignosulfonate, to limit fugitive dust. Pit slopes and floors would be assessed and graded to ensure that drainage flows to low areas of the pit floor away from pit walls. Sediment control structures and outlets would be inspected and cleaned out to maintain full capacity. Pit berms would be inspected for stability and safety. Stockpiles and unvegetated reclaimed slopes would be stabilized. Areas that have been reclaimed would be inspected. Noxious weeds would be treated to limit their presence and spread. The Mine would comply with applicable state and federal fire laws and regulations and would take all reasonable measures to prevent and suppress fires in the area of operations.

If any scientifically important paleontological remains of historical or archaeological sites are uncovered during mining operations, the Mine operators would cease operations in the immediate area and notify the BLM authorized officer.

2.2.8 Reclamation

The Upper Pit and East Pit would be developed to allow for progressive or concurrent reclamation, where a portion of the completed pit is backfilled using overburden or intraburden. Planned reclamation grade is 2.5 horizontal to1 vertical or shallower.

Reclamation would be carried out concurrently with mining activities because of the need to dispose of intraburden and overburden as mining progresses. Overburden and intraburden would be backfilled and stockpiled in the area of the depleted stage above the area of active mining. To create a final surface that mimics natural topography, extremely long slopes would be shortened by creating a bench or grade break and periodic downslope channels would be incorporated into the reclamation grading. Appendix A, Drawing 11 (American Gypsum 2019) shows conceptual reclamation grading for the pits and roads included with this Plan Modification.

Following active mining and pit reclamation, haul roads would be regraded to expose culverts, using excavated material as backfill. Culverts would be removed, and native drainage channels would be re-established at preconstruction grades (ranging from grades less than 5% to over 50%). Erosion protection measures such as rock vortex weirs or riprap would be installed as necessary based on the conditions encountered during channel grading.

Backfill material in reclaimed slope areas would be compacted and track-walked with a dozer or similar equipment to roughen the reclaimed slope prior to revegetation. These activities would limit erosion and promote surface water infiltration. Growth medium stockpiled from clearing operations would be placed on the re-sloped areas in layers of 6 to12 inches depth. The reclamation seed mixture used with successful current reclamation efforts would be seeded during the fall months. If the accumulation of growth medium stockpiles exceeds the ongoing reclamation and revegetation requirement (not anticipated), excess growth medium stockpiles would also be seeded during the fall months to facilitate stabilization. The current and proposed seed mix is shown in Table 2-6.

Table 2-6. Proposed Seed Mixture

Species	Variety	Application Rate (pure live seed pounds/acre)
Bluebunch wheatgrass	CO/UT source preferred or Anatine, Goldar	2.8
Bottlebrush squirreltail	Fish Creek (preferred) or VNS	1.4
Thickspike wheatgrass	Critana (preferred) or Bannock	2.5
Indian ricegrass	White River (preferred) or Paloma or Nezpar	2.5
Sandberg bluegrass	UP CO (preferred) or High Plains or VNS	0.4
Muttongrass	Ruin Canyon (preferred) or VNS	0.3
Yellow rabbitbrush or rubber rabbitbrush	*Chysothamnus viscidiflorus* or *C. nauseosus*, CO/UT source preferred	0.25
Winterfat	CO/UT source preferred	1.5

Trees cleared ahead of active mining would be used in the reclamation process. This slash has aided past revegetation by providing shade for the early seedlings, helping to stabilize and control erosion of the plots, and eventually adding organic nutrients back into the soil.

2.2.9 Project Design and Resource Protection Features

Design and resource protection features are required aspects of the current Mine permit and are included in the Proposed Action. These design and protection features have been developed to reduce anticipated environmental impacts which might otherwise stem from project activities. Design features establish a standard of environmental care, which allows for environmentally responsible resource use and development.

2.2.9.1 Cultural Resources

A cultural resources survey was conducted during the summer of 2018 in the proposed Upper Pit expansion area. A second cultural resources survey was conducted in the summer of 2019 to cover gaps in previous surveys near the existing sediment ponds M501 and M601 that were previously approved by CO DRMS (CO DRMS 2003, 2006). Other areas of proposed disturbance have been covered by previous surveys conducted between 1989 and 2017. According to the surveys, the steep landscape is not conducive to archaeological preservation. No sites have been documented in the area. However, if any scientifically important

paleontological remains or historical or archaeological sites are uncovered during mining operations, the Mine operators would cease operations in the immediate area and notify the BLM authorized officer.

2.2.9.2 Water Quality

Pit inflows would be monitored during operations; slopes would be graded or regraded during reclamation to ensure adequate surface drainage. The mine is covered under Colorado General Stormwater Permit COG500000 which authorizes the discharge of process water and stormwater runoff to surface waters of the state, from active and inactive eligible facilities engaged in mining and processing of sand and gravel (and other nonmetallic minerals, except fuel), issued October 13, 2016. Two outfalls are located at existing sediment ponds M5O1 and M6O1 that control stormwater runoff and discharge associated with the haul roads and lands adjacent to the Upper Pit and East Pit.

2.2.9.3 Spills Prevention

Hazardous materials would not be stored within the proposed disturbance area. During operations, care would be taken to ensure that no oil, fuel, or lubricants are discharged onto the ground. Spills would be reported and managed according to American Gypsum's Spill Prevention, Control, and Countermeasure (SPCC) Plan (Environmental Solutions 2019).

2.2.9.4 Stormwater Control

Stormwater runoff within the Upper Pit and East Pit would be stored within the pits. Stormwater runoff from the new access roads would be managed with drainage ditches and be graded to report to existing sediment ponds M5O1 and M6O1. Culverts would be sized, based on analysis of drainage characteristics, and installed where haul roads cross drainages. The existing stormwater management plan would be modified and submitted to the BLM and DRMS for approval before new areas are disturbed.

2.2.9.5 Air Quality

To prevent dust during mining activities, the mining area and roads would continue to be sprayed with water and/or a surfactant as needed to minimize dust created by haul trucks and to achieve at least 90% control efficiency. Trucks on haul roads would maintain an average vehicle speed of 20 miles per hour (mph). Mine operations would be subject to conditions of the Colorado Department of Public Health and Environment (CDPHE) operating permit (CDPHE 2019).

2.2.9.6 Soil Conservation

Any growth media or overburden stockpiles remaining in place longer than 6 months would be stabilized and seeded.

2.2.9.7 Reclamation Seeding

Reclamation would take place during and after mining. When access roads are no longer required, road fill will be excavated, drainages re-established to natural channel shapes, and

slopes re-graded to blend with existing topography. This would happen concurrently with mining, where possible, and in all other areas, after mining is complete.

Areas disturbed during mining activities would be regraded, track-walked, and hydroseeded according to previous approvals (BLM 2019) using an approved and certified weed-free seed mix.

Approved fertilizers (BLM 2016) may be used but are not anticipated for use based on previous experience.

Revegetation success would be determined and monitored according to the BLM Northwest Colorado District Recommended Outline for Surface Reclamation Planning (BLM 2013; U.S. Department of Agriculture 2017). If revegetation is not successful or is not making progress toward meeting successful revegetation criteria by the third growing season, additional action would be taken, such as reseeding or adding soil amendments, or observing the areas for signs of erosion and weed growth.

2.2.9.8 Wildlife

American Gypsum would take measures necessary to prevent undue impacts to any wildlife that pass through or over the Mine area. The Mine would continue to maintain practices in compliance with the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, the Endangered Species Act, and other applicable laws. New disturbances would be kept to the minimum necessary areas for the mining operation. Any disturbed areas not needed as part of the ongoing mining area would be reclaimed per the reclamation standards provided in existing approved permit documents. After cessation of mining activities, disturbed areas would be regraded and revegetated to provide wildlife habitat according to existing permits. Vegetation would not be cleared from new proposed disturbance areas from December 15 to July 15, unless surveys are conducted per BLM requirements, to avoid the destruction of active nests for birds of conservation concern, raptors, and other migratory birds.

2.2.9.9 Invasive Species

Noxious weeds that may be introduced on public lands in the project area due to soil disturbance and reclamation will be treated by approved methods. These methods may include biological, mechanical, or chemical treatments. Should chemical treatment be requested, the operator would submit a Pesticide Use Proposal to the Authorized Officer 60 days prior to the planned application date.

2.2.9.10 Public Safety

The mine entrance is locked during non-business hours. A 4-foot-high wire fence has been installed north of the Upper Pit to prevent accidental access from BLM trails located north of the Mine and the proposed East Pit area. Signs have been installed to alert recreationists to the potential hazard ahead.

2.2.9.11 Survey Monuments

Survey monuments would be protected according to 43 CFR 3809.420 (b) (9), which states:

> To the extent practicable, all operators shall protect all survey monuments, witness corners, reference monuments, bearing trees and line trees against unnecessary or undue destruction, obliteration or damage. If, in the course of operations, any monuments, corners, or accessories are destroyed, obliterated, or damaged by such operations, the operator shall immediately report the matter to the authorized officer. The authorized office shall prescribe, in writing, the requirements for the restoration or reestablishment of monuments, corners, bearing and line trees.

2.2.9.12 Fire

During operations, the Mine will comply with applicable state and federal fire laws and regulations, including applicable fire restrictions, and will take all reasonable measures to prevent and suppress fires in the area of operations.

2.2.9.13 Visual Resources

Existing rock formations, vegetation, drainages, etc. would be retained whenever possible. Slopes would be rounded or warped to match existing landforms when possible. BLM-recommended non-glare paint colors would be used for structures and facilities. Vegetation impacts would be minimized by the following:

- Partial clearing of the limits of expansion rather than clearing the entire area if possible; use of irregular clearing shapes to minimize contrast with existing landforms
- Design of vegetative openings to repeat natural openings in the landscape; scalloped and irregular edges are more natural looking; straight line edges would be avoided
- Feathering / thinning the edges of cleared areas; feathering edges reduces strong lines of contrast

3 Affected Environment and Environmental Consequences

3.1 Setting

This chapter provides a backdrop for the project and describes the existing biological, physical, and socioeconomic characteristics of the project area, including human uses that could be affected by implementing the alternatives described in Chapter 2.

The CRVFO planning area is in north central Colorado. The Eagle-Gypsum Mine is near Gypsum, Colorado, on the north side of the Eagle River, in the north central part of the CRVFO planning area (see Figure 1). The terrain in the permit area and proposed permit expansion area is characterized by narrow, south-trending ridges with steep slopes leading to narrow, V-shaped valleys cut by intermittent drainages. The project area is adjacent to areas that have been previously disturbed by mining-related activities (Appendix A, Drawing 1). The Town of Gypsum is the home of American Gypsum's wallboard plant. The plant is a few miles from the Mine, across the I-70 corridor. The Eagle River flows westward through the Town of Gypsum and along I-70 until it joins the Colorado River in the eastern part of the CRVFO planning area. The Town of Gypsum is a small, home-rule municipality in Colorado, incorporated in 1911. It is about 45 minutes from Vail, Colorado.

Lands within the permit area and proposed permit expansion area generally slope from north to south and are bounded to the south by I-70. Elevations range from 6,600 feet to 7,300 feet amsl. The area is classified as Zone VI climate, a continental subarctic climate (Dfc) according to the Koppen climate classification system (Brittannica 2016). This describes an area of less than 12 inches of annual precipitation (usually falling as snow), low humidity, and long, cold winters.

There is virtually no topsoil at the Mine; vegetation typically grows in areas consisting of weathered gypsum (gypsite) and residual volcanic ash. The surface can mainly be described as gypsum and weathered gypsum outcroppings with intermingled basins of volcanic ash. The gypsum outcroppings predominate in the area as evidenced by the lack of vegetation in areas other than the intermingled volcanic ash basins.

The dominant vegetation community in the area is open pinyon/juniper woodland with an understory of rabbitbrush, bunchgrasses, bladderpod, and other forbs. In undisturbed areas, the surface sediment is stabilized by communities of microbiotic crusts. Surface sediment is pale yellow-brown silty loam residuum, heavily eroded in most areas by slope wash. The underlying geology is Pennsylvanian-aged evaporitic facies composed of gypsum, siltstone, and shale (Tweto 1979).

3.2 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and potential future actions are considered in the analysis to identify whether and to what extent the environment has been degraded or enhanced, whether ongoing activities are causing impacts, and trends for activities in and impacts to the area. Projects and activities are evaluated based on proximity, connection to the same environmental systems, potential for subsequent impacts or activities, similar impacts, the likelihood a project will occur, and whether

the project is reasonably foreseeable (BLM 2014). Table 4.1.1-1 of the Proposed RMP/Final EIS (BLM 2014) is incorporated by reference to describe the past, present, and reasonably foreseeable future actions that were identified as having the greatest likelihood to generate potential cumulative impacts when added to the management actions for the CRVFO RMP.

Table 3-1 describes the past, present, or reasonably foreseeable future actions from Table 4.1.1-1 (BLM 2014) having the potential to affect the same resources as are analyzed in this EA.

Table 3-1. CRVFO Actions Potentially Contributing to the Cumulative Impact Scenario

EA Resource	RMP Human or Natural Resource Area	CRVFO Past, Present, or Reasonably Foreseeable Future (RFF) Projects, Plans, or Actions
All	Drought	(Past and present) Over the past 7 to 8 years, most of the western United States has experienced drought, which is threatening agricultural users and drinking water supplies and has raised the potential for wildland fires.
	Lands and realty	(Past) Land tenure actions have resulted in reducing the total area of lands managed by the CRVFO. Residential development in the areas surrounding CRVFO has been increasing.
	Wildland fire ecology and management	(RFF) Wildland fires would probably continue to occur over time, and although the number of fire starts on BLM lands is relatively small, fragmented landownership patterns in certain portions of the planning area increase the potential for fire to cross administrative boundaries and affect BLM lands. Increasing recurrence and severity of drought conditions have been predicted for this area as a result of climate change. This could in turn increase the occurrence and severity of wildfires on BLM land. Fuels treatments, including prescribed or planned fires, chemical and mechanical treatments, and seeding, would probably continue and could increase in the future.
	Mining	(Past and present) Limestone mining outside Glenwood Springs; gravel pit outside Dotsero. (RFF) Mining of Deep Creek claims.
Air quality and dust	Roadway development	(Past) Road construction has occurred in association with timber harvesting, energy development, and mining on BLM lands, private lands, State of Colorado lands, and U.S. Forest Service (USFS) lands. The rate of road building in the CRVFO area is greater than it was 10 years ago due to oil and gas development (RFF) Road construction is expected to continue at the current steady rate on BLM and USFS lands; the future rate is unknown on private and State of Colorado lands.
	Climate change	(RFF) Increased concern over greenhouse gas emissions and global climate change may lead to future federal and state regulations limiting the emission of associated pollutants. Regulation could include setting significance thresholds for greenhouse gases, such as those currently proposed in the California Environmental Quality Act.
Water resources	Water diversions	(Past) The CRVFO has been affected by private irrigation diversions and by transmountain diversions from the Colorado River basin. Reservoir operations have affected water supply, aquatic conditions, and timing. (RFF) Expansion of the wildland urban interface and sprawled development in the Eagle, Roaring Fork, and Upper Colorado River Valleys are anticipated to have impacts on flow.

EA Resource	RMP Human or Natural Resource Area	CRVFO Past, Present, or Reasonably Foreseeable Future (RFF) Projects, Plans, or Actions
Recreation	Recreation and visitor services	(Past) Colorado's population has grown significantly in the past 10 years, and an increasing number of people are living near or seeking local public lands for a diversity of recreational opportunities characterized by the mountain resort or outdoor lifestyle. (Present) 1. The towns of Wolcott, Eagle, Gypsum, Carbondale, Glenwood Springs, New Castle, Silt, Rifle, Parachute, Battlement Mesa, and DeBeque all have public lands bordering them that are used as "backyard" recreation areas by locals. Recreational use in these areas continues to grow exponentially with the rapid growth in the communities themselves. With use levels growing, evidence of visitation is also increasing. Some are associated with traditional uses (for example, hunting), while others are truly new. On a national level and in response to increasing demand for trails-based recreation on BLM lands, the BLM has developed an off-highway vehicle (OHV) strategy and a mountain bike strategy for trails and travel management. 2. In response to increased recreational use, CRVFO has had to limit motorized use in many areas (i.e., motor vehicle closures); to limit motorized use by season (i.e., winter closures); to increase signage, field staff, and visitor services; to create brochures and maps for visitors; and to apply more rules and regulations. These actions all are intended to maintain natural resource settings, to direct recreation use, and to protect resources. Within some special recreation management areas and in urban-interface areas, new issues, such as domestic animals, noise, and visual aesthetics, are necessitating the BLM to consider additional administrative remedies for recreational use. (RFF) 1.The demand for developed recreation sites would continue to increase in the planning area as more people come to the area. Demand for developed recreation sites may lead to more campgrounds, trails, trailheads, signage, and other associated facilities. 2. OHV use would continue to increase as counties see increased population growth continuing. OHV use is also likely to increase in the western portion of the CRVFO planning area, where new routes are developed for oil and gas production and new residents move to those areas. 3. Nonmotorized use close to urbanizing areas would grow as population grows. It is expected that demand for hiking and mountain biking trails would increase adjacent to all of the municipalities in the planning area. Demand for floating and fishing access to the Eagle River and lower Colorado River would also likely increase. Areas along river corridors would be expected to see increases in nonmotorized use as visitors and anglers hike along and to waterways.
Visual resources	Wildland fire and fuels	(Past) Fires within the planning area are both naturally occurring and used as a management tool. Naturally occurring fires have been widely distributed in terms of frequency and severity. Large-scale fires have occurred in the area in the last half of the nineteenth century and beginning of the twentieth century. Extensive wildfires have also occurred in the area since the early twentieth century, including the Storm King and Coal Seam fires.

3.3 Air Quality Resources

Issues identified:

- How would the Plan Modification's mining of gypsum reserves in the Upper Pit and East Pit affect air quality?
- How would dust from haul trucks delivering gypsum to the plant under the Plan Modification affect the Town of Gypsum?

3.3.1 Affected Environment

The analysis area for direct impacts to air quality is the existing permit boundary for the Mine and the permit expansion area. The analysis area for indirect and cumulative effects is based on the long-range transport of air pollutants including fugitive dust emissions from the Mine and is set by the boundaries of Eagle County, where the Mine is located. The analysis area for impacts to climate change is the Southwest region (comprising the states of Arizona, California, Colorado, Nevada, New Mexico, and Utah), as defined in *Climate Change Impacts in the United States: The Third National Climate Assessment* (Assessment), a comprehensive report on climate change and its impacts in the United States (Shafer et al. 2014). This area includes Eagle County and was chosen because climate change and global warming are regional and global phenomena.

3.3.1.1 Regulatory Compliance

National Ambient Air Quality Standards and State Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) to limit the amount of air pollutant emissions considered harmful to public health and the environment. Primary and secondary standards have been set for six criteria pollutants: carbon monoxide (CO), lead, nitrogen dioxide (NO_2),[1] ozone,[2] sulfur dioxide (SO_2), and particulate matter (PM). All criteria pollutants are directly emitted from a variety of sources, the exception being ground-level ozone and the secondary formation of condensable particulate matter (secondary $PM_{2.5}$[3]) (BLM 2020). Geographic areas that do not comply with primary NAAQS requirements for criteria pollutants are considered nonattainment areas. A particular geographic region may be designated an attainment area for some pollutants and a nonattainment area for other pollutants. Eagle County is currently in attainment with the NAAQS for all pollutants (EPA 2018a). As a result, the General Conformity Rule does not apply to the Proposed Action. (The General Conformity Rule ensures that actions taken by federal agencies in nonattainment and maintenance areas are consistent with a state's plans to meet the NAAQS [Clean Air Act (CAA) Section 176(c)] [42 USC 7506].)

[1] The EPA uses NO_2 as the indicator for the larger group of nitrogen oxides (oxides of nitrogen) or NO_x; however, emissions are usually reported as NO_x. NO_2 is a criteria pollutant for which NAAQS has been established.

[2] Ozone is a secondary pollutant and is not directly emitted into the air, but it is created by chemical reactions between NO_x and volatile organic compounds (VOCs) in the presence of sunlight.

[3] Secondary $PM_{2.5}$ forms when certain products of combustion cool enough to condense and form a solid or aerosol that can then be measured via traditional particulate monitoring methods.

The Colorado Modeling Guideline for Air Quality Permits sets ambient air quality standards for gases. The NAAQS and Colorado ambient air quality standards are summarized in Table 3-2.

Table 3-2. National Ambient Air Quality Standards and Colorado Ambient Air Quality Standards

Pollutant		Primary or Secondary	Form	Averaging Time	NAAQS	Colorado Ambient Air Quality Standards
CO		Primary	Not to be exceeded more than once per year	8 hours	9 parts per million (ppm)	9 ppm
				1 hour	35 ppm	40,000 micrograms/cubic meter ($\mu g/m^3$)
Lead		Primary and secondary	Not to be exceeded	Rolling 3-month average	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$
NO_2		Primary	Ninety-eighth percentile of 1-hour daily maximum concentrations, averaged over 3 years	1 hour	100 parts per billion (ppb)	100 ppb
		Primary and secondary	Annual mean	1 year	53 ppb	100 $\mu g/m^3$
Ozone		Primary and secondary	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	8 hours	0.070 ppm	0.070 ppm
		–	Expected number of days per calendar year, with maximum hourly average concentration greater than 0.12 ppm, is equal to or less than 1	1 hour	–	235 $\mu g/m^3$
PM	$PM_{2.5}$*	Primary	Annual mean, averaged over 3 years	1 year	12 $\mu g/m^3$	12 $\mu g/m^3$
		Secondary	Annual mean, averaged over 3 years	1 year	15 $\mu g/m^3$	Not applicable
		Primary and secondary	Ninety-eighth percentile, averaged over 3 years	24 hours	35 $\mu g/m^3$	35 $\mu g/m^3$
	PM_{10}*	Primary and secondary	Not to be exceeded more than once per year on average over 3 years	24 hours	150 $\mu g/m^3$	150 $\mu g/m^3$
SO_2		Primary	Ninety-ninth percentile of 1-hour daily maximum concentrations, averaged over 3 years	1 hour	75 ppb	75 ppb
		Secondary	Not to be exceeded more than once per year	3 hours	0.5 ppm	700 $\mu g/m^3$

Sources: EPA (2016a); CDPHE (2018)

* $PM_{2.5}$ = PM less than 2.5 micrometers in diameter, PM_{10} = PM between 2.5 and 10 micrometers in diameter

Ambient Air Quality

Colorado demonstrates compliance with the NAAQS through the monitoring of ambient air quality using a network of monitoring stations operated by the Colorado Air Pollution Control Division (APCD). The closest monitoring stations to the Mine are Paonia (approximately 65 miles to the southwest in Delta County) and Rangely (approximately 101 miles to the northwest in Rio Blanco County). Ambient (outdoor) air monitoring measurements at various stations measure ambient concentrations of pollutants in the air. These measurements would capture emissions from contributing emission sources including the wallboard plant and other currently operating industries in the region.

The Paonia station monitors NO_2, ozone, continuous $PM_{2.5}$, and continuous PM_{10}. The Rangely station monitors NO_2, ozone, and continuous $PM_{2.5}$. Table 3-3 provides the 2019 ambient air quality monitoring results from the two monitoring stations. Data in Table 2 indicate there were no NAAQS or Colorado ambient air quality standards exceedances or near exceedances in 2019 at the two monitoring stations nearest the Mine.

Table 3-3. 2019 Air Quality Monitoring Data from Two Colorado Monitoring Stations

Pollutant	Primary or Secondary Standard	Units	Form	2019 Monitoring Station Data		NAAQS
				Rangely*	Paonia†	
CO	Primary	ppm	Not to be exceeded more than once per year	Not monitored	Not monitored	35
		ppm		Not monitored	Not monitored	9
Lead	Primary and secondary	$\mu g/m^3$	Not to be exceeded	Not monitored	Not monitored	0.15
NO_2	Primary	ppb	Ninety-eighth percentile of 1-hour daily maximum concentrations, averaged over 3 years	25	11.3	100
	Primary and secondary	ppb	Annual mean	8.69	4.26	53
Ozone‡	Primary and secondary	ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	0.064	0.059	0.070
SO_2	Primary	ppb	Ninety-ninth percentile of 1-hour daily maximum concentrations, averaged over 3 years	Not monitored	Not monitored	75
	Secondary	ppb	Not to be exceeded more than once per year	Not monitored	Not monitored	500
PM_{10}§	Primary and secondary	$\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years	Not monitored	26	150
$PM_{2.5}$§	Primary	$\mu g/m^3$	Annual mean, averaged over 3 years	7.96	3.85	12
	Primary and secondary	$\mu g/m^3$	Ninety-eighth percentile of 24-hour concentrations, averaged over 3 years	12	7.4	35

Sources: EPA (2016a); EPA (2019a)

* Rangely Golf Course Monitor (Site ID: 81030006) located at 40.086944°N, 108.761389°W

† Paonia Monitor (Site ID: 80290007) located at 38.876400°N, 107.602300°W

‡ Final rule for ozone NAAQS effective December 28, 2015.

§ PM_{10} = PM between 2.5 and 10 micrometers in diameter, $PM_{2.5}$ = PM less than 2.5 micrometers in diameter.

Prevention of Significant Deterioration

The Prevention of Significant Deterioration (PSD) is a CAA permitting program for new major sources or major modifications of existing sources of air pollution that are located in attainment areas. PSD is designed to protect public health and welfare and to preserve, protect, and enhance the air quality in national parks, wilderness areas, monuments, and other areas of special value. The program applies to new (or modified) major stationary sources in attainment areas; major sources are defined as those sources that emit 100 tons per year or more of any criteria pollutant for specifically listed source categories or that emit 250 tons per year of any criteria pollutant and

are not in a specifically listed source category. Neither the Mine nor the Proposed Action would be a major PSD source.

Under PSD regulations, the EPA classifies airsheds as Class I, Class II, or Class III. Class I areas are those areas where almost no change from the existing current air quality is allowed. These are areas of special national or regional natural, scenic, recreational, or historic value, for which PSD regulations provide special protection. Moderate pollution increases and reasonable growth are allowed in Class II areas, but stringent air quality constraints are desired when a PSD Class II baseline is triggered. In Class III areas, substantial industrial or other growth is allowed, and increases in concentrations up to the NAAQS are considered insignificant. No Class III areas have been designated to date; therefore, all areas not designated as Class I areas are known as Class II areas. A summary of the Class I areas in located within 100 kilometers (km) of the Mine can be seen in Table 3-4.

Table 3-4. Distance and Direction to Class I Areas from the Mine

Class I Area	Distance and Direction
Flat Tops Wilderness	15.5 miles (25 km) northwest
Eagles Nest Wilderness	25 miles (40 km) northeast
Maroon Bells-Snowmass Wilderness	28 miles (45 km) south
West Elk Wilderness	56 miles (90 km) south

PSD regulations would not apply following implementation of the Proposed Action because it would not change production levels or annual emissions at the Mine or require changes to its current regulatory permits.

Air Quality–Related Values

An air quality–related value (AQRV) is defined as a resource "for one or more Federal areas that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the federal land manager for a particular area" (USFS et al. 2010). Analyzing potential impacts to AQRVs is particularly important at federally mandated Class I lands, which include areas such as national parks, national wilderness areas, and national monuments. Class I areas are granted special air quality protections under the CAA. AQRVs are routinely assessed by the BLM during NEPA analyses for actions/authorizations with the potential to impact such areas (BLM 2020). The requirement to assess impacts to AQRVs is established in the PSD rules. The federal land manager for each Class I area has the responsibility to define and protect the AQRVs at such areas and to consider whether new emissions from proposed major facilities (or modifications to major facilities) would have an adverse impact on those values.

The Mine is 25 km from the nearest Class I area, and the Proposed Action proposes no increase in production or annual emissions. Thus, this project does not meet the applicability requirements of the PSD and no assessment of AQRV impacts directly related to mining gypsum is needed for the ongoing and proposed mining.

Visibility

Section 169A of the CAA established a national visibility goal to prevent future visibility impairment and remedy any existing impairment in Class I areas. *Visibility* refers to the clarity with which scenic vistas and landscape features are perceived at great distances. *Impairment* refers to human-caused air pollution. In 1999, the EPA promulgated the Regional Haze Rule to address regional haze, which refers to haze that impairs visibility in all directions over a large area. Haze forms when sunlight encounters particle pollution in the air. Under the Regional Haze Rule of the CAA (40 CFR 51 Subpart P), states and federal agencies work together to establish goals and emission reduction strategies to improve visibility in Class I areas (EPA 2001). States are required to address visibility in their state implementation plans. In addition, the EPA encourages states to work together in regional partnerships to develop and implement multistate strategies to reduce emissions of visibility-impairing fine particle ($PM_{2.5}$) pollution (*Federal Register* 64:35714).

Visibility impairment or regional haze is caused by small pollution particles dispersed in the atmosphere. These aerosols scatter and absorb light, impacting visibility. The majority of particulate emissions from gypsum mines are large particles or particulate matter emitted at or near ground level with little or no buoyancy. Best management practices are required by the state of Colorado to ensure that dust from earth-disturbance activities and overburden handling limit visible emissions from sites. The role of regional transport of fine particles that contribute to elevated PM levels and regional haze impairment has been well-documented. Flat Tops Wilderness is the nearest Class I area to the Mine (see Table 3-4) and is partly within the direct impacts analysis area for air quality.

The IMPROVE (Interagency Monitoring of Protected Visual Environments) program was initiated in 1985 to establish current visibility conditions and trends in national parks and wilderness areas. Deciviews (dv) is a term used to express visibility quality. Average visual range in many Class I areas in the west is 60 to 90 miles (100 to 150 km), equivalent to 13.6 to 9.6 dv, or about 50% to 70% of the visual range that would exist without anthropogenic air pollution from stationary and mobile sources (*Federal Register* 64:35714). The IMPROVE station at Flat Tops Wilderness was used for characterization of the baseline regional haze level in the direct effects study area using data for the period from 2012 to 2018.

From 2012 to 2018, the clearest days in the Flat Tops Wilderness have seen a dv trend of -0.06 dv per year (maximum of 1.9 dv in 2012 to 1.5 in 2018). The annual average haze index for the haziest days at Flat Tops Wilderness has a positive improvement trend of -0.05 dv per year (from 12.17 dv in 2012 down to 11.84 dv in 2018) (Colorado State University 2017). Figure 5 shows the visibility trends from the Flat Tops Wilderness Class I area from 2012 through 2018.

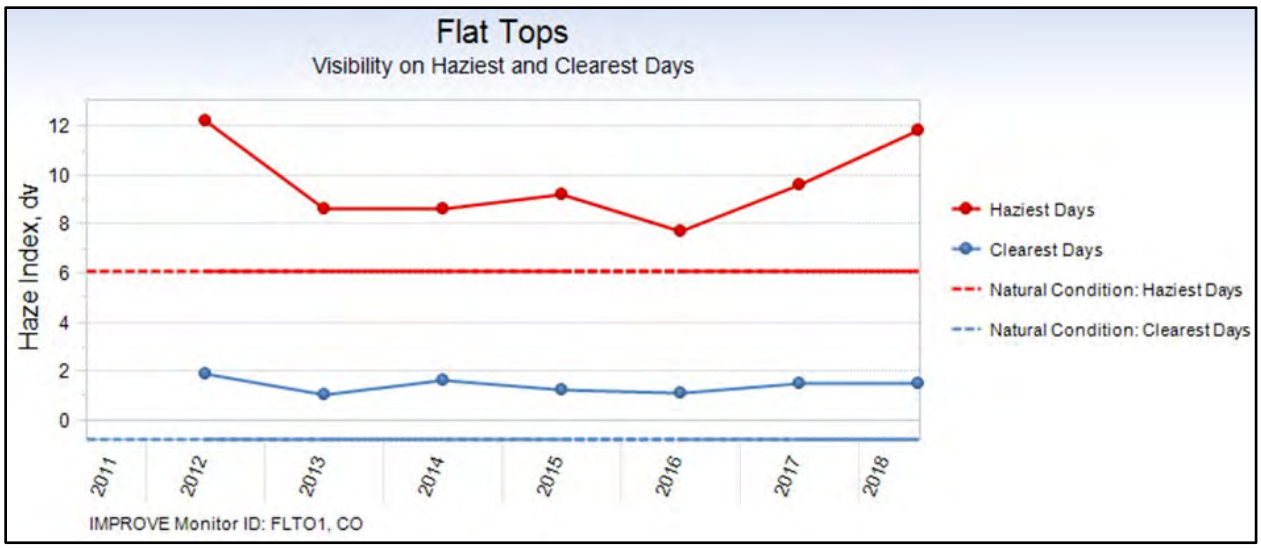

Figure 5. Visibility on haziest and clearest days – Flat Tops Wilderness.

Emissions

Ambient air quality in the project area is influenced by the amount and type of pollutants released near and upwind of the project area. National Emissions Inventory (NEI) data from Eagle County are listed in Table 3-5. These NEI data include the total criteria pollutant and hazardous air pollutants (HAP) emissions released from anthropogenic sources (stationary and mobile sources) and natural sources (biogenic sources and wildfires). NEI data from 2017 are available for point sources; however, mobile source and wildfire data will not be available until later in 2020.

Table 3-5. Eagle County 2014 National Emissions Inventory Data

Source Type	Pollutant Emissions (tons per year)						
	PM_{10}	$PM_{2.5}$	VOC	NOx	CO	SO_2	HAPs
Natural sources	0	0	13,076.8	171.68	2,183.3	0	0
Anthropogenic sources	511.4	1,963.4	1,768.7	2,807.3	13,246.1	48.2	38.7
Total	511.4	1,963.4	14,845.5	2,979.0	15,429.4	48.2	38.7

Source: EPA (2017a).

Note: VOC = volatile organic compound

Anthropogenic emission sources generally fall into two broad categories: stationary and mobile. Stationary sources are nonmoving, fixed sources of air pollution that emit pollutants through process vents or stacks or through fugitive (small leaks) releases. Stationary sources are classified as major or minor. A major source emits or has the potential to emit a regulated air pollutant in quantities that are above defined CAA thresholds. Stationary sources that are not major are considered minor or area sources. The Mine is considered a PSD minor source but a Title V major source by the Colorado Air Pollution Control Division (APCD). The wallboard plant is considered a PSD minor source but a Title V major source by the Colorado APCD. Section 111 of the CAA requires the EPA to establish federal emission standards for source

categories that cause or contribute significantly to air pollution (New Source Performance Standards [NSPS]). NSPSs limit emissions from emission source categories to minimize the deterioration of air quality. Stationary sources are required to meet these limits by installing new equipment or adding pollution controls to older equipment. Implementation of the Proposed Action would not require the purchase or use of new equipment or pollutant sources potentially subject to NSPSs.

Section 112 of the CAA requires the EPA to promulgate regulations establishing emission standards for each category or subcategory of major sources and area sources of HAPs; these are known as the National Emissions Standards for Hazardous Air Pollutants (NESHAPs). HAPs (e.g., benzene, perchloroethylene, and mercury) are known or suspected to cause cancer or other serious health effects. The EPA regulates 187 HAPs through maximum achievable control technology standards, which are individual emission standards developed for a particular stationary source category. Each maximum achievable control technology standard applies to major sources in the industrial source category; major sources are those that emit more than 10 tons per year of a single HAP or 25 tons per year of any combination of HAPs (EPA 2016b). The EPA also regulates HAPs from mobile sources such as highway vehicles, and non-road equipment. The Mine is not a major source of HAPs. In addition, implementation of the Proposed Action would not change production levels or annual emissions at the Mine and would not require any changes that are subject to the NESHAPs.

Ozone

Sensitive vegetation and ecosystems, including forests, parks, wildlife refuges, and wilderness areas, can be damaged by ozone, especially during the growing season. Ozone can slow plant growth by reducing photosynthesis potential, increase sensitive plants' risk of disease and damage from insects, exacerbate harm caused by pollutants and severe weather or drought, and can cause visible damage to foliage under certain conditions. The effects of ozone on individual plants can negatively impact whole ecosystems, including decreased quality of habitat, loss of species diversity, shifts in water and nutrient cycles, and changes to the variety of plants present in a region (BLM 2020).

Eagle-Gypsum Mine

The CAA specifies standards and requirements to limit air pollution and directs the EPA to develop air quality regulations and programs. The EPA can delegate authority for the implementation of air quality regulations and programs to a state. The Colorado APCD has been granted this authority and issues air permits to major and minor sources of regulated air pollutants in Colorado. A state implementation plan is a state's plan for complying with the CAA and the NAAQS. It consists of narrative, rules, technical documentation, and control measures that address polluted areas. Colorado has an approved state implementation plan.

The Colorado APCD issued the American Gypsum Company – Eagle Plant a 1997 permit to operate (No. 95OPEA041) (operating permit). It is currently in effect (renewed April 1, 2019) and expires on April 1, 2024. The federal action being analyzed will not require a new or modified operating permit. The maximum annual production rate allowed in the operating permit is 800,000 tons of gypsum shipped to the wallboard plant per year. Table 3-6 lists the emission units associated with the mining activities authorized by the operating permit.

Table 3-6. American Gypsum Company – Eagle Plant Permit to Operate Emission Units

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Facility-wide fugitive emissions Topsoil removal and replacement Loading and handling Blasting Overburden/topsoil stockpiles Unpaved haul roads	P023	P023	Fugitive dust control measures
107-hp diesel-fired engine	P025	P025	Uncontrolled

Source: Operating Permit No. 95OPEA041. Issued by Colorado Department of Public Health and Environment in 1997 (renewed 2019).

The American Gypsum Company – Eagle Plant operating permit includes the quarry and haul roads used to transport gypsum from the active mining area to the plant. The operating permit requires that the sulfur content of the diesel fuel shall not exceed 0.05% by weight or the sulfur content as specified in 40 CFR Part 63, Subpart IIIII. The operating permit also requires that the Mine employ such control measures and operating procedures as are necessary to minimize fugitive particulate emissions (dust) into the atmosphere in accordance with Regulation No. 1, 5 CCR 1001-3, §III.D.1.

The Mine has developed a fugitive dust control plan to comply with the operating permit requirements. Table 3-7 lists the dust control measures described in the plan.

Table 3-7. Dust Control Measures in the Eagle-Gypsum Mine's Fugitive Dust Control Plan

Facility Operation	Dust Control Method
Topsoil removal	Adequate soil moisture is maintained in topsoil and overburden to control emissions during removal. Watering is implemented if necessary.
Blasting	Sequential blasting is used.
Stockpiles	Topsoil and overburden stockpiles are compacted and revegetated within 1 year. Side slopes of overburden stockpiles are enclosed by a natural gulch.
Haul roads	Vehicle speed on unpaved roads and disturbed areas does not exceed a maximum of 30 mph, and average vehicle speed does not exceed 20 mph. Speed limit signs will be posted. Unpaved haul roads are watered as often as needed to control fugitive particulate emissions. Haul trucks are equipped with and use covers.
Material handling	Emissions from material handling (i.e., removal, loading, and hauling) are controlled by watering at all times unless natural moisture is sufficient to control emissions.
Reclaimed and other disturbed areas	Reclamation work and sequential extraction of material are initiated to keep the total disturbed areas at any one time to a minimum.

Emissions from the Mine are predominantly PM in the form of fugitive dust emissions from gypsum mineral mining. CO, SO_2, NO_x, volatile organic compounds (VOCs), and HAPs are also emitted from mining equipment and vehicles.

Climate Change

Global warming refers to the ongoing rise in global average temperature near the Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases (GHGs) (primarily CO_2, methane [CH_4], nitrous oxide [N_2O], and fluorinated gases) in the atmosphere, and it is changing

global climate patterns. Climate change refers to any significant change in the measures of climate (e.g., temperature, precipitation, and wind patterns) lasting for an extended period of time (EPA 2017b).

The Global Change Research Act of 1990 mandates that the U.S. Global Change Research Program (USGCRP) deliver a report to Congress and the president every 4 years that analyzes the effects of global climate change on the natural environment and other systems, as well as provides current trends in global climate change. The recently released second volume of the Fourth National Climate Assessment focuses on the human welfare, societal, and environmental elements of climate change and variability for 10 regions of the United States (USGCRP 2018). Global climate is changing rapidly compared to the pace of natural climate variations that have occurred throughout Earth's history. Evidence for these changes consistently points to human activities, especially emission of GHGs, as the dominant cause. Global average temperature has increased by approximately 1.8°F from 1901 to 2016. Without significant emission reductions, annual average global temperatures could increase by 9°F or more by the end of this century (compared to preindustrial temperatures) (Hayhoe et al. 2018).

Climate model projections for the Southwest (consisting of Arizona, California, Colorado, New Mexico, Nevada, and Utah) indicate consistently warmer conditions in two to three decades and temperatures rising steadily into the middle of the century (Conant et al. 2018). Since 2000, drought has reduced the flow of the Colorado River, which has reduced the contents of Lake Powell and Lake Mead to their lowest levels. This drought increases the area burned by regular wildfires (Conant et al. 2018).

The EPA regulates GHG emissions under several initiatives, including the Mandatory Greenhouse Gas Reporting rule, the Final Greenhouse Gas Tailoring rule, geologic sequestration requirements, and EPA and National Highway Traffic Safety Administration standards for new motor vehicles. Because no change to the production levels or annual emissions at the Mine would occur under the Proposed Action, no GHG reporting or other permitting requirements would apply.

Greenhouse Gases

CO_2 is the primary GHG emitted through human activities that contributes to climate change (81% of total U.S. GHG emissions in 2016); it is followed by methane (10% of total 2016 emissions), N_2O (6% of total 2016 emissions), and fluorinated gases (3% of total 2016 emissions) (EPA 2018a). The main human activity emitting CO_2 is the combustion of fossil fuels (including the combustion of coal) for electricity, heat, and transportation (EPA 2018b).

The global warming potential (GWP) of gases was developed to allow comparisons of global warming impacts between different gases. The GWP of a gas depends on how well the gas absorbs energy and how long the gas stays in the atmosphere. It is a measure of the total energy that a gas absorbs over a particular period of time (usually 100 years) compared with CO_2. CO_2 has a GWP of 1. The larger the GWP, the more warming the gas causes. For example, methane's 100-year GWP is estimated to be 28 to 36, meaning that methane will cause 28 to 36 times as much warming as an equivalent mass of CO_2 over a 100-year time period (EPA 2017c). The GWP for N_2O is estimated to be 265 to 298.

The term carbon dioxide equivalent (CO_2e) is used to describe different GHGs in a common unit. For any quantity and type of GHG, CO_2e represents the amount of CO_2 that would have the equivalent global warming impact (Brander 2012).

The EPA's Mandatory Greenhouse Gas Reporting rule requires industrial facilities and suppliers of fossil fuels or industrial gases that result in greater than 25,000 metric tons (MT) of CO_2e of GHG emissions per year to report their emissions. Table 3-8 lists the industry sector, number of reporting facilities, and total GHG emissions for the United States and the State of Colorado for reporting year 2018 from the EPA's Facility Level Information on Greenhouse Gases Tool (FLIGHT) (EPA 2019b). These data are useful to understand which large sources of anthropogenic emissions are contributing to GHG emissions both nationally and at the state level.

Table 3-8. 2018 Greenhouse Gas Emissions by Sector

Industry Sector	Number of Reporting Facilities (United States)	Number of Reporting Facilities (Colorado)	United States Reported GHG Emissions (million MT of CO_2e)	Colorado Reported GHG Emissions (million MT of CO_2e)	Global Anthropogenic GHG Emissions (million MT of CO_2e)
Power plants	1,389	35	1,815	35	--
Petroleum and natural gas systems	2,319	39	316	4.2	--
Refineries	140	1	181	0.8	--
Chemicals	457	4	191	0.2	--
Other	1,316	15	130	1.3	--
Minerals	383	7	116	2.4	--
Waste	1,498	1.7	109	1.7	--
Metals	304	2	94	0.3	--
Pulp and paper	218	0	36	0	--
Total*	**7,655**	**61**	**2,987**	**46**	**49,000†**

* Total reporters shown may be less than the sum of the number of reporters in the selected source categories because some facilities fall within more than one source category.

† IPCC (2014).

3.3.2 Direct and Indirect Effects of No Action

Under the No Action alternative, the proposed Plan Modification would not be approved by the BLM and American Gypsum would not proceed with expansion activities at this time. Mining at the Eagle-Gypsum Mine would continue under current approvals until the current mine plan is fully developed and the mineable ore is used up. Sediment pond M601 would remain in its constructed location and BLM would issue a separate decision for this action. The Mine would continue to operate at current production levels for approximately 17 years. Direct, indirect, and cumulative effects to air quality would continue at current levels and would not contribute cumulatively to the impacts of past, present, and reasonably foreseeable future actions.

3.3.3 Direct and Indirect Effects of Proposed Action

Under the Proposed Action, the proposed expansion would be a continuation of current mining activities. Currently, 500,000 to 600,000 tons of gypsum ore are mined each year. The Mine has active mining within two areas, referred to as the Lower Pit and the Upper Pit. The proposed mining activities would increase the disturbance footprint of the Upper Pit, would include development of a new pit referred to as the East Pit, and would involve construction of new haul roads to service the proposed pit expansion. Expansion of the Upper Pit and opening of the East Pit would allow production to continue at the current rate for an estimated additional 40 years.

Emissions of air pollutants at the Mine are currently limited by a production rate condition established in its 1997 air quality operating permit (Permit No. 95OPEA041) of 800,000 tons per year. Because the Proposed Action would be a continuation (rather than an increase) of current surface mining, no permit modification would be required if the Proposed Action is implemented. Mining of gypsum would occur under the current air quality permit. The Proposed Action would not authorize a change in the current air quality permit or in production levels; therefore, there would be no incremental increase in annual emissions from implementation of the Proposed Action and thus no incremental increase in air quality impacts. Mining would extend from the existing Upper Pit footprint and would include development of the East Pit. The number of daily haul truck trips would remain consistent with current haul truck traffic because the rate of production would remain at current levels; therefore, the fugitive dust emissions from haul trucks delivering gypsum to the plant would be expected to remain consistent overall. American Gypsum would continue to maintain compliance with their operating permit and associated fugitive dust control plan.

Under the Proposed Action, PM emissions would be generated from gypsum mining operations such as land clearing, topsoil and overburden removal and replacement, gypsum extraction, loading and transferring to handling facilities, gypsum processing and storage, mine haul roads, and reclamation. Dust suppression techniques are used throughout mine operations to manage fugitive particulate emissions. Permit No. 95OPEA041 mandates the control of fugitive dust in accordance with Regulation No. 1, 5 CCR 1001-3, §III.D.1, including watering; sequential blasting; revegetation; vehicle speed reduction on haul roads; and watering haul roads. The permit also requires that material handling and transfer points be watered at all times to minimize PM emissions. These required fugitive dust control measures would limit direct PM impacts to air quality.

The Mine complies with the federally enforceable dust control requirements of Permit No. 95OPEA041 by following a site-specific fugitive dust control plan. Haul road dust is controlled by several methods. Speed limits are posted along the haul roads; vehicle speed on haul roads does not exceed a maximum of 30 mph and average vehicle speed does not exceed 20 mph. Several large water trucks are also used to wet down haul roads and pit ramps to reduce dust formation. Employees receive annual training to slow down or stop operations if dust cannot be controlled by water or other agent applications. The Mine continues reclamation work and sequential extraction of material to keep the total disturbed areas at any one time to a minimum.

Criteria pollutants such as CO, SO_2, exhaust PM, and NO_x would also be emitted from vehicles and equipment under the Proposed Action, along with HAPs and VOCs. In addition, employees

commuting to and from the Mine on paved and unpaved roads would create criteria pollutant and HAP emissions, as well as fugitive dust emissions. Compliance with the fugitive dust control plan helps reduce dust emissions associated with travel on unpaved roads by haul trucks and worker commute vehicles. Estimated annual emissions for criteria pollutants and HAPs based on the maximum allowable production rate are listed in Table 3-9. These emissions are estimated based on data provided by the Mine, based on EPA-approved guidance and calculation methodologies, and they incorporate the Western Regional Air Partnership (WRAP) Fugitive Dust Handbook's fugitive dust control measures published PM control efficiency (WRAP 2006) to estimate emissions from the sources with federally enforceable fugitive dust control requirements.

Table 3-9. Eagle-Gypsum Mine Direct Emissions – Annual Emission Rate Based Maximum Allowable Production (in tons per year)

Source	Pollutant Emissions (tons per year)							
	PM	PM_{10}	$PM_{2.5}$	CO	NOx	SO_2	VOC	HAP
Point source (P025 - Diesel-Fired Engine)	–	–	–	3.13	14.53	0.8 pounds of SO_2 per MMBtu of oil heat input	–	–
Fugitive dust sources (P023 – Gypsum Mineral Mining Operation Fugitive Emissions)	173.2	72.6	–	–	–	–	–	–
Mobile source mining equipment exhaust	–	0.55	0.49	9.43	14.68	0.04	2.17	0.22
Mobile source emissions (indirect) (Worker Commuting and Truck Hauling)	–	7.05	0.83	2.94	0.58	0.01	0.35	0.03
Total	**173.2**	**80.20**	**1.32**	**15.50**	**29.79**	**0.05**	**2.52**	**0.25**

The emissions in Table 3-9 are calculated based on the permitted production limits and information regarding the surface mining operations, mobile source equipment roster, and employee commute information. Per Permit No. 95OPEA041, the direct mining fugitive dust emissions are limited to 173.2 tons per year (tpy) of PM and 72.6 tons per year of PM_{10} based on the production limit of 800,000 tons of gypsum mined per year. This emissions limit includes the fugitive dust generated from the trucks hauling the gypsum to the wallboard facility. The tailpipe emissions of the haul truck emissions are included in the mobile source emissions. The permit also limits the diesel-fired engine to 14.53 tpy of NO_X and 3.13 tpy of CO. SO_2 diesel-fired engine emissions are limited to 0.8 pound of SO_2 per pounds per million British thermal units (mmBtu) of oil heat input.

Fugitive dust sources include dust generated from vehicles travelling over paved and unpaved roads. Fugitive dust emissions from the mine were calculated based on EPA's calculation methodologies in AP-42 Chapter 13.2 (EPA 2006). Control efficiencies discussed in the WRAP Fugitive Dust Handbook (WRAP 2006) for the federally enforceable fugitive dust control requirements of Permit No. 95OPEA041 were applied to determine the emissions.

Mobile source exhaust emissions from on- and off-road vehicles are calculated using the South Coast Air Quality Management District (SCAQMD)'s Off-Road Model Mobile Source Emission

Factors for the 2020 vehicle fleet. Mine worker commuting emissions were calculated using SCAQMD emission factors for On-Road Passenger Vehicles for the 2020 vehicle fleet.

For determining whether a source is a major source, the definitions of *major stationary source* and *major source* in the PSD and Title V regulations, respectively, provide that fugitive emissions shall not be included unless the source belongs to one of the categories of sources specifically listed in the regulations (EPA 2015). Mobile source emission units such as mobile-source mining equipment and employee commuter vehicles do not require stationary source permits and are not subject to stationary source permitting thresholds. Additionally, fugitive dust emissions from sources not subject to requirements of Section 111 or 112 of the CAA are not included in determining major source thresholds for the purposes of PSD or Title V applicability. 40 CFR 52.21(b)(1)(iii) states that fugitive emissions of a stationary source shall not be included in determining whether a site is a major stationary source unless the source belongs to one of 27 named categories of stationary sources. Because surface mines are not one of the 27 listed source categories in 40 CFR 52.21(b)(1)(iii), fugitive emissions from sources that are not subject to Chapter 111 or 112 of the CAA are not counted toward major source thresholds. This is consistent with EPA guidance stating that "if the primary activity of a stationary source falls within a source category that is not listed, then as a general matter fugitive emission rom the emissions units at the source are not included in determining whether the source is a major stationary source. However, if the source also contains emission units which do fall within a listed source category (or categories), then you include fugitive emissions from these listed emissions units to determine if the source is a major stationary source." (EPA 2003). Therefore, the only fugitive emission sources included toward major source thresholds with respect to Title V and PSD applicability at the mine would be point source emissions and fugitive emissions from equipment that falls within a listed source category because those specific emission units as subject to requirements of Section 111.

Regardless, for the purpose of this EA, all direct and indirect emission sources are included in the emission summary in Table 3-9 above to quantify the emissions from the gypsum mining activities. The Mine operates well below the permitted allowable emission rate of 800,000 tons per year of gypsum extraction; therefore, the emissions presented above are a conservative representation of the Mine's annual emissions. Typical annual production rates for the Mine are expected to continue at a nominal rate of 500,000 tons of gypsum shipped to the wallboard plant per year with a maximum of 600,000 tons per year.

However, assuming the emission rates in Table 3-9 are representative of the facility's emission rates, these can be compared against the Eagle County National Emission Inventory data (Section 3.3.1, Table 3-5) to determine the relative magnitude of the emission rates. Overall, the facility could contribute approximately 15.7% of the PM_{10} emissions, 0.1% of the CO emissions, 1.0% of the NO_x emissions, 0.1% of the SO_2 emissions, less than 0.1% of the VOC emissions, and 0.7% of the HAP emissions in Eagle County. The emissions from the Mine are not expected to impact visibility at Class I areas because the Mine will continue to operate at current production levels.

3.3.3.1 Climate Change

To understand impacts from GHG emissions, emissions are typically expressed in terms of CO_2 equivalent or CO_2e. CO_2e emissions are determined based on the total emission rates of each

GHG pollutant, and the GWP of each pollutant. Each GHG has a GWP that is based on how much energy emissions of 1 ton of the gas will absorb over a given period of time relative to 1 ton of CO_2. The GWP accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere. Methane has a higher energy absorption capacity than CO_2 but lasts only a decade on average in the atmosphere. N_2O has a higher-still energy absorption capacity and generally lasts more than 100 years in the atmosphere, on average (EPA 2017c). GWPs have been developed for GHGs over various time horizons including a 20-year and 100-year time frame. The 100-year GWP has been adopted by the United Nations Framework Convention on Climate Change and its Kyoto Protocol and is used widely as a metric to assess GHG emission intensity. The EPA uses the 100-year time horizon in its *Inventory of Greenhouse Gas Emissions and Sinks: 1990–2017* (EPA 2019c) and Mandatory Greenhouse Gas Reporting rule. Therefore, project-related emissions are shown based on the 100-year GWP values for comparison to state and national GHG emissions.[4] Additionally, total CO_2e from the project based on a 20-year time horizon is also shown for reference. The GWPs used to calculate CO_2e emissions presented in this section are based on the Intergovernmental Panel on Climate Change's (IPCC's) *Climate Change 2014: Synthesis Report* and are listed in Table 3-10 for the 100-year and 20-year timescale (IPCC 2014).

Table 3-10. Global Warming Potentials of Project Greenhouse Gases

Pollutant	100-Year GWP	20-Year GWP
CO_2	1	1
Methane	28	84
N_2O	264	265

No impacts to climate change would occur from the Proposed Action; however, the combustion of fuel by off-road equipment and on-road worker commuter vehicles at the Mine would result in GHG emissions. These emissions are estimated and listed in Table 3-11.

Table 3-11. Estimated Annual Greenhouse Gas Emissions from Mine-Related Mobile Source Equipment

Source	MT of CO_2	MT of CH_4	MT of N_2O	100-Year MT of CO_2e^*	20-Year MT of CO_2e^*
Off-road equipment (direct)	3,067.37	0.18	--	3,072.34	3,082.30
On-road equipment (indirect)	641.64	0.03	--	641.96	643.38
Gypsum plant equipment (indirect) (turbines, impact mills, and wallboard dryers)	100,557.22	1.90	0.19	100,660.32	100,766.63
Total	**104,266.23**	**2.11**	**0.19**	**104,374.62**	**104,492.31**

* CO_2e is calculated by multiplying the mass emissions of the GHGs by the GWP for the GHGs. GWPs are based on the IPCC's *Climate Change 2014: Synthesis Report* (IPCC 2014).

The emissions in Table 3-11 are calculated based on the permitted natural gas combustion limits for the turbines, impact mills, and wallboard dryers as established in the operating permit (Permit

[4] The EPA uses GWPs from the updated *Climate Change 2014: Synthesis Report*; therefore, the EPA's state and federally reported GHG emissions are not calculated on the same GWP basis. However, this comparison is still useful to get an idea of the relative magnitude of project emissions.

No. 95OPEA041); the average heating value for natural gas; and emission factors from the GHG Reporting Rule Tables C-1 and C-2 (40 CFR 98(c):Tables C-1 and C-2). Per Permit No. 95OPEA041, the two Allison Gas turbines are limited to a total of 508 million standard cubic feet (MMscf) per year of natural gas consumption (not per each), the three impact mills are limited to a total of 675 MMscf/year of natural gas consumption, and the four wallboard dryers are limited to a total of 675 MMscf/year of natural gas consumption. The Mine is not subject to EPA's Mandatory Reporting Requirements because gypsum mines are not required to report GHG emissions except for stationary fuel combustion source emissions. The mobile source emissions are not included in the mining source category.

3.3.4 Cumulative Effects

Past and present actions in the air quality and climate change analysis area are described in Section 3.3. Most past, present, and reasonably foreseeable future action emissions (that are still occurring) likely consist of fugitive dust, criteria pollutant, HAPs, and GHG emissions from roadway development and mining.

Emissions of air pollutants at the Mine and the gypsum wallboard manufacturing facility are currently limited by a production rate condition in its 1997 air quality permit (Permit No. 95OPEA041). Because the Proposed Action is a continuation (rather than an increase) of current gypsum mining, no air quality permit modification would be required if the Proposed Action is implemented. The Proposed Action would not result in a change in annual production levels; therefore, there would be no incremental increase in annual emissions from implementation of the Proposed Action.

Air resources staff in the BLM Colorado State Office conducted a local-level NO_2 1-hour modeling analysis using the latest version of the EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) with meteorology and other modeling files provided by the Colorado APCD for assessing potential cumulative impacts to the Town of Gypsum for operations of local NO_x emissions sources including the wallboard manufacturing facility and other nearby NO_x emissions sources. For the AERMOD analysis, the wallboard manufacturing facility emissions sources were modeled at their operating permit levels even though historical facility operations data for the past several years shows that these sources operate/emit at levels much lower than permitted levels. Based on the modeling analysis performed, the maximum modeled 1-hour NO_2 cumulative concentrations were predicted to be below the applicable state and federal cumulative 1-hour NO_2 air quality standard at all applicable ambient receptors in Gypsum.

Regional cumulative air quality impacts from In the Colorado Air Resource Management Modeling Study (CARMMS) 2.0 report (Ramboll 2017) are provided to describe overall future cumulative impacts for this EA. The CARMMS focuses on evaluating air quality impact contributions from various levels of new oil and gas development in the region, but the cumulative modeling for CARMMS accounts for all emissions sources in the region including those associated with Mine development and operations. As described in the CARMMS 2.0 report, regional cumulative ozone concentrations and AQRV impacts at sensitive areas, including the Flat Top Wilderness Class I area, are expected to improve from baseline year to future year 2025 (Ramboll 2017).

3.3.4.1 Climate Change

The Fifth Assessment Report of the IPCC (AR5) (IPCC 2014) includes a summary of data from 30 different global climate models that evaluate the natural systems and feedback mechanisms contributing to climate variability. A range of global GHG emissions scenarios known as representative concentration pathways (RCPs) were considered in the modeling analysis to assess potential degrees of climate change impacts. A stringent mitigation scenario (RCP2.6), a low emissions scenario (RCP4.5), an intermediate emissions scenario (RCP 6.0), and an aggressive emissions scenario (RCP8.5) are evaluated in the report. These scenarios correspond to atmospheric concentrations of CO_2 by the year 2100 of 421 ppm for RCP2.6, 538 ppm for RCP4.5, 670 ppm for RCP6.0, and 936 ppm for RCP8.5. The range of likely change in global surface temperature by 2050 ranges from 0.3 to 1 degree Celsius for the RCP2.6 scenario and from 0.5 to 2.0 degrees Celsius for the RCP8.5 scenario. Generally, the more stringent climate change mitigation, the lower the projected change in global surface temperatures. When discussing regional impacts, however, it is important to note that degrees of surface temperature increases vary from region to region.

To discuss the cumulative impacts of GHG emissions for the project area, regional-scale projected impacts are discussed for the state of Colorado. The U.S. Geological Survey (USGS) National Climate Change Viewer (USGS 2016) can be used to evaluate potential climate change at the state level. The viewer provides data showing projections of future climate trends under RCP emission scenarios RCP4.5 and RCP8.5. Data presented in the USGS Climate Change Viewer data can also be extrapolated to get a general understanding of impacts under RCP2.6 and RCP6.0. Generally, the RCP2.6 scenario can be assumed to contribute to a lesser degree of climate change impacts in the region, while the RCP6.0 can be assumed to contribute to impacts that are of lesser magnitude than RCP8.5 but of greater magnitude than RCP4.5. Projected changes to the maximum and minimum temperature and precipitation for Colorado are presented for RCP4.5 and RCP8.5 to assess regional cumulative impacts from GHG emissions in Figures 6 through 8 below. The RCP4.5 and RCP8.5 scenarios forecast similar levels of climate impacts in the region over the next few decades; however, impacts over the next century diverge significantly. Because of uncertainties in the climate models, especially toward the end of the century, the impacts projected represent a forecast but are not certain to occur at the magnitudes projected.

Overall, the RCP8.5 scenario representing the aggressive emission scenario results in higher seasonal average maximum and minimum temperature projections over the century in comparison to the RCP4.5 scenario. However, both scenarios project an increase over the historical average over the next century. The temperature projections for both the RCP scenarios available in the USGS data around the mid-century are fairly consistent with most of the divergence in the scenarios being realized in the latter half of the century. By 2050, the seasonal maximum and minimum temperatures in Colorado are projected to increase by roughly 2.5°F based on the average of the global climate change models. However, the uncertainty in the estimates shown in the shaded areas of Figures 6 through 8 for both the RCP4.5 and RCP8.5 scenarios out to 2040 show that the level of uncertainty in the projections range from 5°F to 7°F depending on the season. Therefore, it is difficult to definitively state that the cumulative impacts at the mid-century mark will result in a specific magnitude of warming in the region. However, there is a definitive upward trend in seasonal minimum and maximum temperatures.

Rainfall data have a much less distinct trend, and the level of uncertainty over the next century shows that seasonal average rainfall may remain within the range that is currently typical for Colorado. However, based on the average projections of the climate change models, there is projected to be a slight increase in winter and spring average precipitation and a slight decrease in summer precipitation. This trend is stronger based on the RCP8.5 scenario.

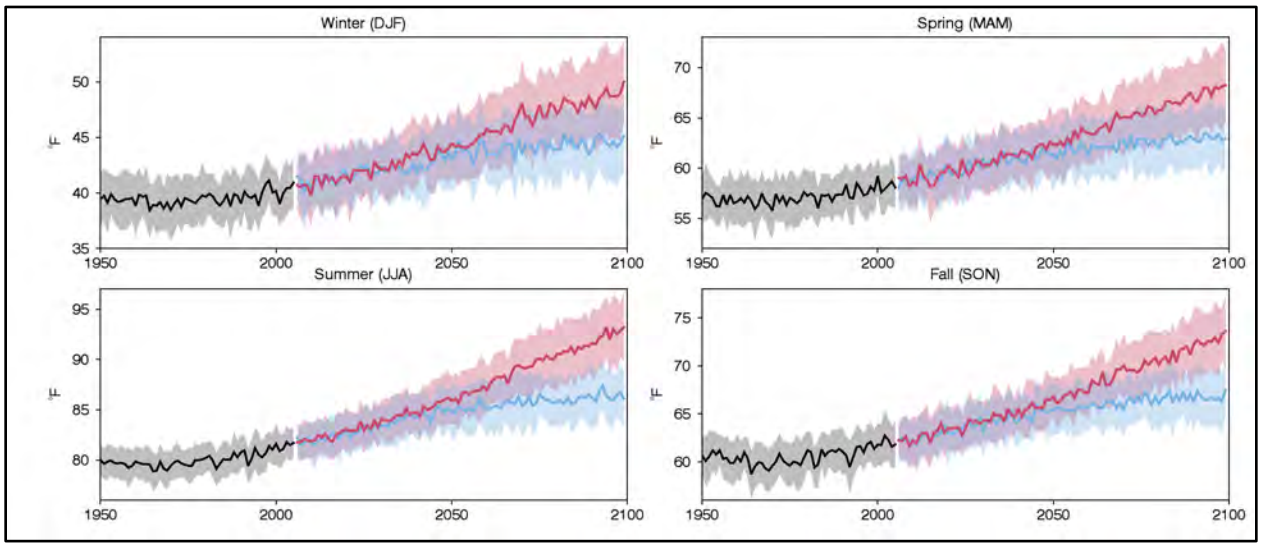

Figure 6. Colorado climate change viewer, maximum 2-meter air temperature.

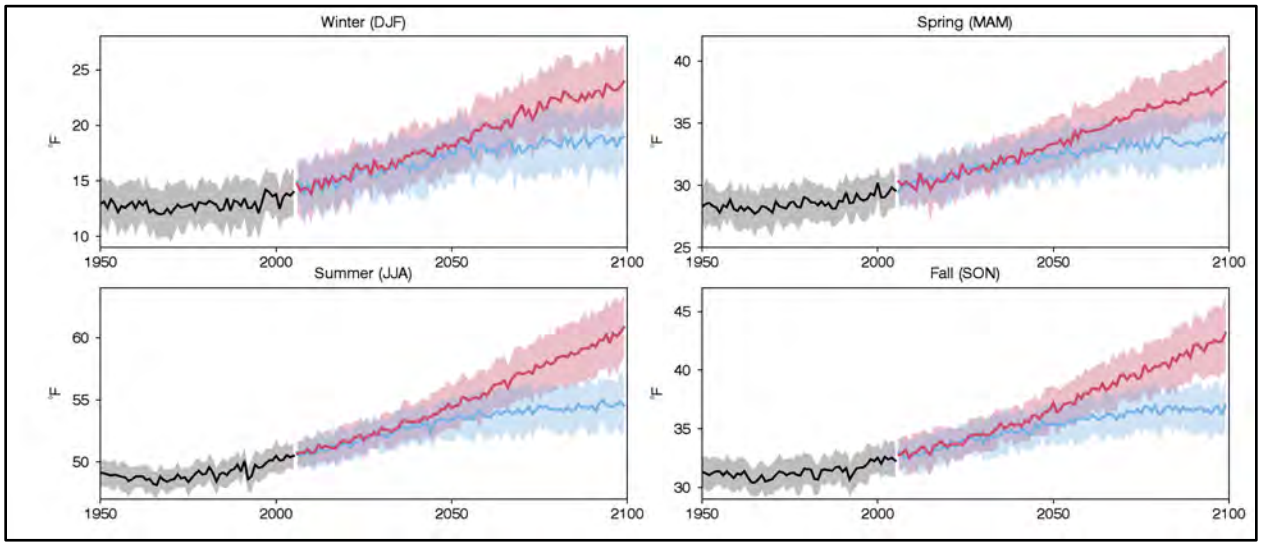

Figure 7. Colorado climate change viewer, minimum 2-meter air temperature.

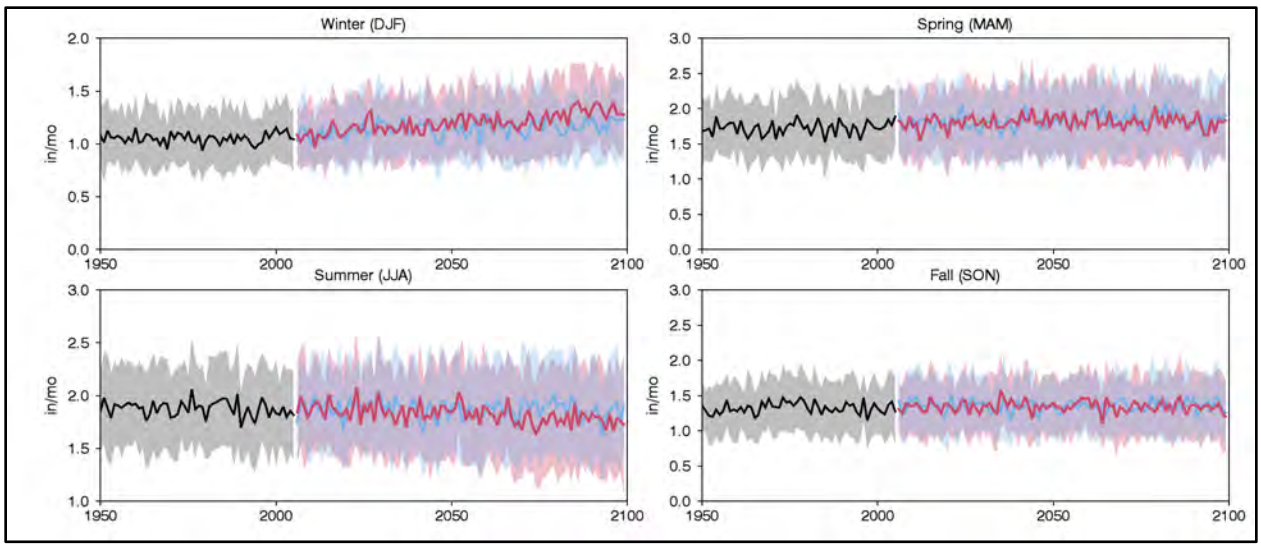

Figure 8. Colorado climate change viewer, precipitation.

The project's GHG emissions will contribute to cumulative atmospheric concentrations of GHG emissions. On a global scale, the GHG emission contribution of any single source is dwarfed by the large number of comparable national and subnational contributors. The relative contribution of GHG emissions from additional years of project operations will vary depending on contemporaneous changes in other sources of GHG emissions. A single source with a GHG emissions magnitude similar to the Mine and associated facilities emissions level is very unlikely to influence the overall global cumulative emissions profile. Nevertheless, each source contributes, on a relative basis, to global emissions and long-term climate impacts.

However, based on the EPA's FLIGHT data from reporting year 2018 (see Table 3-8), the total emissions from the Mine, including all mobile source emissions, are less than 0.23% of the total GHG emissions reported in Colorado and approximately 0.0035% of the nationwide GHG emission totals for reporting facilities when compared on a 100-year GWP basis. When compared to the global GHG emissions, the emissions from the Proposed Action would be approximately 0.0002% of the global emission totals based on IPCC data from 2010.

3.4 Water Resources

Issues identified:

- How would the Plan Modification affect hydrologic conditions within the disturbed area and outside of it?
- How would groundwater be affected by mining activities under the Plan Modification?

3.4.1 Affected Environment

3.4.1.1 Surface Water

The existing Upper Pit and proposed East Pit are located between approximately 6,800 feet and 7,300 feet on a generally south-facing ridge that is cut by small, unnamed ephemeral draws. The nearest named drainage is approximately 0.50 mile to the west of the Mine office area and one mile from the western edge of the Upper Pit. The top of this ridge, at approximately 7,500 feet, is approximately 1.25 miles from the north edge of the mine permit boundary. Figure 9 shows the permit area, the numerous small, ephemeral drainages passing through the permit area, and their relation to the Eagle River. The mine is located within two Hydrologic Unit Code (HUC) level 12 sub-watershed level drainages that includes tributary systems within watersheds. These are Spring Creek-Eagle River and Outlet Eagle River. The Eagle River is the receiving stream for any water that would flow off the slopes in the vicinity of the Mine.

Based on data available from 1904 through 2016, the area receives less than 12 inches of annual precipitation (usually falling as snow), has low humidity and long, cold winters. Average maximum temperatures range from 34 degrees Fahrenheit (°F) (January) to 85°F (July). Average minimum temperatures range from 4°F (January) to 46°F (July) (Western Regional Climate Center 2016).

Normal precipitation in the area produces little surface runoff. Most of the stormwater is absorbed by dry soils and geologic fractures. Short-term runoff does occur during rare major storms (American Gypsum 2019).

The 10-year and 100-year, 24-hour precipitation depths from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 are shown in Table 3-12 below and were assumed to follow a Natural Resources Conservation Service (NRCS) Type II distribution (American Gypsum 2019). The distribution type assists engineers in modelling expected runoff and infiltration rates. Type II distribution events start off slow, increase in intensity, and then let up slowly—a standard model for the Rocky Mountain West (Merkel et al. n.d. [2015]).

Table 3.12. NOAA Design Storm Depths

Storm Event	Precipitation Depth (inches)
10-year 24-hour	1.47
100-year 24-hour	2.21

The following NRCS soil map units are associated with the Upper Pit and East Pit:

- Soil map unit 55 – Gypsum land-Gypsiorthids complex, 12 to 65 percent slopes—58.6 acres
- Soil map unit 104 – Torriorthents-Camborthids-Rock outcrop complex, 6 to 65 percent—39.5 acres
- Soil map unit 106 – Tridell-Brownsto stony sandy loams, 12 to 50 percent slopes, extremely stony—0.1 acre of the East Pit (NRCS 2019).

The landscape in the area of the Upper and East Pits is characteristic of an eroded "badland" (NRCS 2015). Soils range from gravelly to fine sandy loams and are 0 to 44 inches deep. Runoff class is high, and soils are slightly to highly saline (American Gypsum 2019; NRCS 2019). Vegetation in the areas to be mined is generally sparse grasses that grade into pinyon-juniper forest as elevation increases and slope percentage decreases (American Gypsum 2019).

Stormwater intercepted by the Upper Pit is captured in the pit. Sediment pond M501 is located to the southwest of the Upper Pit and captures stormwater from the 53.4-acre drainage basin located to the north and west of the Upper Pit. Currently, two culverts, M5C1 and M5C2, direct water falling within this drainage basin under the pit haul road and to sediment pond M501. As mining in the Upper Pit develops southward and is partially backfilled, the haul road will be moved southward and a single, 30-inch diameter corrugated steel pipe culvert will be installed (see Drawing 14 in Appendix A). Sediment pond M601 is located south of the Upper Pit. It currently captures runoff from a waste pile and small drainage area located to the south of the Upper Pit. During development of the East Pit, all stormwater intercepted by this pit would be captured within the pit. Sediment pond M601 would capture water that falls between the Upper Pit and East Pit in a 42.6-acre watershed. A single 24-inch corrugated steel pipe culvert will direct water under the East Pit haul road and to sediment pond M601 (see Drawing 14 in Appendix A). The pond functions as designed and serves to control drainage into the unnamed, ephemeral draw that empties into the Eagle River. Sediment pond M601 was constructed in a slightly different location than originally proposed, and its crest elevation differs slightly from the information originally provided to CO DRMS. Summaries of each sediment pond's dam and spillway characteristics are included in the Plan Modification.

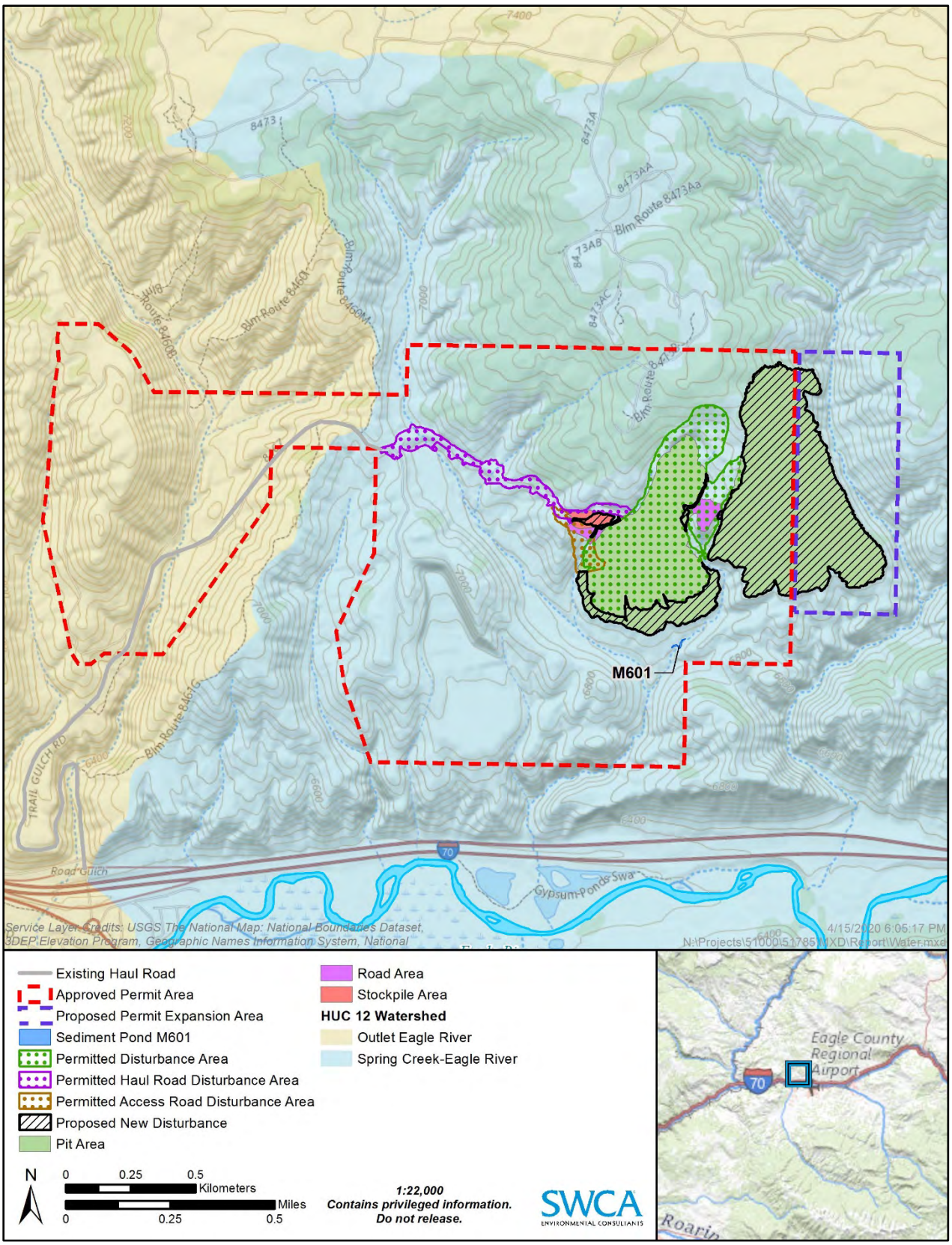

Figure 9. Water resources.

3.4.1.2 Groundwater

Groundwater protection in Colorado is regulated by the Colorado Water Quality Control Act of 1974, Colorado Revised Statutes 25-8-103. The purpose of this act is to establish a water quality program and give state agencies under this statute the final authority to prevent injury to beneficial uses made of state waters; conserve state waters; and to protect, maintain, and improve the quality of public water supplies. The rules are administered by the CDPHE Water Quality Control Commission (CDPHE 2019). Groundwater well locations and permits are administered by the Colorado Division of Water Resources (CDWR 2020a), also known as the state engineer (CDWR 2020b).

The depth to groundwater at the Mine is not known. No groundwater data has been gathered within the Lower or Upper pits to date because no groundwater has been encountered except in one isolated case (American Gypsum 2019). Drilling data was collected from 25 drill holes in 2015 in the area of the Upper Pit. The deepest holes extended to 202 feet below ground surface (bgs). Water was not encountered in any holes except for a single, shallow hole where water was encountered at 22 feet bgs, the total depth of the hole. This hole was located adjacent to a ramp or staging area below a backfilled highwall. Below the ramp/staging area was the current, excavated pit (Tierra Group 2015). Previous drilling, blasting, and mining activities in this area may have produced pathways that allowed water to penetrate from the surface. If groundwater is encountered during any future exploratory drilling, the ultimate pit depths of the Upper Pit and East Pit may be reduced to avoid impacting groundwater.

A review of the CWR Well Permit Researcher showed no groundwater wells within the permit area. Seven wells have been located within two miles of the permit boundary. Well details are presented in Table 3-13 and shown on Figure 10 (CDWR 2020a). All wells were constructed into the evaporitic facies (gypsiferous) of the Eagle Valley Formation in which the Mine is located. Numerous wells located within alluvium of the Eagle River floodplain are not considered to be in connection with groundwater of the Eagle Valley Formation and are not included in this analysis.

Table 3-13. Depth to Static Water Level and Total Depth of Six Groundwater Wells Located Within 2 Miles of American Gypsum's Permit Boundary and North of Eagle River

Well ID	Usage	Elevation (feet amsl)	Total Depth (feet)	Static Water Level (feet bgs)	Approximate Water Elevation (feet amsl)	Distance from Mine Permit Boundary	Azimuth
235461-	Commercial	7358	420	240	7118	2 miles	NW
82262-F	Domestic	7153	160	<not listed>	--	2 miles	NW
283452-	Monitoring	7304	250	99	7205	2 miles	NNW
18254-MH	Monitoring	6917	42	17	6900	0.66 mile	E
35818-F	No information	6834	No information	No information	--	0.72	W
24396-	Domestic	6417	34	5	6412	0.72	SW
250576-	Monitoring	6328	500	140	6188	0.80	SW

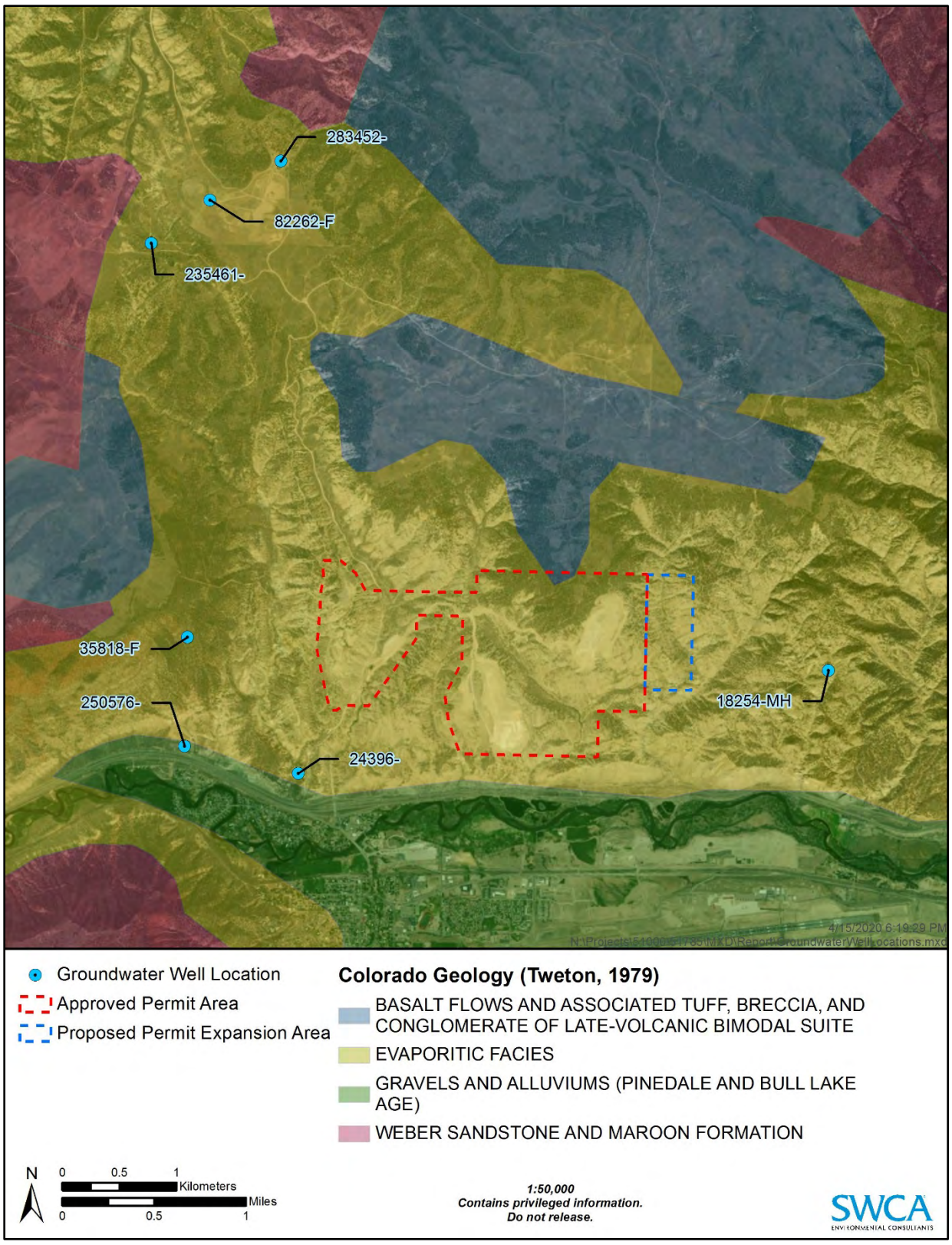

Figure 10. Groundwater wells within 2 miles of the Eagle-Gypsum Mine permit boundary north of the Eagle River.

3.4.2 Direct and Indirect Effects of No Action

Under the No Action alternative, the Upper Pit would not be expanded or deepened, and the East Pit would not be developed. The current mine and reclamation plans would remain in effect, and Sediment ponds M501 and M601 would remain in their current locations, controlling flows through their current watersheds, being cleaned out at intervals as described in the current mine plan, as revised. Mining would continue according to current mining methods. Pit slopes and floors would be assessed for stability and erosion issues as described in the current mine plan. At present, surface water in the Mine permit area is adequately controlled through sediment ponds M501 and M601.

The current mine plan allows continued excavation to an elevation of 6,900 feet. The 2015 drilling data found no water in drill holes, the deepest of which was 6,888 feet, or 12 feet below the final floor elevation of the Upper Pit. Based on these drilling data, no impacts to groundwater are anticipated if the No Action alternative is selected.

3.4.3 Direct and Indirect Effects of Proposed Action

3.4.3.1 Surface Water

Monitoring and inspection efforts are described in Section 6.16 and outlined in Table 6.7 of the Plan Modification. In Section 6.16, the mine commits to managing erosion and sedimentation, maintaining sediment control structures and ponds, and stabilizing mined and reclaimed lands using the same techniques that are in the current and approved mine plan. As described in Section 6 and 7 of the Plan Modification, erosion from roadfill/embankment areas or active or reclaimed pit slopes would be monitored weekly for signs or erosional instability, gully development, signs of subsidence, cracks, bulges, or other signs of movement. Culverts would be monitored quarterly for blockages, crushing, and failure of riprap collars/aprons. Revegetation would be monitored annually for erosion and weed growth. Sediment ponds and control structures would be cleaned out regularly to maintain full capacity, and outlets, standpipes, spillways, etc. would be inspected and repaired as necessary (American Gypsum 2019). Based on these commitments, it is unlikely that the proposed Mine expansion would have a measurable impact on hydrologic conditions within the current or proposed disturbed area, or outside of it. There would be no impact on the established location of sediment pond M601.

3.4.3.2 Groundwater

Under the Proposed Action, the Upper Pit would be excavated to a pit floor elevation of approximately 6,760 feet, and the East Pit would be excavated to an anticipated pit floor elevation of 6,900 feet. In either pit, if additional gypsum is present in the pit footprint and groundwater is not encountered (identified through additional drilling), interior benches would be constructed to and the pit floor would be excavated to a lower level.

Based upon 17 years of mining activity and exploratory drilling programs conducted at the Mine to date, no groundwater has been intercepted. However, the planned final depth of the Upper Pit under the proposed Mine expansion would be 128 feet lower than the 2015 drill hole data. Static water depth in the four closest nearby wells ranges from 6188 to 6900 feet elevation, showing the variability of groundwater depth near the permit area.

Additional drilling is planned to further define the depth and extent of gypsum and depth to groundwater. All drill holes would be plugged including those to be removed during mining. Under the Plan Modification, "if groundwater is encountered during drilling, the ultimate pit depths (Upper Pit and East Pit) may be reduced from what is described herein … to avoid impacting groundwater." Based on the lack of groundwater encountered to date, and the commitments to continue drilling and revising pit depths if needed (should groundwater be encountered), no impacts to groundwater are anticipated. The established location of sediment pond M601 has no impact on groundwater resources.

3.4.4 Cumulative Effects

Surface and groundwater resources at the Mine would not be affected by past, present, and reasonably foreseeable future actions because these actions, identified as surface and groundwater diversions, reservoirs, and water supplies of concern, are located downgradient of the Mine and thus have no effect on water resources at the Mine. If groundwater is deleteriously affected by downgradient surface and groundwater diversions, reservoirs, and water supplies of concern, this would be a net-positive effect for the Mine because groundwater elevations would likely drop, allowing the Mine to excavate further before encountering groundwater (if groundwater was present within pit elevations).

Surface water resources downgradient of the Mine would not likely be affected by past, present, and reasonably foreseeable future actions of the Mine because most precipitation events seep into the ground and do not result in surface flows. When large precipitation events occur, stormwater intercepted by the mine pits is held in the pits until it evaporates. Stormwater intercepted by lands between the pits passes through sediment control ponds (M501 and M601) that are sized to contain the 10-year, 24-hour event. The mine commits to maintaining the required capacity of M501 (0.43 acre feet) and M601 (0.57 acre feet) capacity by cleaning these ponds out as needed, minimizing impacts to downgradient surface water.

Groundwater resources downgradient of the mine would not likely be affected by past, present, and reasonably foreseeable future actions because the Mine has not yet encountered groundwater in any pits and proposes to cease mining prior to reaching groundwater, based on drill hole data acquired in advance of mining activities. There are no on-site processing facilities and therefore no processing chemicals or acid-producing materials used or stored at the Mine. During operations, care would be taken to ensure that no oil, fuel, or lubricants are discharged onto the ground. Any spills or discharges would immediately be reported to the BLM, followed by prompt cleanup and remediation. Spills would be reported and managed according to American Gypsum's SPCC Plan. Therefore, there is no opportunity for hydrocarbons or hazardous materials to pollute groundwater under or downgradient of the mine.

3.5 Comprehensive Trails and Travel Management/Recreation

Issue identified:

- How would the Plan Modification affect travel routes and recreation use in the area?

3.5.1 Affected Environment

The analysis area for comprehensive trails and travel management/recreation are BLM lands locally known as Gypsum Hills. They lie immediately north and west of the permit area boundary and proposed permit expansion area. The BLM manages the Gypsum Hills Extensive Recreation Management Area (ERMA) within the analysis area. The Gypsum Hills ERMA and the surrounding BLM lands are mainly used by people riding OHVs and by hunters during the fall big game seasons. Visitor use is dispersed and localized on the existing designated trails.

No part of the Mine's permit area is within the Gypsum Hills ERMA. Recreation access to the Mine is generally discouraged by the presence of the Mine gate, existing disturbance, and fencing. A 4-foot-high wire fence is located north of the Upper Pit to prevent accidental access from BLM trails located north of the Mine and proposed East Pit area. Signs along the fence alert recreationists to the potential hazard. Sediment pond M601 is located in an area of the Mine that is not likely to be used by recreationists as it is near active Mine operations.

There are two BLM motorized routes that enter the permit area (Figure 11). BLM route 8460M, a motorcycle route, enters the permit area from the north. It is within the permit area for about 567 feet before joining the haul road (BLM route 8460M) for approximately 597 feet before connecting to BLM route 8461 (motorcycle, ATV, and UTV only). BLM route 8461 continues south from the haul road for about 307 feet to the permit area boundary. From there, route 8461 continues south for about 1.1 miles outside the permit area before connecting back to Trail Gulch Road closer to I-70. BLM route 8473A is a full-size vehicle route that ends just north of the existing Upper Pit. BLM recognizes a safety concern for visitor use of routes entering the permit area and has been trying to discourage motorized use on these routes for years.

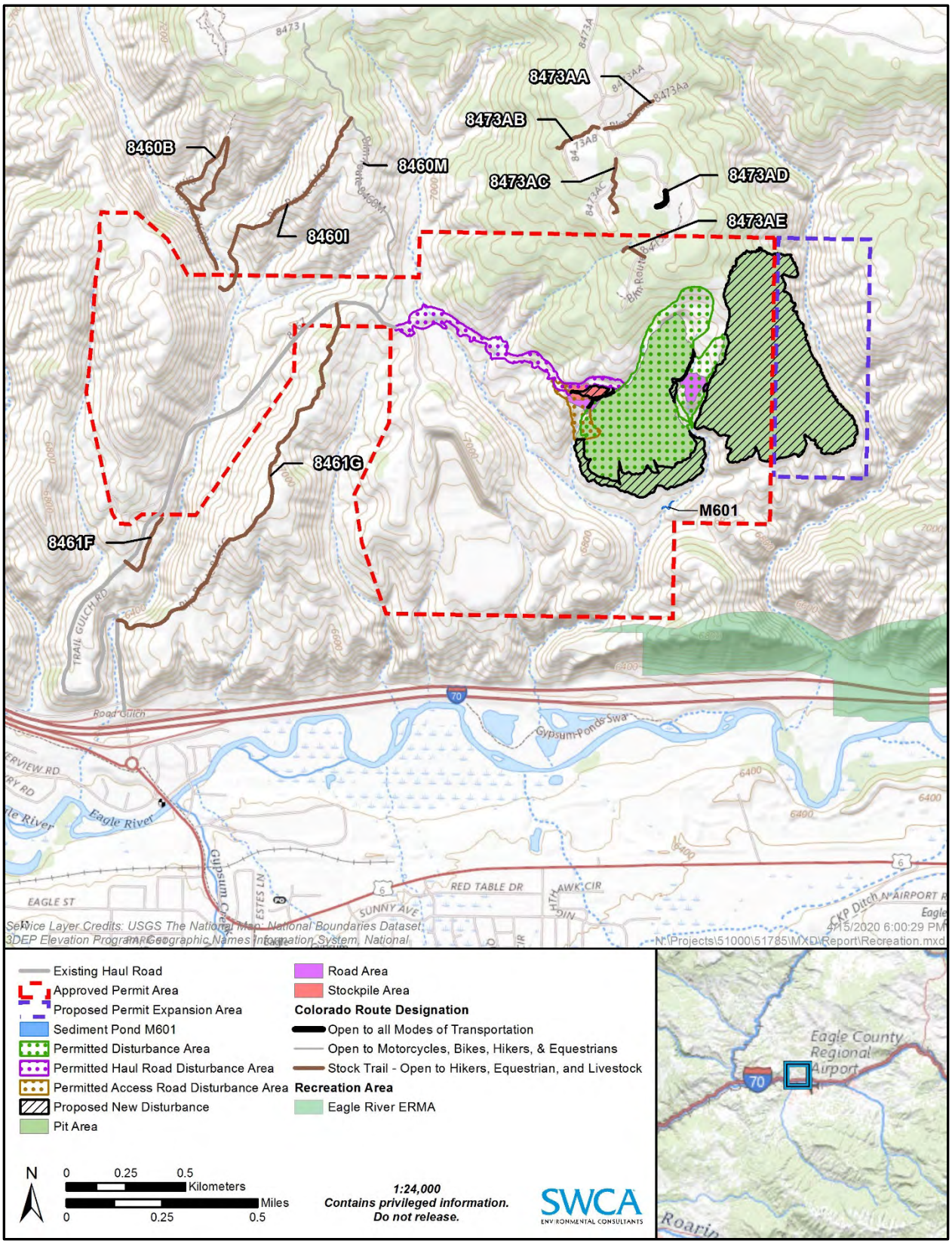

Figure 11. Recreation resources.

3.5.2 Direct and Indirect Effects of No Action

Under the No Action alternative, BLM route 8460M would continue to connect to route 8461 via the haul road. BLM route 8473A would continue to dead end at the existing Upper Pit. Existing trends in trail use and recreation activity would be expected to continue into the foreseeable future. Under either alternative, the BLM routes entering the permit area would need to be re-routed by BLM to address safety concerns. Loop routes would be created to direct people away from the permit area. The loop routes would better provide for public safety and enhance the Gypsum Hills trail system for visitors.

Although the Plan Modification would not be approved under the No Action alternative, production at the Mine would continue for approximately 17 years under existing permit approvals. There are no impacts to recreation trail use as a result of the construction of sediment pond M601 at its current location as this area is in an active part of the Mine that contains no trails.

3.5.3 Direct and Indirect Effects of Proposed Action

Under the Proposed Action Alternative, BLM route 8460M would continue to connect to route 8461 via the haul road. BLM route 8473A would continue to dead end at the existing Upper Pit. Existing trends in trail use and recreation activity would be expected to continue into the foreseeable future. The approximately 98 acres of new disturbance under the Proposed Action would remove those lands from potential dispersed recreation use and would extend by approximately 40 years the Mine's activity in the permit area. Under either alternative, the BLM routes entering the permit area would need to be re-routed by BLM to address safety concerns. Loop routes would be created to direct people away from the permit area. The loop routes would better provide for public safety and enhance the Gypsum Hills trail system for visitors.

The wire fence north of the Upper Pit and East Pit would remain in place to deter accidental access by recreationists from BLM lands and trails located north of the Mine's permit area boundary and the proposed permit expansion area.

There are no impacts to public travel as a result of the construction of sediment pond M601 at its current location as this area is in an active part of the Mine that contains no trails.

3.5.4 Cumulative Effects

The cumulative effects area for recreation resources is the recreation analysis area, the same as for direct and indirect effects. Ongoing, planned, and future activities that may contribute to cumulative recreation impacts include increasing population in nearby communities and increased demand for recreation; and drought and wildland fires that may affect vegetation communities and lands available for recreation. There are no anticipated cumulative impacts to public travel, access or recreation. The implementation of loop routes for trails that otherwise would extend into the permit area would better provide for public safety and enhance the Gypsum Hills trail system for visitors.

3.6 Socioeconomics

Issue identified:

- How would the Plan Modification affect the economy of Eagle County?

3.6.1 Affected Environment

This section describes the existing social and economic baseline conditions within the analysis area of Eagle County, Colorado, which contains the Town of Gypsum and is the home of American Gypsum's wallboard manufacturing plant. North and adjacent to the Town of Gypsum, located on private and BLM administered lands, is the Mine and proposed Mine expansion (see Figure 1).

3.6.1.1 Population Trends

During the 1950s and 1960s, recreation and ski areas were developed around the Town of Vail, which is part of Eagle County (Town of Vail 2020). The success of Vail and the completion of I-70 in the 1990s led to the growth of the Town of Gypsum and neighboring Town of Eagle "…as bedroom communities for the workforce responsible for constructing and maintaining up-valley resort communities" (Town of Gypsum 2017). Growth in the number of retirees in the valley is another important driver to the Town of Gypsum's economy (Town of Gypsum 2017).

Table 3-14 shows population data for the Town of Gypsum, Eagle County, and the state of Colorado. Between 2010 and 2018, all geographies experienced a change in population between 7.0% (Eagle County) and 16.9% (Town of Gypsum). The percent increase in population for Eagle County was 6.2% below the state increase; however, the Town of Gypsum experienced a larger proportional population increase when compared to the state.

Table 3-14. Population Change from 2010 to 2018

Geography	Population (2010)	Population (2018)	Population Change (2010–2018)	Population Pct. Change (2010–2018)
Town of Gypsum	6,054	7,079	1,025	16.9%
Eagle County	50,793	54,357	3,564	7.0%
Colorado	4,887,061	5,531,141	644,080	13.2%

Source: U.S. Department of Commerce (2019a).

Note: American Community Survey 5-year estimates used. 2018 represents average characteristics from 2014–2018; 2010 represents 2006–2010.

3.6.1.2 Industry, Employment and Income Trends

In 2018 services-related employment, which includes industries such as retail trade, food and hospitality, finance, health care, and real estate accounted for approximately 39,247 jobs or 80.2% of the total employment in Eagle County. Non-services–related employment, which includes construction, manufacturing, and mining, accounted for approximately 6,136 jobs or 12.5% of the total employment. The majority of non-services–related jobs in 2018 (approximately 4,839) were in construction, whereas mining jobs accounted for 319 jobs, or less

than 0.1% of the total employment in Eagle County. Government-related employment, which includes federal, state and local government jobs, accounted for approximately 3,544 jobs, or 7.2% of the total employment.

Although non-services–related jobs accounted for a small proportion of total jobs in Eagle County in 2018, it experienced the greatest increase in employment (25.6%) from 2010 to 2018, and was growing at a faster pace than either services-related (20.1% increase) or government (5.4% increase) industry categories during the same time period.

Four of the top five industries (accommodations and food service, real estate and rental leasing, retail trade, and entertainment and recreation), account for more than 57.0% of services-related employment in Eagle County. Construction jobs account for 78.8% of employment within non-services–related employment (see Table 3-15).

Table 3-15. Change in Employment by Industry from 2010 to 2018

Employment by Industry	Colorado				Eagle County			
	2010	2018	% Change	% of Total Employment	2010	2018	% Change	% of Total Employment
Total employment (number of jobs)	*3,143,637*	*3,864,154*	*22.9%*	–	*40,796*	*48,927*	*19.9%*	–
Non-services related	429,332	550,033	28.1%	14.2%	4,884	6,136	25.6%	12.5%
Mining (including fossil fuels)	48,728	57,758	18.5%	1.5%	257	319	24.1%	0.7%
Construction	185,291	262,525	41.7%	6.8%	3,939	4,838	22.8%	9.9%
Manufacturing	138,462	167,168	20.7%	4.3%	367	607	65.4%	1.2%
Other non-services	56,851	62,582	10.1%	1.6%	321	372	15.9%	0.8%
Services related	2,259,681	2,814,059	24.5%	72.8%	32,451	39,247	20.9%	80.2%
Retail trade	298,985	342,742	14.6%	8.9%	3,545	4,381	23.6%	9.0%
Real estate and rental and leasing	179,287	227,735	27.0%	5.9%	4,586	5,206	13.5%	10.6%
Arts, entertainment, and recreation	86,224	110,504	28.2%	2.9%	3,955	4,244	7.3%	8.7%
Accommodation and food services	232,845	305,673	31.3%	7.9%	7,030	8,554	21.7%	17.5%
Other services related	1,462,340	1,827,405	25.0%	47.3%	13,335	16,862	26.4%	34.5%
Government	454,624	500,062	10.0%	12.9%	3,360	3,544	5.5%	7.2%

Source: U.S. Department of Commerce (2019b)

Income

Eagle County relies on tourism and recreation-related industries for a major component of the local economy. These jobs are affected by seasonal cycles and can affect unemployment rates, which fluctuated between 2.2% and 3.8% throughout 2018 (U.S. Department of Labor 2019).

The Town of Gypsum's Master Plan (2017) encourages development of employment opportunities that will make it less dependent on this sector.

Low average unemployment is a general indicator of economic health. The average annual unemployment rate for Eagle County has decreased by 5.8% from 2010 to 2018 (Table 3-16) and was 2.7% compared to 3.3% for the state of Colorado in 2018.

Average earnings per job is the total earnings divided by the total employment (both full-time and part-time jobs) and is used as an indicator of the quality of local employment. Average earnings do not include non-labor earnings (e.g., earnings from dividends, interest, and rent). Average earnings per job in Eagle County increased by 17.8% from 2010 to 2018 (see Table 3-16). The better-paying jobs tend to be private, non-services jobs such as mining and construction, or specialized service jobs such as in healthcare and financial services.

Per capita income is total personal income (both labor and non-labor earnings) divided by total population of an area and is an indicator of general personal wealth. Per capita personal income has increased in Eagle County by 52.5% from 2010 to 2018 (see Table 3-16).

Table 3-16. Earnings Per Job, Per Capita Income, and Unemployment Rates 2010 to 2018 (2018 $s) for Eagle County

	2010	2018	Change 2010–2018	% Change
Unemployment				
Average annual unemployment rate	8.5%	2.7%	-5.8%	–
Earnings and Income				
Average earnings per job	$43,415	$51,148	$7,733	17.8%
Per capita income	$51,237	$78,152	$26,915	52.5%

Sources: U.S. Department of Commerce (2019b); U.S. Department of Labor (2019)

Mining

According to The Diggings (2020), Eagle County, Colorado, has a total of 78 mines, 58 of which were listed as producing in 2020, and primarily consist of manganese, silver, gold, lead, copper, zinc, and uranium production. Of the nine mining districts located in Eagle County, the Gypsum Area Mining District has the only active claims. The American Gypsum Company is listed as the largest owner in Eagle County with 191 active claims and 3,820 active acres.

In Eagle County, more than 300 people are employed in the mining sector (U.S. Department of Commerce 2019b) (see Table 3-15). Currently American Gypsum's mine and plant operations in the Town of Gypsum provides 100 permanent jobs, which makes it the third largest employer in Town (Town of Gypsum 2017). The existing mining operations provide 13 jobs, and the wallboard plant, which relies on ore produced by the mine, provides 87 jobs based on current production levels. Existing jobs associated with current operations provide an average income of approximately $62,400 per year, which is approximately 22.0% above the average annual earnings per job for Eagle County. Estimated total annual payroll from American Gypsum's operations in the Town of Gypsum is approximately $6.2 million with an additional $2.5 million

in benefits. An earlier economic impact analysis developed by American Gypsum indicated more than 200 additional jobs are indirectly supported (BLM 2002).

3.6.1.3 Federal and Local Revenue

The General Mining Act of 1872 regulates extraction of many nonenergy minerals, such as gypsum, on federal public domain lands. Under this Act, American Gypsum does not pay any royalties to the federal government. BLM charges fees to cover the administrative costs related to its mineral claims. An earlier economic impact analysis developed by American Gypsum indicated more than $2,000,000 per year was paid in local property taxes in 1999 dollars (BLM 2002). Adjusted for an average annual inflation of 2.17% from 1999 to 2018, it is estimated that American Gypsum paid more than $3,000,000 (yearly) in local property taxes in 2018 dollars.

3.6.2 Direct and Indirect Effects of No Action

Under the No Action alternative, existing mine operations would continue for the remainder of the mine life expectancy of approximately 17 years and no changes to socioeconomic conditions would be anticipated. American Gypsum's current level of employment at the Mine and plant would be expected to continue for the remainder of the mine life. Once current gypsum mining operations are exhausted, the wall board plant would cease operations because there will be no more readily available alternative sources of gypsum nearby. Thus, all of the current economic impacts (jobs, property taxes) of the American Gypsum operation would be lost.

3.6.3 Direct and Indirect Effects of Proposed Action

Under the Proposed Action, the life of the Mine would be extended for an additional 40 years beyond the remaining 17 years of currently planned Mine operations. No changes to socioeconomic conditions would be anticipated given that gypsum production is estimated to persist at current levels. However, these conditions (well-paying jobs, local tax revenue) would extend out an additional 40 years instead of 17.

3.6.4 Cumulative Effects

The cumulative effects area of analysis for socioeconomics is Eagle County. The individuals and businesses that would be affected by the Project would be primarily reside in this county, with the cumulative effects likely greater for the individuals and businesses in the Town of Gypsum. Because the Proposed Action is a continuation of existing mining operations at the American Gypsum Mine, implementation of the proposed Mine expansion would not directly contribute incremental effects to socioeconomic resources beyond existing levels.

3.7 Visual Resources

Issue identified:

- How would the proposed Mine expansion affect views from the I-70 corridor and from the towns of Gypsum and Eagle?

The BLM ensures that the scenic values of the public lands managed by the agency are considered before allowing uses that may have negative visual impacts. The BLM accomplishes this through its visual resource management (VRM) system and site-specific conformance reviews for proposed projects. Proposed projects and activities are evaluated to determine whether they conform to the VRM objectives and to identify mitigating measures that can be taken to minimize adverse visual impacts.

The visual resources analysis area is the project area and an area that extends 2.5 miles south, and 6 miles east to capture key observation points. The indicators used to analyze this resource issue are 1) the level of visual contrast created by the proposed project and 2) conformance with existing VRM class objectives.

3.7.1 Affected Environment

3.7.1.1 Landscape Character

The Mine is located on BLM and private land and has been a visible feature upon this landscape since it began operations in 1984. Mining operations are visible from I-70, Gypsum, and Eagle. Elevations in the vicinity range from approximately 6,300 feet within the Town of Gypsum to 7,250 feet at the location of the proposed East Pit. The natural vegetation in the analysis area is made up of juniper woodlands comprising the Foothills Shrublands ecoregion

The Town of Gypsum is characterized by a small urban area that includes the Eagle County airport, which stretches for several miles along the south side of the Eagle River. Residential subdivisions and ranchlands surround the urban area. The backdrop of the community is framed by picturesque Colorado mountain peaks. The landscape between the mountains and the Eagle River—the middleground—is diverse consisting of foothills, plateaus, and mesas broken by both residential and ranch lands. These lands tend to be federal lands managed by the BLM or USFS or open space lands managed by Eagle County or the communities.

I-70 parallels the Eagle River on the north. The dominant visual feature north of I-70 is the current mine operation. The mine is surrounded by relatively undisturbed public lands managed by the BLM.

Overall, human development has altered the natural landscape of the foreground through residential development, commercial development, and transportation routes, including the railroad. The surrounding lands, both middleground and background, have generally maintained scenic values and characteristics of a natural landscape.

3.7.1.2 Regulatory Framework

The BLM, during the land use planning process and development of the CRVFO RMP, assigned visual resources management classifications to all BLM-administered land in the analysis area. Visual resources on BLM-administered lands are managed in accordance with the VRM system (BLM 1986a).

BLM actively manages visual resources in the vicinity of the project, primarily as it relates to the scenic views locals and visitors alike enjoy along the I-70 corridor, which follows the Colorado River within the analysis area. BLM's management of this scenic corridor is primarily accomplished through the classification of visual resource management areas, as well as management of the Eagle River ERMA.

The project area is located within lands managed as VRM Class III and IV objectives as determined in the CRVFO RMP (BLM 2015); while the analysis area includes Class II, III, and IV, as well as urban areas (Figure 12). Table 3-17 below provides a breakdown of the VRM acreage within the analysis area.

Table 3-17. Analysis Area VRM Acreages

VRM Class	Acres
Class II	5,047
Class III	3,346
Class IV	1,199
Urban*	4,198

*Urban is not a VRM class but is provided for landscape setting context.

The affected VRM class objectives are as follows:

- **Class II Objective.** The objective to this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- **Class III Objective.** The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- **Class IV Objectives.** The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

- **Urban.** The urban classification is not a VRM class but may be prescribed in an RMP as areas that experience higher population densities than surrounding areas, often matching a given municipal and/or town center boundary. Urban areas can offer recreational activities combined with urban settings; equating an urban recreation experience, such as walking on paved paths, historic building sight-seeing, or cycling on paved roads; all within short distance (usually walkable) of restaurants, supply stores, and community facilities.

3.7.2 Direct and Indirect Effects of No Action

No new visual contrasts or changes to the views of the I-70 corridor or the towns of Gypsum and Eagle would be expected if the No Action alternative is selected, particularly at the East Pit location. Mining operations and activities would be conducted in accordance to existing permits at the Upper Pit.

Existing permitted operations at the Mine would continue to be in conformance with visual resource management objectives, as prescribed by the CRVFO RMP (BLM 2015).

3.7.3 Direct and Indirect Effects of Proposed Action

There would be no impacts to visual resources as a result of the placement of sediment pond M601 in its current location.

3.7.3.1 Viewshed Analysis

A viewshed of the analysis area was created using a geographic information system (GIS) three-dimensional (3D) model of the maximum height of the proposed East Pit and surrounding landscape to analyze visibility of the Proposed Action. By locating multiple viewpoints on the top of the maximum height of the "full-build out" of the East Pit and looking out at the surrounding landscape, the resulting "seen area" or viewshed represents the area from which the East Pit location theoretically could be visible (see Figure 12). This theoretical view is based on elevation and landform and does not account for vegetation, structures, and other landscape elements that could obstruct views. Using the viewshed analysis and reviewing the activities occurring in this remote area, a resource analysis area was determined adequate to capture potential visual impacts. The viewshed analysis in coordination with the BLM, was used to assist in identification of key observation points (KOPs) that represent common or sensitive points from which the stockpile extension could be viewed. The three KOPs identified for further analysis are shown in Figures 12 and 13.

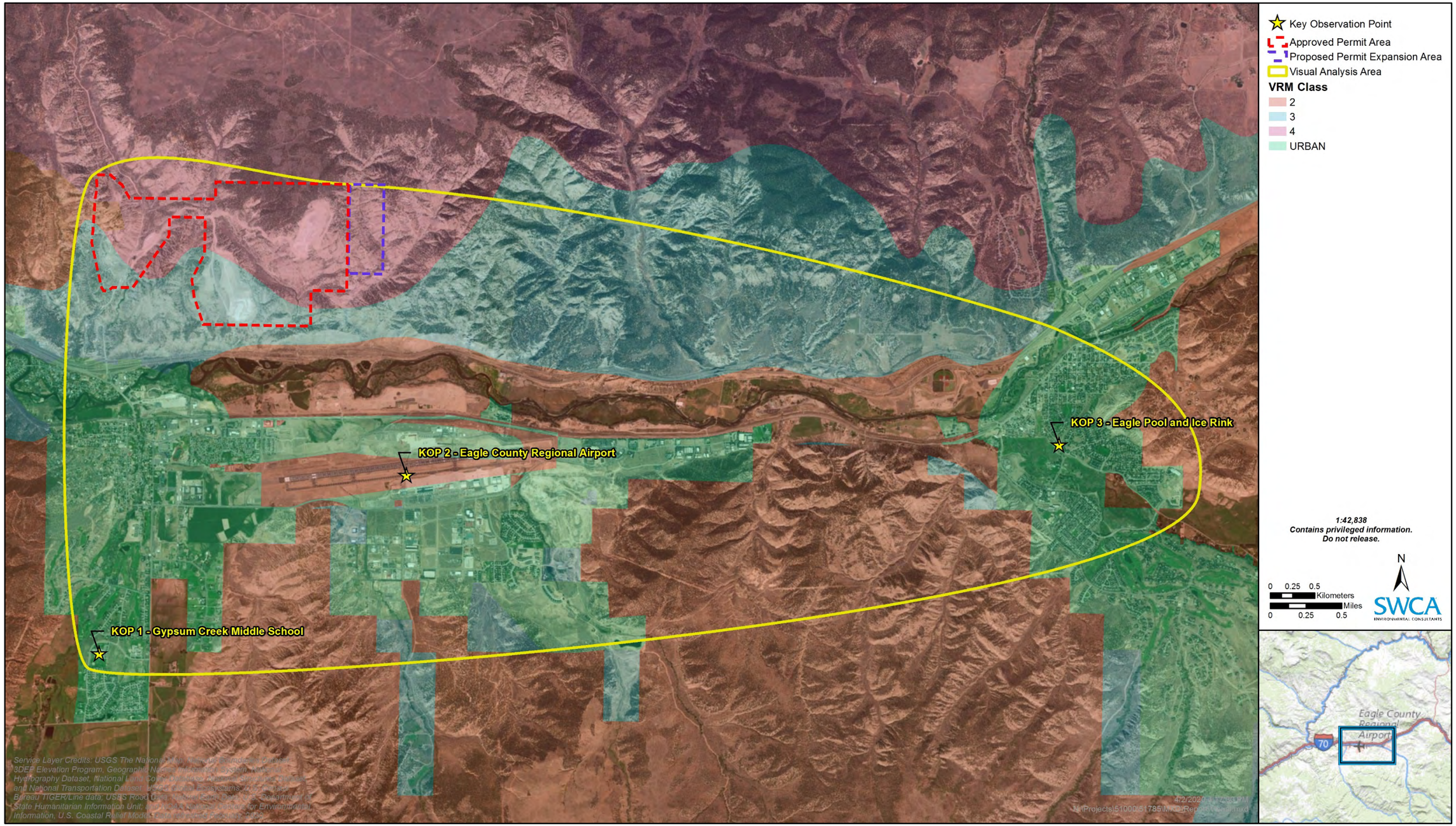

Figure 12. Visual resources.

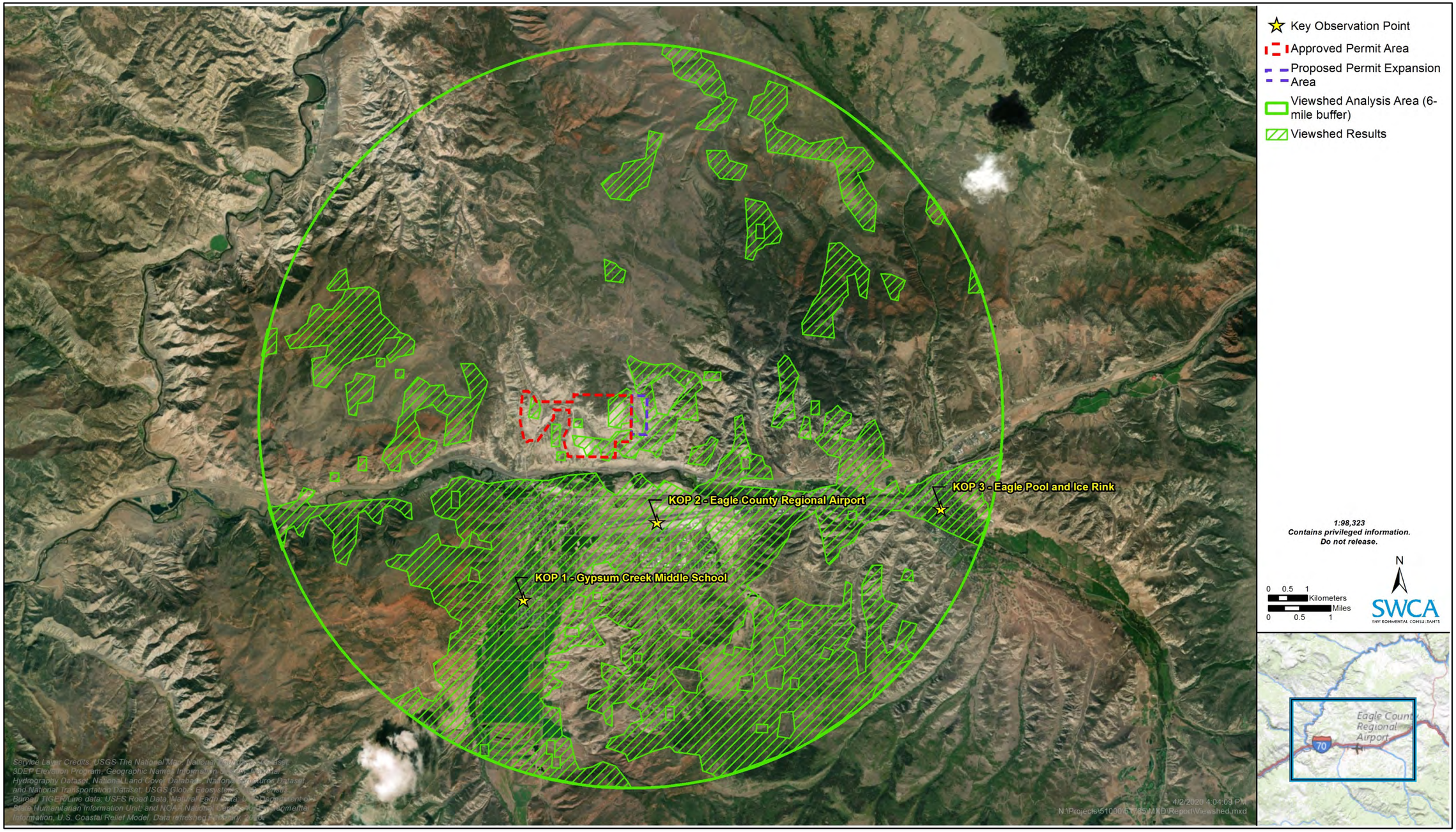

Figure 13. Viewshed.

3.7.3.2 Bureau of Land Management Contrast Rating Process

The Visual Resource Contrast Rating process is a project-level planning and analysis tool used for assessing project visual impacts, as provided in *BLM Manual 8431 – Visual Contrast Rating* (BLM 1986b). The tool compares proposed project features with the major features in the existing landscape to determine whether the project will meet the VRM class objectives.

The visual resource analysis was conducted from three KOPs representing common or sensitive views of the Proposed Action:

- KOP 1 – Gypsum Creek Middle School
    - 2.5 miles southwest of existing Mine
- KOP 2 – Eagle County Regional Airport
    - 1.7 miles southeast of existing Mine
- KOP 3 – Capitol St. and Bush Creek Rd.
    - 5 miles east of existing Mine

The KOPs represent a sample of casual viewers, including local, sensitive, and transitory; and also represents tourist viewers. The KOPs differ in their distance from the project area and dominance and duration of view. Photographs taken from each KOP that illustrate the current landscape view are included in Appendix B. All Proposed Action project components were accounted for in the BLM Contrast Rating process, as described below.

The BLM Contrast Rating process was used to determine the visual contrast that may result from implementation of the Proposed Action. The contrast rating was based upon the expected visual contrast between the proposed project elements and the existing landscape character. At each KOP, existing landforms, vegetation, and structures are described in Appendix B. The level of perceived contrast between the proposed project and the existing landscape is then classified using the following definitions:

- **None**: The contrast is not visible or perceived.
- **Weak**: The element contrast can be seen but does not attract attention.
- **Moderate**: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong**: The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

The Contrast Rating Forms for each KOP are provided in Appendix B.

Key Observation Point 1 – Gypsum Creek Middle School

There would be overall weak contrasts in form and texture due to the distance of the KOP from the Proposed Action (approximately 3 miles) and the ability of the casual observer to discern modifications within the characteristic landscape. Contrast in the analysis area would be attributed to color and line, which would be weak to moderate, primarily due to the formation of distinctive transitions that would be created at the East Pit edges. The proposed surface

disturbance is low on the horizon. Casual observers moving throughout the residential development surrounding the KOP would encounter intermittent visual obstructions due to homes and structures in the foreground area. The residential development reduces the duration of views of the disturbance area.

Key Observation Point 2 – Eagle County Regional Airport

There would be a moderate degree of contrast in form, line, and texture associated with landform modifications. There would be overall weak contrast in vegetation. As KOP 2 is the nearest KOP to the Proposed Action, the potential contrast within the characteristic landscape of the disturbance area would be more discernible by the casual observer than due to the inferior viewing location (approximately 700 feet lower than the existing Mine). Casual observers moving throughout airport parking areas and pedestrian areas surrounding the KOP would encounter intermittent visual obstructions due to industrial structures and facilities (Eagle County Airport) in the foreground area. The residential development reduces the duration of views of disturbance area.

Key Observation Point 3 – Capitol Street and Bush Creek Road

There would be no perceived visible changes in form, line, color, or texture from KOP 3 resulting from the Proposed Action. The Proposed Action would not be visible or discernible by the casual observer from this KOP due to the distance of the Proposed Action from the viewer in conjunction with intervening landforms adjacent to disturbance area and existing visual disturbances associated with urban development within the immediate foreground area of the KOP.

3.7.3.3 Visual Resource Management Conformance

The degree of contrast (i.e., anticipated impact) is weak to moderate from two KOPs, while there would be no perceived contrast from the third KOP (Capitol Street and Bush Creek Road). The level of perceived change to the characteristic landscape would be low. Mining activities may be seen but would not attract the attention of the casual observer, primarily due to the existing presence of the mine. Application of best management practices, as well as potential mitigation measures, would further minimize the degree of contrast by repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

The 98 acres of new disturbance within VRM Class IV associated with the proposed East Pit would be in conformance with the visual resource management decisions in the CRVFO RMP (BLM 2015).

3.7.4 Cumulative Effects

The geographic boundary for visual resources cumulative effects is the same as direct and indirect effects. Existing visual resource environmental conditions in the vicinity of the existing Mine reflect changes brought about by 35 years mining activity, occupancy, and use. Ongoing, planned, and future activities that may contribute to cumulative visual impacts include nearby past mining activities (limestone and gravel mining), roadway and railway development, water diversions, drought, and wildland fires.

The Mine practices concurrent reclamation to the extent possible. As disturbed areas are reclaimed, visual effects of surface disturbance are reduced over time. Reclamation of the Eagle-Gypsum Mine and associated facilities at the end of mining will minimize visual impacts caused by surface-disturbing activities over the long term. Disturbed areas under this Plan Modification would be contoured to blend in with the adjacent surroundings and reseeded to support vegetation similar to the native vegetation present before mining. Following recontouring and reseeding, visual contrast primarily associated with form, line, and textures would be reduced over time as reclaimed areas begin to appear more similar to the adjacent undisturbed landscape.

4 Consultation, Coordination, and List of Preparers

4.1 Tribes, Individuals, Organizations, or Agencies Consulted

Letters were sent to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Ute Indian Tribe, and Colorado SHPO on February 11, 2020. BLM consulted with American Gypsum's Mine Manager, Jon Edeen, and American Gypsum's Plant Manager, Chuck Zaruba.

4.2 List of Preparers

BLM staff and SWCA Environmental Consultants' staff who participated in the preparation of this EA are listed alphabetically by last name in Table 4-1.

Table 4-1. List of Preparers and Reviewers

Agency or Entity/Name	Resource Specialty or Responsibilities	Office or Location
BLM Interdisciplinary Team		
Forrest Cook	Air resources	Colorado State Office
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Wendy Huber	Project lead	CRVFO
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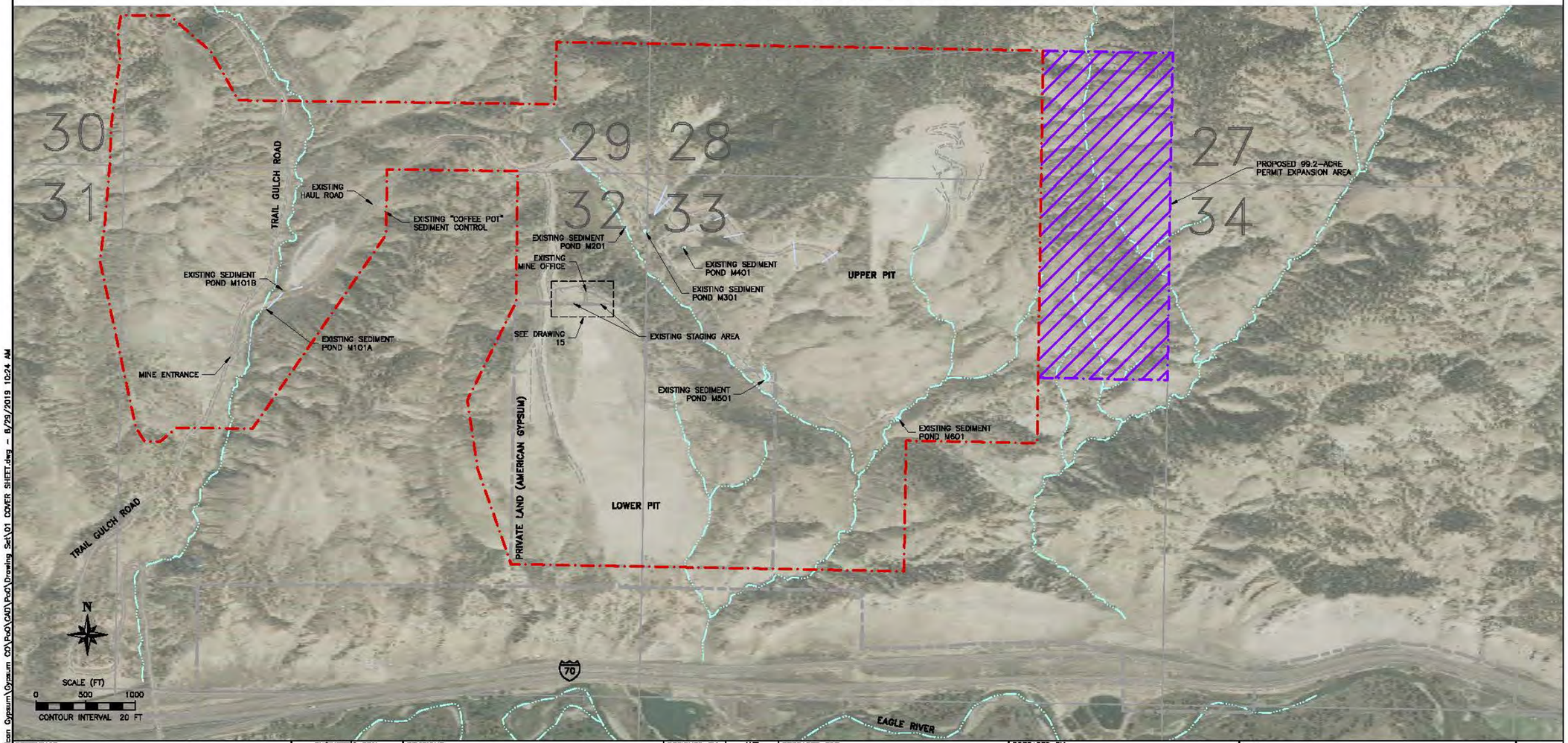
APPENDIX A

Selected Plan Modification Drawings

UPPER PIT AND EAST PIT
2019 PLAN OF OPERATIONS MODIFICATION
EAGLE-GYPSUM MINE



Adrien Butler Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO Drawing Set\01 COVER SHEET.dwg — 8/29/2019 10:24 AM

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TOPOGRAPHY IS FROM COMPASSDATA, 2015 AND 2016
SUPPLEMENTAL TOPOGRAPHY FROM GAMBA, 2018 AND GAMBA, 2019
ADDITIONAL INFORMATION FROM USDA NRCS, 2018
MICROSOFT BING AERIAL IMAGE 2018

ENGINEER'S SEAL

REVISIONS:			
REV	DESCRIPTION	BY	DATE
0	ISSUED FOR PLAN OF OPERATIONS	AKB	02/2019
1	ROAD SNAPSHOTS, MODIFIED 6900 ROAD	AKB	05/2019
2	DISTURBANCE AREAS, BUILDING AREAS	AKB	09/2019

DESIGNED BY:	AKB
DRAWN BY:	TCH
CHECKED BY:	AKB
APPROVED BY:	PEK

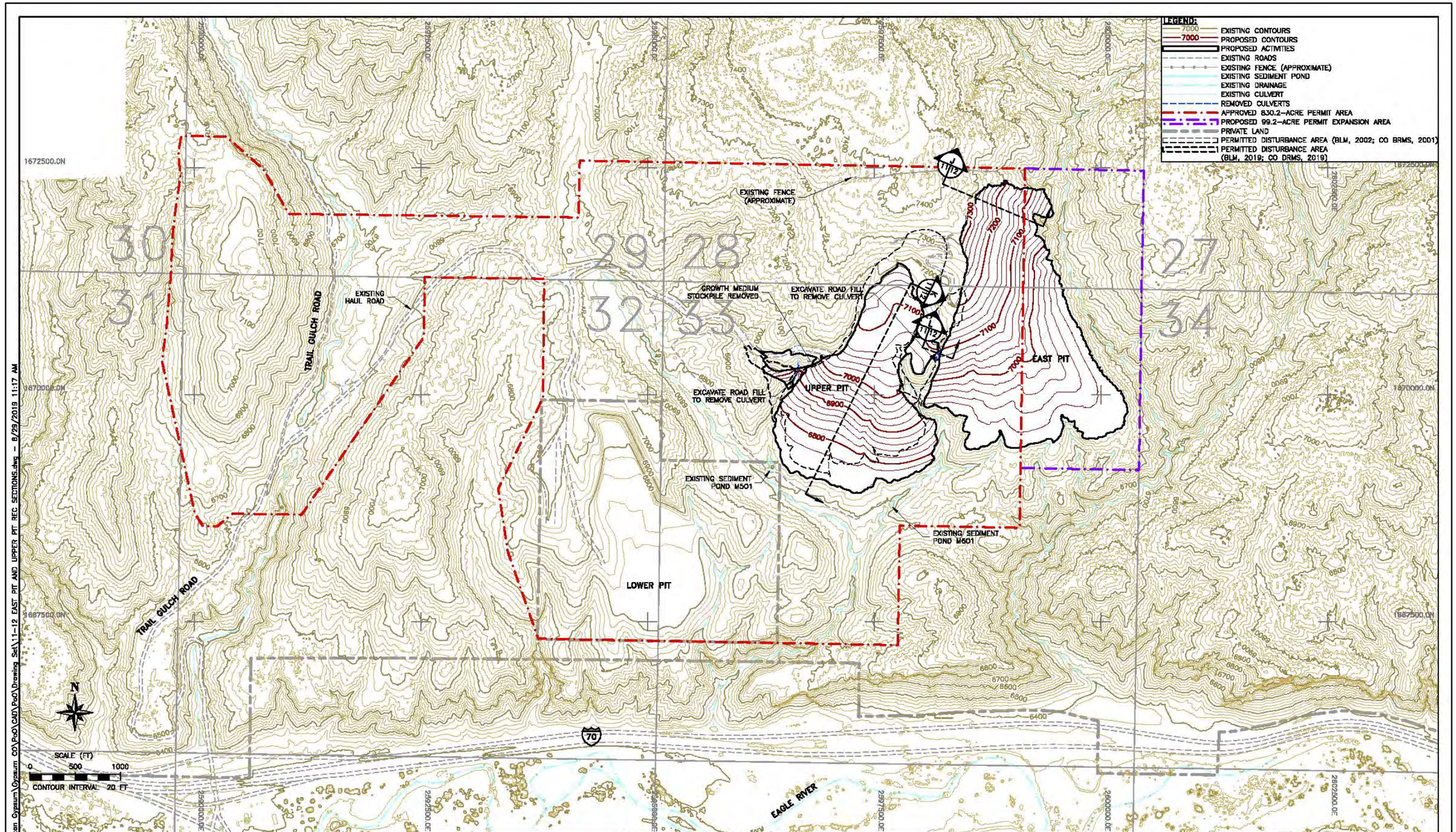
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: COVER SHEET

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	01
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 01 OF 18



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REFERENCE:
DATUM IS NAD 83 COLORADO CENTRAL STATE PLANE
TOPOGRAPHY IS FROM COMPASSDATA, 2015 AND 2016
SUPPLEMENTAL TOPOGRAPHY FROM GAMBA, 2018 AND GAMBA, 2019
ADDITIONAL INFORMATION FROM USDA NRCS, 2018

ENGINEER'S SEAL

REVISIONS:			
REV	DESCRIPTION	BY	DATE
0	ISSUED FOR PLAN OF OPERATIONS	AKB	02/2019
1	ROAD SNAPSHOTS, MODIFIED 6900 ROAD	AKB	05/2019
2	DISTURBANCE AREAS, BUILDING AREAS	AKB	09/2019

DESIGNED BY:	AKB
DRAWN BY:	TCH
CHECKED BY:	AKB
APPROVED BY:	PEK

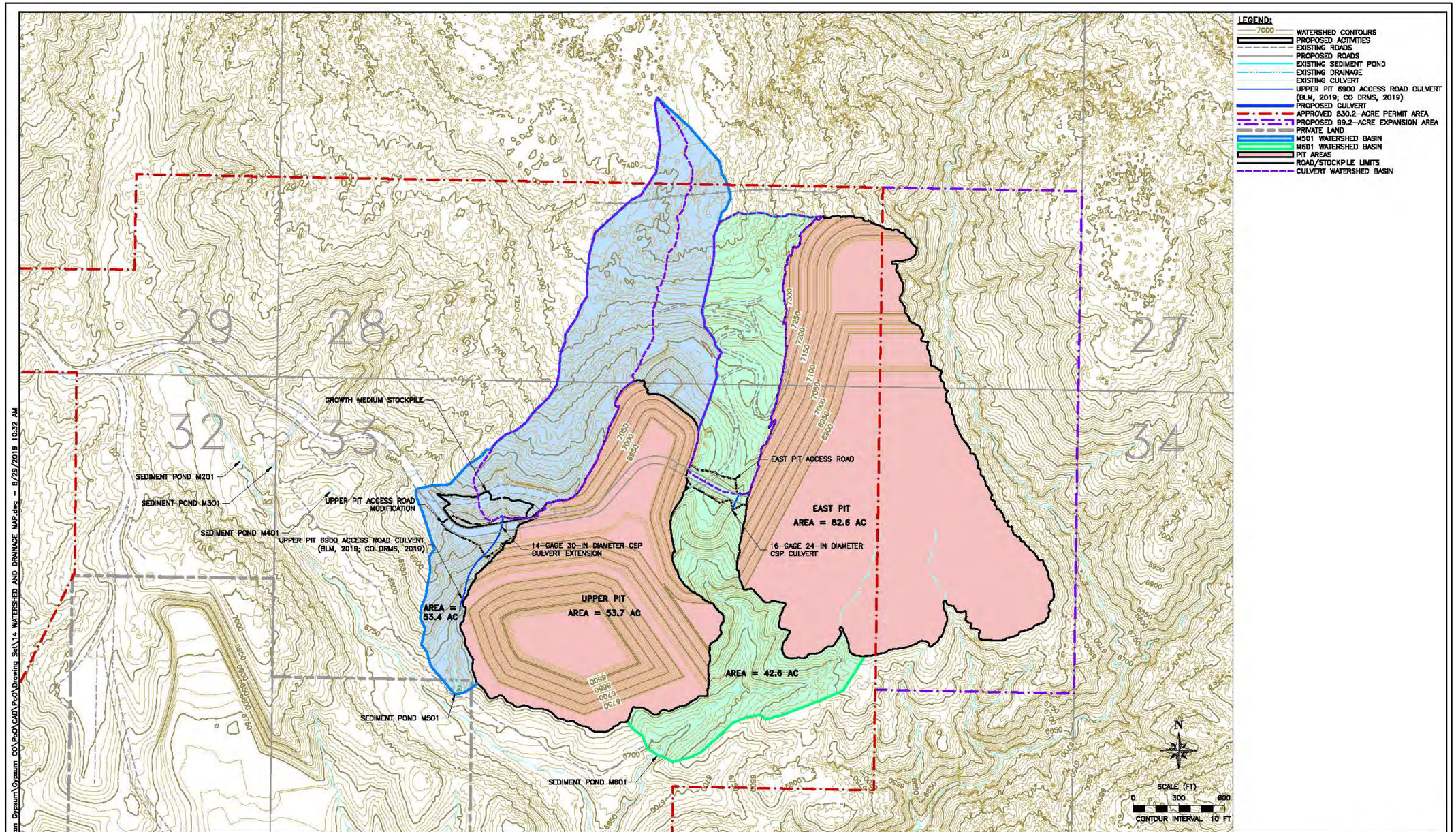
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:
PROPOSED DISTURBANCE RECLAMATION GRADING MAP

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	11
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 11 OF 16



Adrien Butler | Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO Drawing Set\V14 WATERSHED AND DRAINAGE MAP.dwg — 9/29/2019 10:32 AM

REFERENCE:
1 DATUM IS NAD 83 COLORADO CENTRAL STATE PLANE
1 TOPOGRAPHY IS FROM COMPASSDATA, 2015 AND 2016
1 SUPPLEMENTAL TOPOGRAPHY FROM GAMBA, 2018 AND GAMBA, 2019
1 ADDITIONAL INFORMATION FROM USDA NRCS, 2018

ENGINEER'S SEAL

REVISIONS:			
REV	DESCRIPTION	BY	DATE
0	ISSUED FOR PLAN OF OPERATIONS	AKB	02/2019
1	ROAD SNAPSHOTS, MODIFIED 6900 ROAD	AKB	05/2019
2	DISTURBANCE AREAS, BUILDING AREAS	AKB	09/2019

DESIGNED BY:	AKB
DRAWN BY:	TCH
CHECKED BY:	AKB
APPROVED BY:	PEK

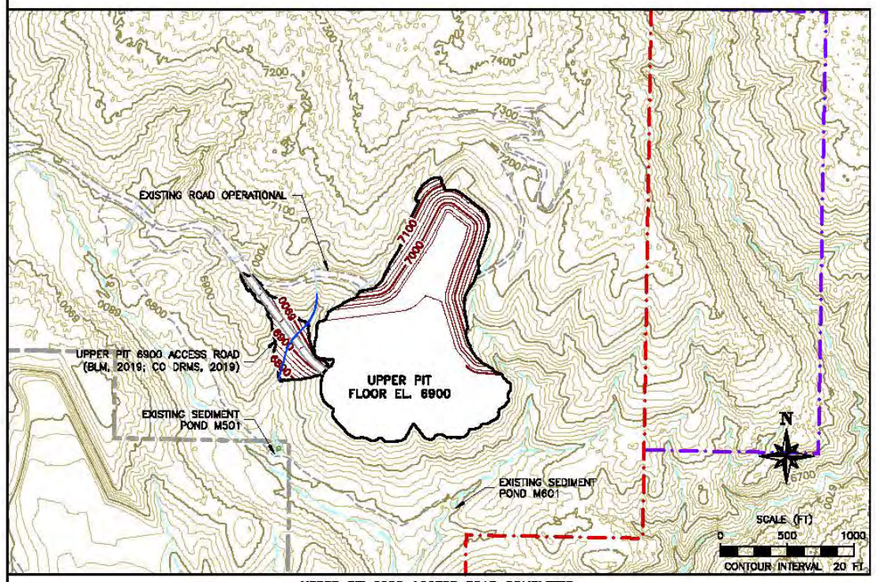
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

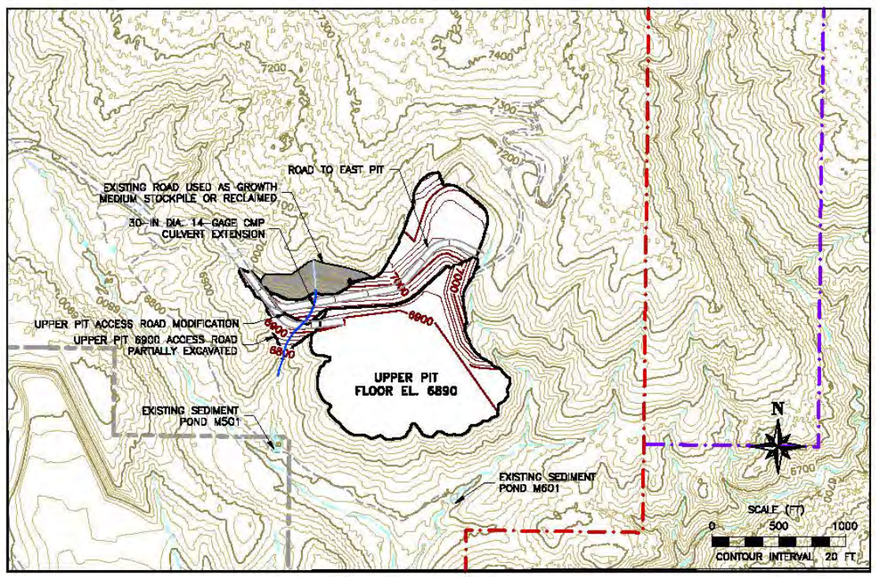
TITLE: WATERSHED AND DRAINAGE MAP

2 REVISION

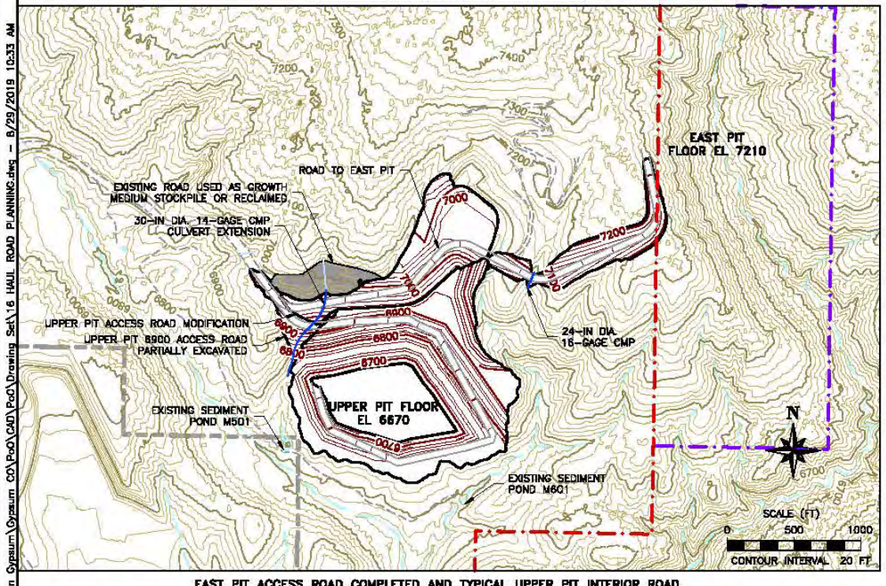
PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	14
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 14 OF 18



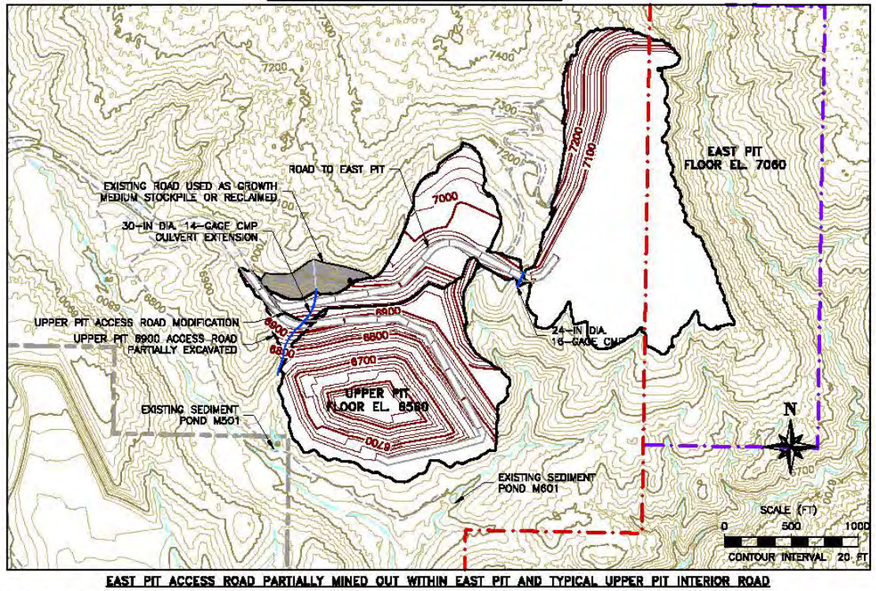
UPPER PIT 6900 ACCESS ROAD COMPLETED



EAST PIT ACCESS ROAD PARTIALLY COMPLETED



EAST PIT ACCESS ROAD COMPLETED AND TYPICAL UPPER PIT INTERIOR ROAD



EAST PIT ACCESS ROAD PARTIALLY MINED OUT WITHIN EAST PIT AND TYPICAL UPPER PIT INTERIOR ROAD

LEGEND:

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED ACTIVITIES
- EXISTING ROADS
- PROPOSED ROADS
- EXISTING SEDIMENT POND
- EXISTING DRAINAGE
- EXISTING CULVERT
- PROPOSED CULVERT
- REMOVED CULVERT
- APPROVED 830.2-ACRE PERMIT AREA
- PROPOSED 89.2-ACRE EXPANSION AREA
- PRIVATE LAND

REFERENCE:
DATUM IS NAD 83 COLORADO CENTRAL STATE PLANE
TOPOGRAPHY IS FROM COMPASSDATA, 2015 AND 2016
SUPPLEMENTAL TOPOGRAPHY FROM GAMBA, 2018 AND GAMBA, 2019
ADDITIONAL INFORMATION FROM USDA NRCS, 2018

ENGINEER'S SEAL

REVISIONS:

REV	DESCRIPTION	BY	DATE
0	ISSUED FOR PLAN OF OPERATIONS	AKB	02/2019
1	ROAD SNAPSHOTS, MODIFIED 6900 ROAD	AKB	05/2019
2	DISTURBANCE AREAS, BUILDING AREAS	AKB	09/2019

DESIGNED BY:	AKB
DRAWN BY:	TCH
CHECKED BY:	AKB
APPROVED BY:	PEK

PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: HAUL ROAD PLANNING

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	16
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 16 OF 18

Adrien Butler - Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\16 HAUL ROAD PLANNING.dwg - 9/29/2019 10:33 AM

APPENDIX B

Viewshed Analysis Documentation

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
March 10, 2020 12:35pm

District
Silt

Resource Area
Colorado River Valley FO

Activity (program)
Mineral Extraction/Mining

SECTION A. PROJECT INFORMATION

1. Project Name
American Gypsum Mine

2. Key Observation Point
KOP 1—Gypsum Middle School

3. VRM Class
Class IV

4. KOP Location

Township 5S

Range 85E

Section 17

5. Location Sketch
See report for KOP location map
See attached Simulations

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Sloping, angular, linear ridgelines that are south facing with incised drainages; and intermixed rounded hills	Dominated by patterns of dark pinyon-juniper; individual forms are indistinct at viewing distance	None visible or discernible from KOP
LINE	Directional, sinuous lines of drainages intermixed with sloping, angled ridgelines	Broken line of pinyon-juniper in drainages, broken, irregular lines at higher elevations where vegetation meets	None visible or discernible from KOP
COLOR	Muted grey to soft, subtle tans with soft tones of red, streaks of khaki	Deep, dark green to black of pinyon-juniper; buff to khaki of grasses and shrubs; distinctive contrast between light and dark colors	None visible or discernible from KOP
TEXTURE	Undulating, directional; drainages and ridgelines; rigid when viewed east to west	Dense, carpet-like of pinyon-juniper at higher elevations, transitioning to stippled as the vegetation density decreases in lower elevations	None visible or discernible from KOP

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Amorphic of pit; directional along south facing slopes; geometric, rectangular bench cuts	Dominated by patterns of dark pinyon-juniper along pit edge; individual forms are indistinct at viewing distance	None visible or discernible from KOP
LINE	Amorphic of pit edge; linear, continuous, horizontal of bench cuts	Distinctive, transition at pit edge resulting from contrast in colors of soils and dark vegetation	None visible or discernible from KOP
COLOR	Light to medium toned muted greys to soft, subtle tans	Deep, dark green to black of pinyon-juniper along pit edge; distinctive contrast between light and dark colors	None visible or discernible from KOP
TEXTURE	Generally smooth, concave form of pit; rigid, directional of bench cuts	Dense, carpet-like of pinyon-juniper at higher elevations, along pit edge transitioning to stippled as the vegetation density decreases in lower elevations	None visible or discernible from KOP

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form			X				X					X
Line			X			X						X
Color		X					X					X
Texture			X				X					X

2. Does project design meet visual resource management objectives? X Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names **Date**
C. Bockey **March 10, 2020**

SECTION D. (Continued)

Comments from item 2.

Project activities are consistent with BLM VRM Class objectives assigned for this area.

Additional Mitigating Measures (See item 3)

Retain existing rock formations, vegetation, drainages, etc., whenever possible.
Round or warp slopes to match existing landforms when possible.
Minimize impacts on existing vegetation by the following:

- Partial clearing of the limits of expansion rather than clearing the entire area if possible.
- Use irregular clearing shapes to minimize contrast with existing landforms
- Design vegetative openings to repeat natural openings in the landscape. Edges that are scalloped and irregular are more natural looking. Straight line edges should be avoided.
- Feathering / thinning the edges of cleared areas. Feathering edges reduces strong lines of contrast.

Use BLM recommended non-glare paint colors for structures and facilities.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

KOP 1 - Gypsum Middle School – Existing Condition

KOP 1 - Gypsum Middle School – Proposed Action

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date
March 10, 2020 1:30pm

District
Silt

Resource Area
Colorado River Valley FO

Activity (program)
Mineral Extraction/Mining

SECTION A. PROJECT INFORMATION

1. Project Name
American Gypsum Mine

2. Key Observation Point
KOP 2—Eagle County Regional Airport

3. VRM Class
Class IV

4. KOP Location

Township 5S

Range 84W

Section 4

5. Location Sketch
See report for KOP location map
See attached Simulations

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Sloping, angular, pyramidal linear ridgelines that are south facing with incised drainages	Rounded globe-like forms of dark pinyon-juniper; indistinct forms of grasses and shrubs	None visible or discernible from KOP
LINE	Converging and directional, sinuous lines of drainages intermixed with sloping, angled ridgelines	Broken and inconsistent line of pinyon-juniper in drainages and along ridgelines	None visible or discernible from KOP
COLOR	Muted grey to soft, pale tans with soft tones of red and gold	Deep, dark green to black of pinyon-juniper; buff to khaki of grasses and shrubs; distinctive contrast between light and dark colors	None visible or discernible from KOP
TEXTURE	Coarse, undulating, directional; drainages and ridgelines; rigid when viewed east to west	Dense, carpet-like of pinyon-juniper at higher elevations, transitioning to stippled broken textures as the vegetation density decreases in lower elevations	None visible or discernible from KOP

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Sloping, amorphic form of pit; directional along south facing slopes; geometric, rectangular bench cuts	Dominated by patterns of dark pinyon-juniper adjacent to pit	None visible or discernible from KOP
LINE	Amorphic of pit edge; horizontal continuous line of bench cuts	Irregular and inconsistent where dark pinyon-juniper occurs	None visible or discernible from KOP
COLOR	Light muted greys intermixed with soft, subtle tans / golden tones	Deep, dark green to black of pinyon-juniper in areas where vegetation occurs and is visible; distinctive contrast between light and dark colors	None visible or discernible from KOP
TEXTURE	Generally smooth, concave form of pit; rigid transitions, directional, of bench cuts and haul road	Irregular and patchy in areas where vegetation occurs and is visible	None visible or discernible from KOP

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST

ELEMENTS	FEATURES: LANDWATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form		X					X					X
Line		X					X					X
Color			X				X					X
Texture		X					X					X

2. Does project design meet visual resource management objectives? X Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? X Yes ☐ No (Explain on reverse side)

Evaluator's Names C. Bockey

Date March 10, 2020

SECTION D. (Continued)

Comments from item 2.

Project activities are consistent with BLM VRM Class objectives assigned for this area.

Additional Mitigating Measures (See item 3)

Retain existing rock formations, vegetation, drainages, etc., whenever possible.
Round or warp slopes to match existing landforms when possible.
Minimize impacts on existing vegetation by the following:

- Partial clearing of the limits of expansion rather than clearing the entire area if possible.
- Use irregular clearing shapes to minimize contrast with existing landforms
- Design vegetative openings to repeat natural openings in the landscape. Edges that are scalloped and irregular are more natural looking. Straight line edges should be avoided.
- Feathering / thinning the edges of cleared areas. Feathering edges reduces strong lines of contrast.

Use BLM recommended non-glare paint colors for structures and facilities.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094

KOP 2 - Eagle County Regional Airport – Existing Condition

KOP 2 - Eagle County Regional Airport – Proposed Action

Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date March 30, 2020
District Slt
Resource Area Colorado River Valley FO
Activity (program) Mineral Extraction/Mining

SECTION A. PROJECT INFORMATION

1. Project Name
American Gypsum Mine

2. Key Observation Point
KOP 3—Capitol St. and Bush Creek Rd.

3. VRM Class
Class IV

4. KOP Location
Township 5S
Range 84W
Section 5

5. Location Sketch
See report

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Sloping, linear ridgeline with intermixed rounded hills	Patterns of dark pinyon-juniper; individual forms are indistinct at viewing distance	None visible or discernible from KOP
LINE	Directional ridgelines	Broken, irregular line of pinyon-juniper	None visible or discernible from KOP
COLOR	Muted grey with subtle, soft tones	Deep, dark green to black of pinyon-juniper; distinctive contrast between light soils and dark pinyon-juniper	None visible or discernible from KOP
TEXTURE	Undulating, directional	Stippled and patchy pinyon-juniper	None visible or discernible from KOP

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDWATER	2. VEGETATION	3. STRUCTURES
FORM	Not visible or discernible from KOP	Not visible or discernible from KOP	None visible or discernible from KOP
LINE	Not visible or discernible from KOP	Not visible or discernible from KOP	None visible or discernible from KOP
COLOR	Not visible or discernible from KOP	Not visible or discernible from KOP	None visible or discernible from KOP
TEXTURE	Not visible or discernible from KOP	Not visible or discernible from KOP	None visible or discernible from KOP

SECTION D. CONTRAST RATING ☐ SHORT TERM X LONG TERM

1. DEGREE OF CONSTRAST		FEATURES: LANDWATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form				X				X				X
	Line				X				X				X
	Color				X				X				X
	Texture				X				X				X

2. Does project design meet visual resource management objectives? X Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended? ☐ Yes X No (Explain on reverse side)

Evaluator's Names C. Bockey
Date March 30, 2020

SECTION D. (Continued)

Comments from item 2.

Proposed Action would not be visible or discernible form KOP due to distance from this KOP, viewer perspective and intervening landforms adjacent to disturbance area and existing visual disturbances associated with urban development within the immediate foreground of KOP.

Additional Mitigating Measures (See item 3)

Proposed Action at full build would occur behind and lower than landforms in front of disturbance area when viewed from KOP.

U.S. GOVERNMENT PRINTING OFFICE: 1985-461-988/33094