August 31, 2024

Division of Reclamation, Mining and Safety
1313 Sherman Street
Room 215
Denver, Colorado 80203

Attn: Amy Yeldell

Please find enclosed the responses to Adequacy Review #2, a revised 2019 Plan of Operations, and revised tabulated mine plan quantities. The TR includes clarification on sequencing and quantities of the mining and reclamation activities in support of calculating a revised financial warranty value for the Eagle-Gypsum Mine, CDRMS Permit M-1984-041, in Eagle County.

This letter is in response to the Minerals Program Inspection Report issued on March 25, 2024 and the subsequent Adequacy Review #2. Pending the clarifications provided within this TR, the Eagle-Gypsum Mine will continue to follow the stipulations outlined in the original approval and subsequently approved TRs.

Regards,

Logan Cabi
Mine & Environmental Manager

Attachments: 1) Responses to Adequacy Review Questions
2) Revised 2019 Plan of Operations
3) Operation Plan Drawings
4) Tabulated Mine Plan Quantities

RESPONSES TO ADEQUACY REVIEW #2 QUESTIONS

1. A spreadsheet “Tabulated Mine Quantities.xlsx.” was included with the TR-12 materials. Three material types were broken out; storage (final placement), Waste (cut material to be relocated into storage) and gypsum (taken off site). The Division is interpreting that for bonding purposes Storage and Waste will be utilized as backfill material. However, no volumes for growth medium (topsoil) were provided.
    a. Please revise the spreadsheet to include topsoil volumes by location.

    (RESPONSE) Table updated to included existing stockpile quantities.

2. Please update section 2.13 to clarify the material consistency of ”intraburden” or “waste”. Previous revisions have classified the overburden as Shalely Sandstone or dry clay. Specify the material consistency to be utilized for backfill material.
    (RESPONSE) Material density provided from onsite geotechnical investigation data. The applicable section 2.13 is section 6.13 within the revised Plan of Operations document.

3. Please provide a map which labels the various areas broken out on the “Tabulated Mine Quantities.xlsx.” Include on the map all referenced storage locations.
    (RESPONSE) Previously submitted Plan of Operation maps have been included. Quantities, areas, and scenarios utilized within the “Tabulated Mine Quantities.xlsx.” are pulled from these maps.

4. Please provide the “worst case scenario” maximum highwall length, height, and slope to be backfilled at any time during the mine plan.
    (RESPONSE)

	Lower Pit		Upper Pit
	Upper Section	Lower Section	
Maximum Highwall Length (Cumulative)	3,350'	3,600'	1550'
Maximum Highwall Height	110'	125'	200'
Maximum Highwall Slope - Reclaim to 1:3	1:1	1:1	1:1

Note - "Worst case scenario" applies to a 5-year look ahead of planned mining activity. This exercise should be revisited by 09/01/29.

5. For the backfill and topsoil (or "growth medium") material specify the volume, storage location, the average haul distance and haul grade for transporting the material, by area and material type.
(RESPONSE)

	Lower Pit		Upper Pit	
	Backfill	Topsoil	Backfill	Topsoil
Volume (CY)	3,584,000	46,200	2,295,000	47,400
Storage Location	Southern Extent of Upper Pit	Growth Medium Stockpile at Upper Pit	Northeast Extent of Lower Pit	Growth Medium Stockpile at Upper Pit
Average Haul Distance	6,550'	5,700'	7,750'	2,900'
Average Haul Grade	5-10*	5-10*	5-10*	5-10*

6. Section 3.6 of the Reclamation Plan acknowledges that the site is topsoil deficient and that overburden will be blended to 'stretch' the volume. Has any soil testing of this blended material occurred to date? If so, what were the results?
(RESPONSE) Documentation is added that covers to-date efforts on site of soil testing of the blended material. The applicable section 3.6 is section 7.6 within the revised Plan of Operations document.

7. A cost for riprap was provided. Is this the cost to purchase the material only or does this include delivery to the site?
(RESPONSE) The $50-65/CY for 6-inch D50 riprap material includes delivery.

8. Volumetrics were not provided for all currently disturbed areas. Please clearly provide information for the all-road segments, shop and office facilities, sediment control and access roads, stockpiles, and loadout areas in addition to the open pits.

(RESPONSE)

Areas in addition to Lower/Upper/East Pit	Area	Reclamation Topsoil Volume
All-Road Segments	74.85 Acres	60,400 CY
Shop and Office Facilities	Included within Lower Pit disturbed area quantities	
Loadout Areas	Included within All-Road Segments	

9. Section 2.2 of the mining plan states, “the maximum footprint (of the upper pit) would be excavated to a pit floor elevation…” Per Rule 6.4.4(d) please state the size of area(s) to be worked at any one time. Provide the maximum acreages to be opened at any time, broken out by pit.
   (RESPONSE) Section text updated to reflect maximum footprint over the next 5-year period. The applicable section 2.2 is section 6.2 within the revised Plan of Operations document.

   a. Table 2.1 Estimated Schedule of Operations breaks the mine into several phases. Per Rule 6.4.4(e)(ii), please include a description of the size of each phase and clarify whether the disturbance associated with each phase should be added to the previous phase. (If you feel that this information is better presented in the Tabulated Mine Quantities spreadsheet, please refer to it in the text or as a footnote to Table 2.1).
      (RESPONSE) Foot note reference added to Estimated Schedule of Operations table. The applicable table 2.1 is table 6.2 within the revised Plan of Operations document. The maximum acres of disturbance associated with each pit is reflected in the added table 6.1.

   b. Please confirm that Table 2.1 does not include any mining activity that has not already been permitted.
      (RESPONSE) All mining activity listed was previously approved under AM-04, 2019 Plan of Operations submittal.

   c. Clarify what phases need to exist through life of mine but should be included in the worst-case scenario and will require reclamation.
      (RESPONSE) Based on the 5-year window approach to the "Worst Case Scenario," the following phases need to exist during this time period and would require reclamation:
      - *Phase #2 Lower Pit Extent*
      - *Phase #3 Upper Pit North Extent*
      - *Currently disturbed access/haul roads*

      For life of mine considerations, only the currently disturbed access/haul roads should stay open during the multiple phases. Shops/Office will be located within the currently disturbed access/haul roads or the active pit associated to the current phase.

10. Please include an inventoried list of all culverts (material type, length, and diameter) which were installed and will be removed as part of reclaiming haul roads.
    (RESPONSE) Current inventory of existing culverts have been added to Table 7.3 Existing Mine Office/Staging Area Buildings/Support Facilities

    a. Indicate if they will be excavated during recontouring of the roads or if additional excavation will be required for removal and if so, how much.
       (RESPONSE) Section 7.9 text updated.

11. Will any mulch be applied to reclaimed areas?
    (RESPONSE) The soil blending response to Request #6 includes details of potentially incorporating mulch into the soil blending for reclaimed areas.

12. Removal of buildings/structures is not explicitly discussed within the Reclamation Plan. Will any man-made structures remain post mining? Will all debris be transported off site for disposal? Please specify this within the narrative portion of the Reclamation Plan.
(RESPONSE) Clarification text added to applicable section 7.9 within the Revised Plan of Operation.

13. Within the reclamation plan installation of “rock vortex weirs or rip-rap” is mentioned. Is this referring to the surface water channel that is to be constructed through the regraded 6900 access road? Or are additional rock features necessary? If so, please provide the details of these features, including but not limited to dimensions, volume of import or excavated materials, anticipated quantity, and location(s).
(RESPONSE) The mention of "rock vortex weirs or rip-rap" refers to an ad hoc remediation solution following the planned reclamation efforts in the event further water/erosion control structures are necessary. At this time, there is no designed quantity. A suggested budget number of $125k can be carried to address any ad hoc control measures following the general reclamation efforts.

14. Please provide the height of all structures to be removed.
(RESPONSE) Table 7.3 updated with structure heights.

15. For items in which the foundation type is cinder blocks please clarify if just the perimeter of the structure that sits on the blocks like a stem wall/footer or if a temporary pad has been constructed.
(RESPONSE) Table 7.3 updated with foundation details. Cinder blocks are utilized for corner cribbing, typical.

16. Please provide the construction details of the mine access gate which shall be removed upon final reclamation.
(RESPONSE) Mine access gate information provided in section 7.9.

17. Section 3.10 (Reclamation Plan AM-4) mentions
    a. Slope monitoring for a period of 5 years. What is the annual cost anticipated for this activity and the number of hours annually?
    b. Reclamation (vegetation) monitoring for a period of 3 years. What is the annual cost anticipated for this activity and the number of hours annually?
    c. Stormwater monitoring for a period of 5 years. What is the annual cost anticipated for this activity and the number of hours annually?

    (RESPONSE) Estimated cost and hours for inspections included within Section 7.10.

18. Section 3.0 Reclamation Plan states that “Overburden and intraburden from each successive mining stage would be backfilled and stockpiled in the area of the depleted stage above the area of active mining.” Based on the current mining configuration of the lower pit this does not appear to be the case. Backfill material will be transported from other pits as available. Clarify stockpile locations, type and volumes available on site for reclamation purposes.
(RESPONSE) Clarifying text added within section 7.0 with supporting stockpile locations, types, and volumes provided within previously reviewed maps with AM-04.

2019 PLAN OF OPERATIONS MODIFICATION – TECHNICAL REVISION 12

UPPER PIT AND EAST PIT

PREPARED BY
RESPEC
660 Rood Avenue, Suite A
Grand Junction, Colorado 81501

PREPARED FOR

American Gypsum Company
740 Highway 6
Gypsum, CO 81637

Report Date: August 1, 2024

Project Number M0020.24027

TABLE OF CONTENTS

INTRODUCTION 1

Summary of Proposed Modifications 1

1.0 GENERAL INFORMATION 3

1.1 General 3

1.2 Type of Mining 5

1.3 Mining History 6

1.4 General Description 7

1.5 Operator Information 7

1.6 Claim Information 8

1.7 Inspection Contact 8

2.0 RESOURCE PROTECTION MEASURES 9

2.1 Cultural and Paleontological Resources (CPR) 9

2.2 Fish, Wildlife, and Plant Habitat (FWPH) 9

2.3 Air Quality (AQ) 9

2.4 Soils and Water Resources (SWR) 10

2.5 Survey Monuments (SM) 10

2.6 Fire 10

3.0 OPERATIONAL AND BASELINE ENVIRONMENTAL INFORMATION 11

3.1 Air Quality 11

3.2 Climate and Hydrology 11

3.3 Geology and Soils 12

3.3.1 Geology 12

3.3.2 Soils 13

3.4 Cultural Resources 14

3.5 Paleontology 14

3.6 Vegetation 14

3.6.1 Relationship of Vegetation to Soil Types 15

3.7 Fish and Wildlife 15

3.8 Socioeconomics 16

4.0 FINANCIAL WARRANTY 17

5.0 LEGAL DESCRIPTION AND OWNERSHIP 18
5.1 Legal Description 18
5.2 Surface and Mineral Ownership 18
5.3 General Description 18
5.4 Access 18
5.5 Primary Mine Entrance Location 19
5.6 Permanent Man-Made Structures 19
6.0 MINING PLAN 20
6.1 Commodity 21
6.2 Scope of Operation 21
6.3 Period of Operation 22
6.4 Annual Operation 23
6.5 General Schedule of Operations 23
6.6 Roads and Utilities 24
6.6.1 Roads 24
6.6.2 Haul Routes 25
6.6.3 Other Utilities 25
6.7 Equipment 25
6.8 Soil, Waste, and Mineable Material 27
6.9 Exploration Operations 28
6.10 Operating Practices 29
6.10.1 Mining Methods 29
6.10.2 Underground Operations 30
6.11 Use and Occupancy 30
6.12 Hazmat 31
6.13 Rock Characterization and Handling Plans 31
6.13.1 Materials Characterized 31
6.13.2 Approach/Procedure for Characterization 32
6.13.3 Waste Rock (Intraburden/Overburden) Management Plan 32
6.14 Quality Assurance Plan for Proposed Activities 32
6.15 Spill Contingency Plan 32
6.16 Monitoring and Inspections 32
6.17 Interim Management Plan for Cessation of Activities 34

6.17.1 Measures to Stabilize Excavations and Workings 34
6.17.2 Measures to Isolate or Control Toxic or Deleterious Materials 34
6.17.3 Provisions for the Storage or Removal of Equipment, Supplies, and Structures 34
6.17.4 Measures to Maintain the Project Area in a Safe and Clean Condition 34
6.17.5 Plans for Monitoring Site Conditions during Periods of Non-Operation 35
6.17.6 Schedule of Anticipated Periods of Temporary Closure 35
7.0 RECLAMATION PLAN 36
7.1 Drill Hole Plugging 37
7.2 Regrading/Reshaping 37
7.3 Mine Reclamation 38
7.4 Riparian Mitigation 38
7.5 Wildlife Habitat Rehabilitation 38
7.6 Growth Medium Handling 38
7.7 Revegetation 39
7.8 Deleterious Materials 40
7.9 Buildings, Structures, and Support Facilities 40
7.10 Post-Closure Management 40
8.0 WATER MANAGEMENT 42
8.1 Relationship to Surface Water and Groundwater 42
8.2 Water Use 42
8.3 Surface Water Management 42
8.3.1 Existing Sediment Ponds 42
8.3.2 Stormwater Runoff within Disturbance Areas 44
8.3.3 Culverts 44
8.3.4 Reclamation 45
9.0 RECLAMATION COST ESTIMATE 46
10.0 OTHER PERMITS AND LICENSES 47
11.0 GEOTECHNICAL STABILITY 48
12.0 REFERENCES 49

LIST OF TABLES

Table 1.1: Permit Area Summary 3
Table 1.2: Permitted and Actual Surface Disturbance Summary 4
Table 1.3: Proposed Surface Disturbance Summary 5
Table 1.4: BLM and CO DRMS Authorizations 6
Table 1.5: Claim Information 8
Table 3.1: NOAA Design Storm Depths 11
Table 5.1: Legal Description of Proposed Permit Expansion Boundary 18
Table 6.1: Estimated Schedule of Operations 23
Table 6.2: Anticipated Equipment by Phase 25
Table 6.3: Soil, Waste, and Mineable Material Summary 28
Table 6.4: Mining Method Summary 30
Table 6.5: Facilities on Public Lands 31
Table 6.6: Characterization Methods 31
Table 6.7: Inspection Schedule 33
Table 7.1: Reclamation Map Guide 37
Table 7.2: Proposed Seed Mixture 39
Table 7.3: Existing Mine Office/Staging Area Buildings 40
Table 8.1: Sediment Pond M2O1 through M6O1 Summary 43
Table 8.2: Required Stormwater Runoff Capacities 44
Table 10.1: Eagle-Gypsum Mine Permits and Licenses 47
Table 10.2: Other Permits and Licenses [1] 47

LIST OF FIGURES

Figure 3.1: Geological Map (area taken from Tweto et al., 1978) 13

LIST OF DRAWINGS

Drawing 01: Cover Sheet
Drawing 02: Legend
Drawing 03: Land Status and Information Map
Drawing 04: Proposed Disturbance Area Map
Drawing 05: Soils and Vegetation Map
Drawing 06: Proposed Upper Pit Expansion Map
Drawing 07: Proposed Upper Pit Expansion Cross-Sections
Drawing 08 Proposed East Pit Map
Drawing 09: Proposed East Pit Cross-Sections
Drawing 10: Proposed Culvert Sections and Detail
Drawing 11: Proposed Disturbance Reclamation Grading Map
Drawing 12: Proposed Disturbance Reclamation Grading Cross-Sections
Drawing 13: Proposed Disturbance Reclamation Grading Isopach
Drawing 14: Watershed and Drainage Map

Drawing 15: Mine Office and Staging Area Facilities
Drawing 16: Haul Road Planning

LIST OF APPENDICES

Appendix A: Confidential Information
Appendix B: Mining Claim Fee Receipt
Appendix C: Quality Assurance Plan
Appendix D: Hydrology and Hydraulics Design Support
Appendix E: Geotechnical Investigation and Slope Stability Analyses

LIST OF ACRONYMS

American Gypsum	American Gypsum Company, LLC
amsl	above mean sea level
AN/FO	ammonium nitrate/fuel oil
AQ	Air Quality
BLM	Bureau of Land Management
BMP	Best Management Practices
CCR	Colorado Code of Regulations
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
CPR	Cultural and Paleontological Resources
CRVFO	Colorado River Valley Field Office
D_{50}	Mass Median Diameter
°F	degrees Fahrenheit
FHWA	Federal Highway Administration
FWPH	Fish, Wildlife, and Plant Habitat
H:V	Horizontal:Vertical
HEC-HMS	Hydrologic Modeling System
I-70	Interstate 70
Mine	Eagle-Gypsum Mine Modification
Plan of Operations Modification NEPA	
National Environmental Policy Act	
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
QAP	Quality Assurance Plan

RMP	Resource Management Plan
SM	Survey Monuments
SPCC	Spill Prevention Control and Countermeasure
SWR	Soil and Water Resources
Tierra Group	Tierra Group International, Ltd.
TR	Technical Revision
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USDA	United States Department of Agriculture

LIST OF UNITS

kw	kilowatt
lb/ac	pound per acre
mph	miles per hour
pcf	pounds per cubic foot
tpy	tons per year
%	percent

EXPLANATION OF TERMS

Growth Medium	Inert material capable of supporting vegetation
Intraburden	Inert, non-economic material encountered during open pit mining operations
Overburden	Inert, non-economic material encountered prior to reaching mineable gypsum
Proposed Permit Expansion Area	99.2-acre area within unpatented mining claims
Proposed Disturbance Area	Proposed new disturbance areas for infrastructure such as pits and roads

INTRODUCTION

Summary of Proposed Modifications

American Gypsum Company, LLC (American Gypsum) is looking to expand their existing open pit gypsum mining operation in Gypsum, Colorado. The existing Eagle-Gypsum Mine (Mine) has active mining within two areas, referred to as the Lower Pit and the Upper Pit (Drawing 01). Mining within these two areas supports the wallboard manufacturing plant located south of the mine site. The Lower Pit is located on land owned by American Gypsum, while all other infrastructure such as the Upper Pit, gypsum stockpiles, inert intraburden/overburden storage, access roads, and sediment ponds, are located on land managed by the Bureau of Land Management (BLM), Colorado River Valley Field Office (CRVFO).

American Gypsum's proposed mining activities would consist of increasing the Upper Pit disturbance footprint, developing a new pit referred to as the East Pit, and constructing new haul roads. After the Upper Pit is mined to its current permitted footprint, American Gypsum would begin the expansion of the Upper Pit. American Gypsum plans to begin developing the East Pit in 2021. New haul roads would be constructed to access the Upper Pit expansion and East Pit areas.

The development of the Upper Pit Expansion, East Pit, and associated roads requires a modified Plan of Operations and a National Environmental Policy Act (NEPA) analysis by the BLM, and permit modification with the Colorado Division of Reclamation, Mining and Safety (CO DRMS). American Gypsum has developed this Plan of Operations Modification (Modification) in accordance with the BLM's rules for Surface Management and prevention of unnecessary or undue degradation of public lands found at Title 43 Code of Federal Regulations (CFR) CFR § 3809 (CFR, 2000). This Modification addresses the following mining activities on public lands:

- Modifying the current mine permit area by 99.2 acres;
- Expanding the Upper Pit disturbance area to the south of the approved limits, mining gypsum and intraburden from the Upper Pit;
- Progressive backfilling in the northern reaches of the Upper Pit to accommodate road construction to the East Pit;
- Constructing a road to the East Pit, utilizing previously disturbed (but not reclaimed) areas wherever possible;
- Developing the East Pit, including clearing and grubbing, stockpiling suitable growth medium encountered during clearing and grubbing activities, overburden removal, and mining gypsum/intraburden from the East Pit;

Backfilling the Upper Pit with inert overburden or intraburden from the Upper Pit and East Pit; and

Reclaiming the Upper Pit, East Pit, and associated infrastructure not included in previous permit applications (haul roads).

Current mining activities at the Upper Pit and Lower Pit (including roads, stockpiles, intraburden/overburden storage, water management, reclamation plans, etc.) are being conducted at the Mine under permits and approvals received from the CO DRMS and BLM from 1984 (Colorado Department of Natural Resources (CO DNR), 1984) to 2017 (BLM, 2017; CO DRMS, 2017). American Gypsum also submitted a minor modification request to modify the Upper Pit 6900 Access Road in October 2018 (Tierra Group International, Ltd. (Tierra Group), 2018), with modifications to the reclamation plan submitted to BLM in April 2019 (Tierra Group, 2019); the minor modification was approved by CO DRMS (2019a) and BLM (2019) with conditions of approval . This Plan only includes additional road modifications required to access the Upper Pit expansion and the East Pit. Operations and practices would continue as described in the 2002 permit (BLM, 2002; CO DRMS, 2001) for all facilities and areas not included in this Modification. Section 1.3 contains additional information regarding the history of mining activities at the Mine.

All existing permits and approvals in conjunction with the active operations plan would remain in effect, until or unless modified by submittals related to the proposed activities described herein.

The existing wallboard manufacturing plant is excluded from this Modification.

1.0 GENERAL INFORMATION

1.1 General

The Mine is owned and operated by American Gypsum. Table 1.1 summarizes the approved and proposed permit areas associated with this Modification submittal. Drawing 01 shows the existing Mine permit area (830.2 acres) and proposed permit expansion area (99.2 acres). Drawing 02 provides the comprehensive legend.

TABLE 1.1: PERMIT AREA SUMMARY

Type	Private Land (acres)	BLM-Managed Land (acres)	Total Acreage (acres)
Approved Mine Permit Area	141.1	689.1	830.2
Proposed Permit Expansion Area	N/A	99.2	99.2
Total Permit Area (Approved and Proposed)	**141.1**	**788.3**	**929.4**

Table 1.2 contains a summary of permitted and actual surface disturbance areas by facility. Permitted disturbance areas were delineated using limited available information in permit applications and approvals listed in Table 1.4. Actual disturbance areas were determined using information from American Gypsum's annual report to CO DRMS (American Gypsum, 2018), refined to reflect actual disturbance shown on aerial imagery. Actual disturbance areas are shown on Drawing 03.

TABLE 1.2: PERMITTED AND ACTUAL SURFACE DISTURBANCE SUMMARY

Facility	Disturbance (acres) [1]		
Existing Disturbance – BLM	*Permitted [1]*	*Actual [2]*	*Permit Reference*
Roads and Sediment Ponds [3]	41.0	40.0	CO DNR, 1990; CO DRMS, 2003 (TR-06); CO DRMS, 2006 (TR-07)
Mine Office/Staging Area [3]	5.6	2.1	CO DNR, 1990
Upper Pit	56.5	44.3	BLM, 2002; CO DRMS, 2001
Upper Pit Intraburden Stockpile	7.9	4.0	BLM, 2002; CO DRMS, 2001
Upper Pit 6900 Access Road [4]	5.8	0.0	BLM, 2019; CO DRMS, 2019a (TR-11)
Lower Pit Intraburden Stockpile	5.6	5.0	CO DNR, 1990; CO DRMS, 2017 (TR-10)
Ore Stockpile	5.3	4.9	CO DNR, 1990
Old Mine	37.7	19.0	CO DNR, 1984
Total	**165.4**	**119.3**	
Existing Disturbance – Private	*Permitted [1]*	*Actual [2]*	*Permit Reference*
Roads, Sediment Ponds, Intraburden Stockpile, and Mine Office/Staging Area [3]	23.5	15.5	CO DNR, 1990; CO DRMS, 2003 (TR-06); CO DRMS, 2006 (TR-07), CO DRMS, 2017 (TR-10)
Lower Pit	58.5	56.7	CO DNR, 1990 and CO DRMS, 2017 (TR-10)
Total	**82.0**	**72.2**	
OTHER [5]	6.6		N/A
TOTAL	**254**	**191.5**	

Notes:

[1] Permitted disturbance includes disturbance areas within permit approvals (see Table 1.4). Tierra Group digitized linework from maps where electronic data or permitted disturbance acreage was not available in permit applications or approvals.
[2] Actual disturbance from American Gypsum, divided by land type (BLM-controlled vs private).
[3] 1990 permit documents did not separate roads, intraburden stockpile, and Mine Office within pit areas.
[4] CO DRMS approval (CO DRMS, 2019a) lists total disturbance area as 5.8 acres. Reclamation grading was revised (5.0 acres of post-reclamation disturbance area) at the request of BLM; drawings reflect 5.0-acre disturbance area.
[5] Tierra Group reviewed available permitting documents and was unable to account for the full 254 acres of disturbance area reported by CO DRMS (CO DRMS, 2019b). This discrepancy may be due to overlapping areas between permit submittals, discrepancies in delineating disturbance areas from copies of maps, or other missing information. American Gypsum does not anticipate additional disturbance outside what is shown on Drawing 03 and Tables 1.2 and 1.3.

Tierra Group compared available permitted disturbance limit delineations with actual disturbance limits (from the 2018 annual report (American Gypsum, 2018), with refinements based on aerial imagery) and determined several discrepancies between permit limits and actual disturbance limits, primarily for roads and sediment ponds. These discrepancies are likely due to inaccuracies in delineating disturbance area limits from permit documents or incomplete historical records. Table 1.2 shows that the actual disturbance acreage is less than the permitted acreage. For completeness, Drawing 03 shows actual disturbance limits; American Gypsum does not anticipate disturbing additional areas outside the areas shown on Drawing 03 and listed in Tables 1.2 and 1.3.

TABLE 1.3: PROPOSED SURFACE DISTURBANCE SUMMARY

Facility	Operational Disturbance (acres) [1]			Post-Reclamation Disturbance (acres) [1]		
New Disturbance – BLM	*Permitted [2]*	*Proposed (New)*	*Total*	*Permitted [2]*	*Proposed (New)*	*Total*
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**

Notes: [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 (see Table 1.4) 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 and CO DRMS, 2019a).

Approximately 37.4 acres of proposed disturbance is within the 99.2-acre proposed mine permit area shown in purple on Drawing 04. Approximately 60.9 acres of proposed new disturbance is within the approved 830.2-acre mine permit area shown in red on Drawing 04. The remaining 52.1 acres of proposed disturbance is within previously permitted disturbance areas within the 830.2-acre mine permit area.

1.2 Type of Mining

This is a surface gypsum mining operation. There are no underground components to the proposed mining activities. All gypsum mined from the open pits is processed off-site at the wallboard (drywall) manufacturing plant located south of the mine site on private land within the town of Gypsum, Colorado.

The proposed Upper Pit expansion and East Pit development would be a continuation of current mining operations, providing gypsum to American Gypsum's wallboard manufacturing plant at approximately 500,000 tons per year (tpy), with a maximum estimated rate of 600,000 tpy.

New proposed disturbance areas include the Upper Pit expansion to the south of the permitted disturbance limits, the East Pit area, and a small area between the pits for an access road to the East Pit. Drawing 03 shows new disturbance areas with respect to land ownership and Drawing 04 shows new disturbance areas by type (road or pit).

1.3 Mining History

The Eagle-Gypsum Mine was originally permitted in 1984 by R.A. Mining Company. The operator changed to Eagle-Gypsum, Ltd. in 1986, to Centex Eagle Gypsum Company, LLC in 1997, and then to American Gypsum Company, LLC in 2002.

The Lower Pit is located on private land and was permitted in 1984 (CO DNR, 1984) and operated until 2007. The Upper Pit and the associated haul road and sediment control ponds were authorized in 2002 (BLM, 2002; CO DRMS, 2001). Table 1.4 summarizes the BLM and CO DRMS authorizations for the Mine.

TABLE 1.4: BLM AND CO DRMS AUTHORIZATIONS

Description	Date	Agency [1, 2]
M-1984-041 Permit	24 December 1984	CO DRMS
Plan of Operations (EA CO-077-4-76)	11 September 1984	BLM
Permit/Plan Amendment 01 (EA-CO-077-7-11)	28 January 1987	BLM
Permit/Plan (CO-078-0-3P) Amendment 02 (EA-CO-078-0-24)	30 April 1990	BLM
EA-CO-078-0-24 Decision on Gypsum Mine Plan of Operations CO-078-0-3P	04 May 1990	BLM
Permit NO. M-81-041, Revision No. AM-002	02 May 1990	CO DRMS
Plan of Operations Amendment CO-078-90-1P	06 May 1992	BLM
Mineral Patent 05-92-0016	15 May 1992	BLM
Plan of Operations Amendment CO-078-0-3P (for temporary maintenance)	07 September 1995	BLM
Permit Amendment 03	05 February 2001	CO DRMS
Plan of Operations CO-078-90-1P Amendment (CO-140-2001-064 EA)	24 September 2002	BLM
Plan of Operations Minor Modification COC-072973 (CON040) (per CO-140-2001-064 EA DR)	21 April 2017	BLM
Use and Occupancy Authorization COC-072973 (CON040)	09 August 2016	BLM
TR-01: Revise permit boundary for new “burden spoil” area	28 February 1985	CO DRMS
TR-02: Modify access road	27 February 1987	CO DRMS
TR-03: Change pit slopes	22 July 1991	CO DRMS
TR-04: Change mine plan to abandon low-grade material	01 June 1992	CO DRMS
TR-05: Establish maximum land use/reclamation areas	20 August 1997	CO DRMS
TR-06 [3]: Establish location of Upper Pit (formerly East Pit; change not implemented based on available information), relocate sediment pond spillways to native ground	27 October 2003	CO DRMS
TR-07 [3]: Relocate sediment control structure M6O1 (formerly P5)	02 March 2006	CO DRMS
TR-08: Add compost facility at mine (not constructed)	22 August 2008	CO DRMS
TR-09: Haul road realignment, incorporate stormwater management structures	18 May 2017	CO DRMS

Description	Date	Agency [1, 2]
TR-10: Additional Lower Pit mining activities	27 November 2017	CO DRMS
TR-11: Upper Pit 6900 Access Road	09 January 2019	CO DRMS
Plan of Operations Modification (Upper Pit 6900 Access Road)	06 May 2019	BLM

Notes: [1] CO DRMS was previously the Department of Natural Resources Mined Land Reclamation Division; referred to as CO DRMS.
[2] Technical Revision (TR) approvals are on record with CO DRMS.
[3] BLM approval for these modifications is not available in historic records; implemented changes from TR-06 and TR-07 are included in this Modification. See Sections 6.0 and 8.3.1 for details.

American Gypsum continues to mine the Upper Pit (mining activities have been ongoing since 2007) and was approved to expand the Lower Pit within the existing disturbance footprint in 2017 (CO DRMS, 2017). Mining activities will resume in the Lower Pit in 2019 and are anticipated to continue until accessible gypsum is exhausted.

The Lower Pit and Upper Pit are mined using a rotomill that grinds layers of gypsum and inert, un-economic material (intraburden) in approximately 6-inch layers, with a working width of approximately 10 to 12 feet. 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. These mining methods create pit walls with a 1H:1V (Horizontal:Vertical) inter-bench slope. Pit benches (approximately 10 feet wide) are created every 40 vertical feet as the pit depth progresses.

Gypsum is processed into wallboard directly at the plant; there are no on-site processing facilities and therefore no processing chemicals or acid-producing materials used or stored at the Mine.

Exploratory drilling in 2006 identified additional gypsum on the hillside to the east of the Upper Pit, which will herein be referred to as the East Pit.

1.4 General Description

The Mine is in the Eagle River Valley in Eagle County, Colorado, approximately 1.5 miles north of the municipality of Gypsum. The Mine is located in Sections 28, 29, 30, 31, 32, and 33, Township 4 South, Range 85 West (6th Principal Meridian). Lands within the existing and proposed mine permit area generally slope from north to south and are bounded to the south by Interstate 70 (I-70).

1.5 Operator Information

The Mine is owned and operated by American Gypsum. Contact information is provided below.

American Gypsum Company, LLC
P.O. Box 980
Gypsum, CO 81637
Phone: (970) 524-8151

Confidential information such as American Gypsum's taxpayer identification code is included in Appendix A.

1.6 Claim Information

The proposed permit expansion area is located on unpatented mining claims maintained by American Gypsum. Claims are situated on federal land managed by the BLM. Drawing 03 illustrates the location of claims within the Mine permitted 830.2-acre area and the proposed 99.2-acre permit expansion area. Table 1.5 summarizes claim numbers, names, and types for claims within the proposed new disturbance areas.

TABLE 1.5: CLAIM INFORMATION

CMC Number	Claim Name	Claim Type
CMC-230034	EGL #82	Unpatented
CMC-230035	EGL #83	Unpatented
CMC-230036	EGL #84	Unpatented
CMC-230037	EGL #85	Unpatented
CMC-230038	EGL #86	Unpatented
CMC-251155	EGL #88	Unpatented
CMC-230041	EGL #89 [1]	Unpatented
CMC-230042	EGL #90 [1]	Unpatented
CMC-230043	EGL #91 [1]	Unpatented
CMC-230044	EGL #92 [1]	Unpatented
CMC-230045	EGL#93	Unpatented
CMC-230053	EGL #101 [1]	Unpatented
CMC-230054	EGL #102 [1]	Unpatented
CMC-230055	EGL #103 [1]	Unpatented
CMC-230056	EGL #104 [1]	Unpatented
CMC-230112	JER #1 [1]	Unpatented

Note: [1] Claims are within permitted disturbance limits (BLM, 2002; CO DRMS, 2001).

1.7 Inspection Contact

For inspections, please contact:

Jon Edeen, Mine Superintendent
American Gypsum Company, LLC
P.O. Box 980
Gypsum, CO 81637
Phone: (970) 524-8151
Fax: (970) 524-8140

2.0 RESOURCE PROTECTION MEASURES

2.1 Cultural and Paleontological Resources (CPR)

Resource Protection Measure CPR 1: 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 Fish, Wildlife, and Plant Habitat (FWPH)

Resource Protection Measure FWPH 1: 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.

Resource Protection Measure FWPH 2: Whenever possible, plugs of existing vegetation from areas to be mined would be moved to areas to be revegetated.

Resource Protection Measure FWPH 3: Slash would be placed at the toe of the fill slopes and the growth medium stockpiles.

Resource Protection Measure FWPH 4: Noxious weeds which may be introduced due to soil disturbance and reclamation will be treated by methods to be approved by the Authorized Officer. These methods may include biological, mechanical, or chemical treatments. Should chemical treatment be requested, the operator must submit a Pesticide Use Proposal to the Authorized Officer 60 days prior to the planned application date.

Resource Protection Measure FWPH 5: The Mine operator would take measures necessary to prevent undue impacts to any wildlife that passes through or over the Mine area.

Resource Protection Measure FWPH 6: The Mine would maintain practices in compliance with the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, the Endangered Species Act and other applicable laws (see FWPH 7).

Resource Protection Measure FWPH 7: 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.

2.3 Air Quality (AQ)

Resource Protection Measure AQ 1: To prevent dust during extraction, the mining area would be sprayed with water as needed. Water and surfactant (proposed surfactant is magnesium chloride; other potential surfactants include calcium chloride, ammonium, or sodium-based lignosulfonate) would be applied to haul roads to minimize dust created by haul trucks and to achieve at least 90% control efficiency. Trucks on haul roads would maintain a 24-mile per hour (mph) speed limit.

2.4 Soils and Water Resources (SWR)

Resource Protection Measure SWR 1: Any topsoil or overburden remaining in place longer than six months would be stabilized and seeded.

Resource Protection Measure SWR 2: Pit inflows would be monitored during operations; slopes would be graded or regraded during reclamation to ensure adequate surface drainage.

2.5 Survey Monuments (SM)

Resource Protection Measure SM 1: 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."*

2.6 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.

3.0 OPERATIONAL AND BASELINE ENVIRONMENTAL INFORMATION

3.1 Air Quality

The closest Clean Air Act Class I areas are Flat Tops Wilderness to the northwest, Eagles Nest Wilderness to the east, and Maroon Bells Snowmass Wilderness to the south. The closest air quality monitoring stations are in Rifle, Colorado.

The Gypsum Plant operates under Colorado Department of Public Health and Environment Operating Permit 95OPEA041, first issued in June 1997, revised April 2019, and expiring 01 April 2024. Permits would be revised with the appropriate regulatory agencies as necessary to accommodate the proposed mining activities described herein.

3.2 Climate and Hydrology

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. Average maximum temperatures range from 34°F (January) to 85°F (July). Average minimum temperatures range from 4°F (January) to 46°F (July). The site receives an annual average precipitation of 11 inches (Western Regional Climate Center, 2016).

Normal precipitation in the area produces virtually no surface runoff. Most of the stormwater is absorbed by dry soils and geologic fractures. Short-term runoff does occur during rare major storms.

The 10- and 100-year 24-hour precipitation depths were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 (Perica, et al., 2013) and were assumed to follow a Natural Resources Conservation Service (NRCS) Type II distribution. Precipitation depths for design storm events are shown in Table 3.1.

TABLE 3.1: NOAA DESIGN STORM DEPTHS

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

There are dry creek beds within the proposed disturbance limits that flow during major storms, which are rare at the Mine. During normal precipitation events, most runoff infiltrates into dry soils or geologic fractures. These dry creek beds rarely flow with appreciable water. Stormwater from

the Mine, including disturbance areas described herein, ultimately reports to the Eagle River located south of I-70. Stormwater management is discussed further in Section 8.0.

The depth to groundwater at the Mine is not known; however, groundwater has not been encountered in either the Lower Pit or Upper Pit to date.

Drawing 03 shows dry creek beds, streams, springs, and rivers (mostly un-named) in relation to the proposed Upper Pit and East Pit.

3.3 Geology and Soils

3.3.1 Geology

The site is predominantly the Eagle Valley Evaporite (IPee), with unconsolidated deposits (Qg) in the river valley to the south and basalt (Tbb) in the mountains to the north according to available geology mapping (Tweto et al., 1978). Definitions for these geologic units are included below and are shown in relation to the mine site in Figure 3.1:

IPee: Eagle Valley Evaporite (Pennsylvanian) – Gypsum, anhydrite, and interbedded siltstone and minor dolomite; contains thick salt at depth in some places, as shown by wells drilled for oil and gas. Intertongues with Minturn, Belden, and Maroon Formations and grades into fine-grained clastic rocks of Eagle Valley Formation. Diapiritic in structural configuration in many places, especially in large area in central part of quadrangle. Thickness indeterminate;

Qg: Unconsolidated deposits (Pleistocene): Young gravels (Bull Lake and younger) – Stream, terrace, and outwash gravels; and

Tbb: Basalt of Bimodal Suite (Pliocene and Miocene) – Dense black resistant alkali basalt in lava-flow layers 5 to 200 feet thick, and interbedded tuffs and volcanic conglomerates. Greatest preserved thicknesses are 900 feet on White River Plateau and 800 feet on Grand Mesa. Ages determined from several locality range from 8 to 23 million years.

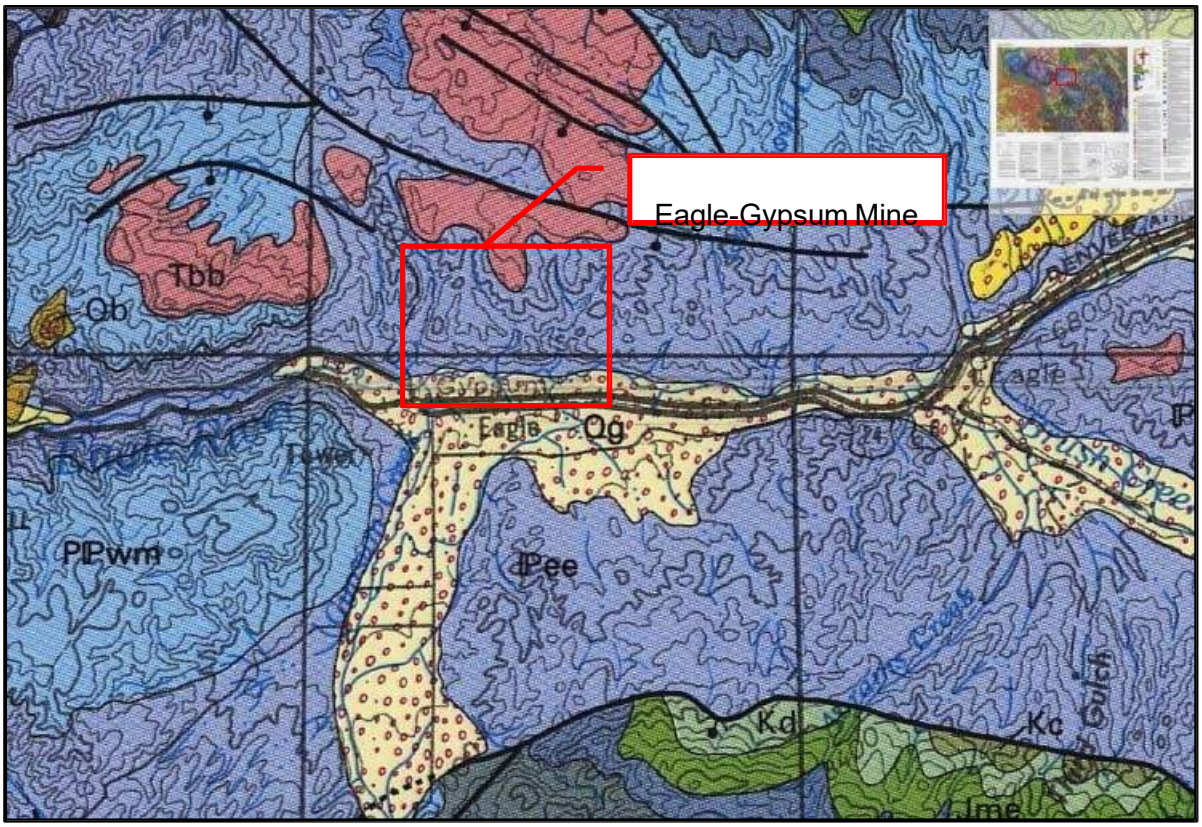

FIGURE 3.1: GEOLOGICAL MAP (AREA TAKEN FROM TWETO ET AL., 1978)

3.3.2 Soils

There is virtually no topsoil at the Mine; vegetation typically grows in areas consisting of weathered gypsum (gypsite) and residual volcanic ash. Previous permits and investigations reported depths of volcanic ash ranging in thickness from 3 inches to 2 feet. The NRCS soil resource report (NRCS, 2016) shows the proposed Upper Pit expansion and East Pit consist of Soil Group B (Gypsum land–Gypsiorthids complex, 12% to 65% slopes) and Soil Group D (Torriorthents-Camborthids-Rock outcrop complex, 6% to 65% slopes). Hydrologic soil groups are classified by the minimum rate of infiltration achieved for bare soil after prolonged wetting. Group A soils have the lowest runoff potential and highest infiltration rates, while Group D soils have the highest runoff potential and lowest infiltration rates. Group A soils have the lowest erosion potential and Group D soils have the highest erosion potential (United States Department of Agriculture (USDA), 1986). Erosion control for the proposed disturbance and post-reclamation activities, including surface soil stabilization of fill slopes, will be discussed in Section 6.0.

Local terminology for the land type is “Gypsum Badlands”. Existing sparse “topsoil” in the area consists solely of weathered gypsum (gypsite) and residual volcanic ash. Historically, there has been virtually no interest in the area for agricultural uses or from the Soil Conservation District.

Ridge topsoils consist primarily of gypsite mixed with weathered residue of other clastic sediments inter-bedded with the gypsum. Exploration drilling has shown that the clastic sediments do inter-bed at depth with the gypsum zones. The steep side hill slopes are essentially gypsum rock

outcroppings with a thin gypsite crust that grades thorough weathered gypsum to solid gypsum rock. Experience has shown that these gypsite crusts vary in thickness from 3 inches to 2 feet. The gypsite crusts generally contain some silty-clayey material due to the weathering of inter-bedded clastic sediments.

In summary, the surface in the area can mainly be described as gypsum and weathered gypsum (gypsite) 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.

Drawing 05 shows the soils map from the NRCS soil resource report for the site (NRCS, 2016), along with aerial imagery.

There are no known cave resources in the proposed disturbance area. Should any caves be discovered in the process of developing the Upper Pit expansion, East Pit, or associated roads, American Gypsum would notify the BLM.

3.4 Cultural Resources

A Class III cultural resources survey was conducted in 2001 on 157 acres for Mine features proposed at that time. No previously-recorded sites or isolated finds were noted. The Mine area was expected to have low potential for cultural resources due to steep slopes and location between the 'Flat Tops' Wilderness Pinyon-Juniper woodlands and the Eagle River Valley.

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 control ponds previously approved by CO DRMS as TR-06 and TR-07 (CO DRMS, 2003; CO DRMS, 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.

3.5 Paleontology

The main geologic formation in the Mine area, Eagle Valley Evaporite, is not included on the BLM's list of formations in the CRVFO Planning Area with paleontological resources (BLM, 2015). Included on the list is Basalt of Bimodal Suite (Tbb), which is listed as having a moderate to unknown, or high potential to yield fossils. No paleontological resources have been uncovered to date during mining operations.

3.6 Vegetation

According to the BLM CRVFO Record of Decision and Approved Resource Management Plan (BLM, 2015), the BLM lands near the Mine are comprised of pinyon-juniper woodlands and sagebrush shrublands. Previous permit documents note that vegetation cover in undisturbed areas of the Mine consists mainly of sagebrush and greasewood. Vegetation is sparse on steeper slopes; some areas include solid gypsum rock outcroppings. Like the existing mining area, the

density and size of vegetation is inversely proportional to the steepness of the slopes and the presence of solid gypsum rock outcroppings.

NRCS soil group boundaries correlate well with vegetation (Drawing 05, Section 3.6.1); Soil Group D (high runoff and low infiltration) areas are typically devoid of vegetation while Soil Group B (fairly low runoff and higher infiltration) areas are more highly vegetated. Steeper slopes typically have little to no vegetation, as they typically consist of gypsum outcrops or are crusted with gypsite. Based on aerial photography and site reconnaissance, the southern extent of the proposed Upper Pit expansion consists mostly of gypsum outcrops or gypsite and little to no vegetation is present. Similarly, the southern portion of the East Pit area is comprised of gypsum outcrops or gypsite, while the northern portion shows signs of vegetation. There are also biological soil crusts (consisting of algae, fungi, and lichens) throughout the proposed disturbance area (Section 6.8).

Juniper and pinion trees cleared ahead of the active mining area would be utilized in the reclamation process. Pinion and juniper slash cleared at the existing Mine have added success to revegetation plots. The technique has consisted of placing slash over plots graded with volcanic ash growth medium and then seeding the plot. The slash has shown to aid 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.

3.6.1 Relationship of Vegetation to Soil Types

The steep slopes encrusted with gypsite support virtually no vegetation. However, flatter areas tend to be layered by a thin crust of volcanic ash that varies from depths of 3 inches to several feet in some areas. This volcanic ash was apparently deposited over the area during the last active period of the Dotsero volcano. The volcanic ash essentially serves as the indigenous topsoil for the area and supports the growth of the pinion and juniper stands in the flatter area. Deposits of the volcanic ash tend to occur in basins that intermingle with hummocks of gypsum outcroppings. Hummock units vary from 4 to 20 feet in maximum dimension.

Successful reclamation efforts at the existing operation have shown that the indigenous volcanic ash can be utilized as a growth medium. The procedure in that area has consisted of removing volcanic ash basins ahead of the active mining area and stockpiling this material for later use in reclamation. There is enough organic content in the ash to support the growth of dry land vegetation. Successful reclamation plots (located on the east side of the Lower Pit and northeast corner of the Upper Pit based on field observations) were previously realized at the existing operation with a seed mixture consisting of Indian Rice Grass (Nezpar), Critana Thickspike Wheatgrass, Sodar Stream Bank Wheatgrass, and Salina Wild Rye (Centex, 2001). This seed mixture was used historically but is not proposed as part of this Modification.

3.7 Fish and Wildlife

There are no perennial streams or water bodies near the Mine, so there is no habitat for fish. The nearest perennial stream is Eagle River, south of I-70, about a mile downslope from the Mine. Short-term runoff does occur during rare major storms and would be captured by stormwater management systems. Best management practices are in place at the Mine for the protection of surface water resources.

Wildlife in the areas adjacent to the Mine is typical of that found in the Pinyon/Juniper Woodland of the Colorado Plateau Physiographic Region. The BLM CRVFO Resource Management Plan (RMP) includes the Mine area in designated elk summer and winter range, and mule deer summer and winter range. Since 1990, sightings of deer or elk in the Mine area have been rare.

Limited wildlife habitat is present near the Mine. Due to active mining operations and the lack of available water, wildlife use of the Mine is minimal.

Raptors may use the undisturbed habitat areas for foraging. Inventories noted from the 1970's found that golden eagles and red-tailed hawks nest on the cliff complex paralleling I-70 south of the Mine. Other raptors likely to hunt or nest in the vicinity include kestrels, sharp shinned hawks, and northern harriers (BLM, 1990a).

Migratory birds may occupy undisturbed shrublands or pinyon/juniper habitat near the Mine. Migratory birds are protected by the Migratory Bird Treaty Act.

3.8 Socioeconomics

The Town of Gypsum is a Home Rule Municipality located in Eagle County, Colorado. The population was 6,477 at the 2010 census and estimated to be 7,117 in 2017 (United States Census Bureau (USCB), 2018). Gypsum is the home of an American Gypsum drywall plant and Mine. Eagle County, Colorado has a total of 105 mines, including occurrences and historic or inactive mines; 16 of the 105 mines are listed as producing (Diggings, 2019).

The Mine is within the boundaries of the Gypsum Planning Area identified in the Town of Gypsum Conceptual Recreational Trails Plan (Olsson Associates, 2017).

4.0 FINANCIAL WARRANTY

Sufficient financial warranty will be provided by American Gypsum as required under the BLM rules for surface management (43 CFR § 3809 (CFR, 2000)). The financial warranty will be based upon the reclamation plan as applied to the proposed disturbance area and would be reviewed and approved by BLM prior to implementation of activities under this 2019 Modification.

5.0 LEGAL DESCRIPTION AND OWNERSHIP

5.1 Legal Description

The Mine is in Eagle County, Colorado in Sections 28, 29, 30, 31, 32, and 33, Township 4 South, Range 85 West, 6th Principal Meridian.

Table 5.1 includes the legal description for the proposed permit expansion area. Proposed disturbance areas outside the permit expansion area are within the boundary of the legal description for the 830.2-acre permit area (Table 1.1).

TABLE 5.1: LEGAL DESCRIPTION OF PROPOSED PERMIT EXPANSION BOUNDARY

Principal Meridian	Township	Range	Section	Quarter	Quarter Section
6th	4 South	85 West	28	SE	SESE
6th	4 South	85 West	33	NE	NENE
6th	4 South	85 West	33	NE	SENE

Drawing 03 shows the proposed permit expansion limits relative to Sections 28, 29, 30, 31, 32, and 33, Township 4 South, Range 85 West, 6th Principal Meridian. Drawing 03 also shows private land owned by American Gypsum and surrounding lands managed by BLM.

5.2 Surface and Mineral Ownership

All the lands in the proposed disturbance areas are public lands managed by the BLM CRVFO. Nearby private lands owned by American Gypsum are shown on Drawing 03. American Gypsum has unpatented mining claims for the lands in the proposed disturbance area, as shown on Drawing 03.

5.3 General Description

The Mine is in the Southern Rocky Mountains physiographic province (Fenneman, 1928) at elevation ranging from about 6600 feet to 7300 feet above mean sea level (amsl). The terrain is characterized by narrow ridges and steep slopes dropping to narrow, V-shaped drainages that drain to the Eagle River, south of I-70.

5.4 Access

The site can be accessed by taking the Gypsum exit from I-70 north approximately ¼-mile to 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 the Mine.

Drawing 03 shows the roads used to access the proposed mining activities included herein (I-70, Trail Gulch Road, and mine access roads).

5.5 Primary Mine Entrance Location

The Mine entrance is located along Trail Gulch Road, branching off to the northeast while Trail Gulch Road continues north. American Gypsum is authorized to lock the gate at the intersection of Eagle County Road No. S-51 and BLM Route 8467/the haul route during non-business hours for safety purposes as described in the 1990 Plan of Operations CO-078-0-3P (BLM, 1990b).

Drawing 03 shows the existing Mine entrance location.

5.6 Permanent Man-Made Structures

There are no known permanent man-made structures within 200 feet of the proposed Upper Pit expansion, the East Pit, or associated roads as shown on Drawing 03. All Mine infrastructures, such as the Mine Office, laydown yards, generators, etc., are temporary.

6.0 MINING PLAN

The proposed Modification would be a continuation of current mining operations. According to existing permits, the existing Upper Pit will be mined within the approved boundary of the 2002 permit (BLM, 2002; CO DRMS, 2001), to an estimated Upper Pit floor elevation of 6900 feet amsl. The existing Mine Office would remain in its current location north of the Lower Pit, along with the existing equipment laydown yards and parking lots (shown on Drawing 01).

The Upper Pit footprint would be expanded to a pit floor elevation of 6760 feet amsl, with 1H:1V pit face slopes and 10-foot wide flat benches constructed every 40 vertical feet of development. To accommodate the lower pit extents, a portion of the Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a) 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 6760 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 6560 feet amsl as shown on Drawings 06 and 07.

Before the Upper Pit is exhausted, American Gypsum plans to develop a new area to the east of the Upper Pit (East Pit). Approximately 1.19 million cubic yards (2.1 million tons) of overburden would be removed from the East Pit area prior to reaching usable gypsum and used as construction material for the East Pit Access Road. This estimate is based on previous drill data and experience at the Lower Pit and Upper Pit. Existing site roads would be used to access the East Pit during initial overburden removal while the main East Pit Access Road is being constructed. The East Pit Access Road would be constructed through a partially-backfilled section of the Upper Pit to connect the East Pit to the modified Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a). As the East Pit progresses to its ultimate planned elevation of 6900 feet amsl, the East Pit Access Road within the East Pit footprint would be mined out to maintain the same elevation as the pit floor (Drawing 08).

Mining methods are anticipated to remain the same throughout the Upper Pit and East Pit development, as described in Section 6.10.1. Stormwater controls are discussed further in Section 8.0. Intraburden removed during Upper Pit mining activities would be used as backfill material for progressive reclamation activities in the Upper Pit. Overburden and intraburden removed from the East Pit area would be used to construct the East Pit Access Road and as backfill material for progressive reclamation activities in the Upper Pit and East Pit. Reclamation activities are discussed further in Section 7.0.

Production capacity from the Mine is estimated 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 tpy. This mining rate results in approximately 80 to 100 trucks per day traveling from the Mine to the wallboard plant.

6.1 Commodity

The primary commodity is gypsum. There is no secondary commodity.

6.2 Scope of Operation

The proposed mining activities would consist of the following:

Road construction (Drawings 06 and 16):

- Remove a portion of the Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a) to accommodate the Upper Pit expanded footprint, including constructing an interior pit road to access lower benches of the Upper Pit;
- Construct a new section of road from approximate elevation 6946 feet amsl on the Upper Pit 6900 Access Road to an Upper Pit elevation of 6958 amsl feet. This would include demolishing the riprap collar on the 30-inch culvert inlet proposed as part of the Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a), installing a new 230-foot long section of 30-inch culvert where the proposed road fill crosses an existing drainage to create a continuous 30-inch culvert. The riprap apron at the culvert outlet (BLM, 2019; CO DRMS, 2019a) would remain intact throughout the culvert's operational life;
- Construct a new road through the partially reclaimed northern section of the Upper Pit;
- Construct a new road across the existing intraburden storage area and on native ground to the East Pit. This would include constructing a new 130-foot long 24-inch diameter culvert, riprap collar (inlet), and riprap apron (outlet) where the road fill crosses an existing drainage. Drawing 10 shows culvert details;
- Abandon, regrade, and reclaim as much of the original haul road and Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a) as possible throughout operations (although there will likely be a short period of time where all three roads would be in use at the same time); and
- Throughout road construction and operation, following Best Management Practices (BMPs) for fill slopes to stabilize surface soils and reduce erosion potential. BMPs may include revegetating or installing erosion protection measures (straw wattles, silt fence, hay bales). Appropriate erosion protection would be determined by conditions encountered during operations.

Open pit mining activities (Drawings 06 through 09):

- Expand the Upper Pit by approximately 11.7 acres outside the approved boundary from the 2002 permit (BLM, 2002; CO DRMS, 2001). The maximum pit footprint would be excavated to a pit floor elevation of approximately 6760 feet amsl. If additional gypsum is present in the pit footprint and groundwater is not encountered (identified through additional drilling), interior benches would be constructed to bring the pit floor elevation to approximately 6560 feet amsl. Drilling permits (including drill hole plugging and reclamation) would be obtained prior to drilling and drill holes would be plugged

in a manner appropriate to water conditions encountered during drilling as described in Section 7.1. Potential drilling areas are identified on Drawing 06; and

Develop the new East Pit, including removing an average overburden depth of 20 feet. The East Pit would be excavated to an anticipated pit floor elevation of 6900 feet amsl as shown on Drawings 08 and 09. Additional drilling may be required to further explore the gypsum depth (potential drilling areas shown on Drawing 08). Drilling permits (including drill hole plugging and reclamation) would be obtained prior to drilling and drill holes would be plugged in a manner appropriate to water conditions encountered during drilling as described in Section 7.1.

Material hauling:

Haul gypsum to American Gypsum's wallboard plant or existing on-site stockpiles;

Haul overburden and intraburden to new road construction areas, on-site storage, or to inactive pit areas for progressive reclamation; and

Haul intraburden to in-pit storage areas (inactive areas of the pits) and maintaining stockpiles.

Progressive (or concurrent) reclamation (Drawings 06 and 08):

Backfill inactive pit areas with overburden and intraburden to 2.5H:1V overall slopes where possible.

Final reclamation (Drawings 11 through 13):

Regrade any areas within the Upper Pit, East Pit, or access roads associated with the proposed disturbance area (listed above) to 2.5H:1V slopes or flatter, achieving 3H:1V where possible;

Remove culverts and associated riprap collars/aprons through road crossings, including excavating road fill to pre-construction topography to expose culverts, re- establishing natural drainages at pre-construction grades, and regrading remaining road fill to 2.5H:1V or shallower;

Install riprap or other erosion protection measures where necessary (such as re-established native drainage channels); and

Revegetate disturbed areas.

Drawing 04 shows types and locations of disturbance associated with the proposed Modification.

The expected maximum disturbance area of mining operations in the next 5 years is approximately 7,100,00 ft^2, or 163 acres. This would occur when the Lower Pit is beginning reclamation, the Upper Pit is beginning mining, and the East Pit has been partially cleared and grubbed. The largest pit highwall, located in the Lower Pit, would be approximately 120 ft tall, 1,300 ft long, and would possess a slope of 1H:1V. This is expected to occur in 2028.

6.3 Period of Operation

Mining in the Upper Pit is ongoing; based on current mining rates (approximately 500,000 tpy), mining in the Upper Pit can continue to support American Gypsum's wallboard plant needs for an additional 15 to 25 years (depending on the quality of gypsum encountered). For the East Pit,

clearing and grubbing/overburden removal is anticipated to begin following the completion of mining activities in the Lower Pit. The East Pit is expected to support mining activities for an additional 26 years (duration may vary depending on the quality of gypsum encountered). The Lower Pit is expected to be mined through 2027 and will largely be left unreclaimed as a storage area for the Upper and East Pits. The Lower Pit, along with the nearby buildings and structures, will not be reclaimed until mining activities have been completed. Table 6.1 demonstrates the maximum size of each Pit during the period 2024-2028.

TABLE 6.1: Maximum Area of Mining Pits (2024-2028)

Pit	Area (acres)
Lower	57.3
Upper	58.8
East	10.0

6.4 Annual Operation

Mining is expected to take place year-round with periodic breaks not to exceed 4 days to accommodate holidays or poor weather conditions that may impact the ability to safely traffic mine access roads. The Mine typically hauls material 5 days per week (Monday through Friday) and typically operates from 6 a.m. to 5 p.m. Infrequently, the Mine operates on Saturdays, limited to hauling 4 Saturdays per year.

6.5 General Schedule of Operations

Table 6.2 illustrates the estimated schedule of operations.

TABLE 6.2: ESTIMATED SCHEDULE OF OPERATIONS

Phase	Activity	Mining Year [1]
Operational – Upper Pit (Permitted)	Active mining to the approved limits from the 2002 permit (BLM, 2002; CO DRMS, 2001)	Year 1 to Year 12
Operational – Upper Pit Expansion	Active mining to a pit floor elevation of 6760 feet amsl (maximum footprint extents), including using intraburden for progressive reclamation (3:H:1V maximum slope)	Year 12 to Year 15
Operational – Upper Pit Interior Benches	Active mining of interior pit benches to a pit floor elevation of 6560 feet amsl (pending drilling confirmation/continuous gypsum at depths exceeding 6760 feet amsl), including using intraburden for progressive reclamation (2.5H:1V maximum slope)	Year 15 to Year 25 [2]
Progressive Reclamation – Upper Pit	Placing intraburden/overburden in the Upper Pit, including forming the East Pit Access Road, with a 2.5H:1V maximum slope	Year 1 to Year 15 [2]
Reclamation – Upper Pit (Full Footprint, excluding active portion of East Pit Access Road)	Placing intraburden/overburden in the Upper Pit with a 2.5H:1V maximum slope, covering with 6 to 12 inches of growth medium, and revegetating with a native seed mixture	Year 16 to Year 26 [2]
Site Development – East Pit	Using existing roads to perform initial clearing and grubbing, stockpiling growth medium (if encountered during clearing and grubbing) within existing disturbance areas, removing overburden for haulage to the Upper Pit or East Pit Access Road	Year 2 to Year 10
Operational – East Pit	Active mining to a pit floor elevation of 6900 feet amsl, including using intraburden for progressive reclamation (2.5H:1V slope) where possible and stockpiling intraburden within the East Pit for future reclamation regrading	Year 15 to Year 41
Reclamation – East Pit	Regrading intraburden to an overall 2.5H:1V slope, covering with 6 to 12 inches of growth medium, and revegetating with a native seed mixture (includes portion of East Pit Access Road through the East Pit)	Year 41 to Year 42

Note: [1] Approximate timing estimated assuming Year 1 is 2019.
[2] Remaining durations assume Upper Pit is operational for 15 years; though it may provide gypsum for a total of 25 years.
[3] Approximate quantities are presented in Plan of Operation Maps and listed within the "Tabulated Mine Quantities.xlsx" spreadsheet.

6.6 Roads and Utilities

6.6.1 Roads

The proposed Upper Pit expansion area would be accessed using approximately 1.32 miles of existing access roads (starting at the Mine entrance location shown on Drawing 03). Roads were cleared of vegetation before construction. Juniper and pinion trees removed during vegetation clearing were stockpiled outside the construction area for use in future reclamation. Roads were constructed using cut-to-fill methods, with a 50-foot wide road to accommodate two lanes of traffic with safety berms and side drainage ditches. Culverts were installed where the road crossed drainages. Haul roads will be reclaimed as described in existing permits (CO DRMS, 2001; BLM, 2002).

The 1.32 miles of existing roads used to access the proposed Upper Pit expansion area includes approximately 0.06 miles of the approved Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a). As the Upper Pit progresses past a pit floor elevation of 6900 feet amsl, a second road (approximately 0.08 miles long) would be constructed utilizing the partially reclaimed northern section of the Upper Pit and the southern section of the Upper Pit 6900 Access Road would be abandoned. As the Upper Pit depth increases, interior roads would be incorporated into the Upper Pit to continue accessing the lower portions of the Upper Pit. Drawing 16 shows the conceptual road configuration. Interior roads would be developed as the pit is developed and are not shown on the ultimate pit configuration shown on Drawings 06 and 07; the conceptual internal Upper Pit road configuration may be modified during operations but would be constructed within permitted disturbance areas.

The East Pit would also be accessed via approximately 1.32 miles of existing access roads, 0.8 miles of the new Upper Pit 6900 Access Road, extending east across the Upper Pit and existing intraburden storage, and approximately 0.2 miles of road within a new disturbance area before terminating at the East Pit. Another 0.28 miles of the new East Pit Access Road would be constructed within the East Pit footprint and would be removed as the East Pit is mined, leaving only 0.02 miles of the road within areas previously undisturbed (excluding the East Pit disturbance area).

All new roads would be 50 feet wide (including safety berms), with 1.5H:1V cut and fill slopes to tie into existing topography (using cut-to-fill methods where possible and utilizing inert intraburden for the remaining fill). Roads would have a maximum 8% longitudinal grade and would be graded with a high point in the center (crown) of the road (at 1.0%) so stormwater runs off the road. Culverts would be installed where the road fill crosses drainages (stormwater controls are discussed in Section 8.0 and culvert details are shown on Drawing 10). Finished road fill slopes (that are not intended to see traffic) would be track-walked and revegetated immediately after construction or as soon as weather allows using an approved seed mixture.

The Upper Pit/East Pit Access Road construction would require approximately 536,000 cubic yards of cut and 1.415 million cubic yards of fill. An additional 163,000 cubic yards of material would be removed from the Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a) to accommodate the increased Upper Pit footprint and used as fill material for road construction or backfill for progressive reclamation activities. The remaining 716,000 cubic yards of fill required

for road construction will consist of intraburden/overburden from the Upper Pit and East Pit development. Drawings 06 and 07 show the Upper Pit and East Pit Access Roads just prior to East Pit development. Drawing 08 shows the East Pit Access Road configuration at the end of East Pit development.

6.6.2 Haul Routes

According to existing permits, roads are two lanes, and traffic patterns follow right-hand traffic conventions (except for the existing minor site access roads used for maintenance, overburden removal, and progressive reclamation activities). No new minor site access roads would be needed under this proposed Modification.

For the proposed Modification, trucks would carry gypsum from the Upper Pit to the new 0.08-mile long access road (west), to the remaining 0.06-mile long section of the Upper Pit 6900 Road (west) (BLM, 2019; CO DRMS, 2019a), to the existing haul road (west, then south), to Trail Gulch Road (south), cross over I-70, and continue southeast on Highway 6 to American Gypsum's wallboard plant. The total haul route would be approximately 3.17 miles from the western edge of the Upper Pit and 3.49 miles from the western edge of the East Pit (internal pit roads excluded).

6.6.3 Other Utilities

The Mine Office would remain in its current location north of the Lower Pit. The Mine Office is a temporary building; there are no power or water lines to the site. No additional utilities such as power, water, or communication lines are anticipated within the proposed disturbance area. Power to the Mine Office is provided by a Multi Quip 70-kilowatt (kw) generator (Table 6.3).

6.7 Equipment

Table 6.3 lists anticipated equipment used during the active mine life and reclamation.

TABLE 6.3: 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

Equipment	Location [1]	Manufacturer	Size	Quantity	Model Year
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
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

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

Mining activities proposed herein would not significantly impact equipment used or frequency of use. Trucks would continue to travel on the existing roads (and proposed roads) at a rate of approximately 80 to 100 trucks per day, typically 5 days per week. When not in use, trucks would be parked in existing parking areas near the existing Mine Office shown on Drawing 01.

6.8 Soil, Waste, and Mineable Material

Based on field observations and previous permits, there is no true “topsoil” at the Mine. Intact (native) growth medium is sparse and consists mainly of weathered gypsum (gypsite) and residual volcanic ash. Previous permits and investigations reported depths of volcanic ash ranging in thickness from 3 inches to 2 feet (isolated pockets as deep as 2 feet are typically found in dry creek beds); this material would be salvaged along with other growth medium during East Pit clearing and grubbing activities and stockpiled with maximum side slopes of 2H:1V in the growth medium stockpile shown on Drawing 06 for future use as growth medium during reclamation activities. Where salvaged growth medium contains biological soil crust material, the stockpiled depth would be limited to a depth of 4 feet to promote continued algae, fungi, and lichen formation and assist in stabilizing the growth medium stockpile surface. If stockpiled growth medium is dormant more than 6 months, the stockpile will be revegetated using an approved seed mixture to stabilize surface material and inhibit weed growth.

Overburden was estimated for the East Pit only. No overburden is expected to be encountered in the Upper Pit area, as the pit is being actively mined and overburden was removed in the early stages of mining. Non-economic material encountered during mining is classified as intraburden (waste). The East Pit was anticipated to have a similar gypsum-to-intraburden ratio as the operational Upper Pit, assuming 55% of the material encountered during mining (by weight) is usable gypsum. Where the proposed East Pit depth exceeds the operational Upper Pit depth, the gypsum-to-intraburden ratio was estimated assuming only 40% of the pit material (by weight) is usable gypsum. As the Upper Pit and East Pit are developed, American Gypsum would propose additional drilling to refine these estimates and may modify the overall pit depth or footprint if drill data or continued mining activities do not produce usable gypsum (Section 6.9). Material estimates are summarized in Table 6.4. The conceptual growth medium stockpile location is shown on Drawings 06 and 08.

TABLE 6.4: 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 in locations shown on Drawings 06 and 08 (if necessary) and used for progressive reclamation
Overburden (East Pit)	From 0 to 50 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

Notes: [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 6900 feet amsl. Material summaries include development associated with the proposed Upper Pit expansion below 6900-foot elevation.

6.9 Exploration Operations

Drilling was performed in 2006 to determine the estimated depth to overburden in the East Pit and the approximate extents and depth of gypsum in both the Upper Pit and East Pit areas. Due to limitations during drilling (access, drilling methods/drill refusal), the maximum gypsum depth within the Upper Pit and East Pit is unknown; additional drilling may be performed as the Upper Pit and East Pit depths progress, within the approved pit disturbance limits, to refine the pit layouts. Additional drilling would be performed using rotary or coring methods, with borehole diameters varying from 3 to 8 inches and depths up to 200 feet. Drilling campaigns would include up to 100 holes per drilling program, and holes would be plugged as soon as practical after drilling, resulting in as many as 20 open holes at any given time. Drilling programs may also include boreholes and sampling for geotechnical data. Drilling permits (including drill hole plugging and reclamation) would be obtained prior to drilling and drill holes would be plugged in a manner appropriate to water conditions encountered during drilling as described in Section 7.1. Potential areas for additional exploration drilling are identified on Drawings 06 and 08.

6.10 Operating Practices

The proposed activities would be a continuation of current mining operations, where a rotomill grinds shallow layers (approximately 6 inches) of gypsum and intraburden in the active pit. Gypsum is hauled via 25-ton truck/trailers to American Gypsum's wallboard plant approximately 1.6 miles south of the Mine entrance. Intraburden is stockpiled or stored on-site, used to construct access roads, or used as backfill material in progressive reclamation activities.

6.10.1 Mining Methods

The Upper Pit expansion and the East Pit would be mined using the same methods as used in the current Upper Pit operations. A rotomill continuous milling machine removes the top surface of gypsum and intraburden with an active working width of approximately 10 to 12 feet. The pit floor grades to drain to low area within the pit that temporarily contains surface water runoff within the pit footprint, with a 2-foot high perimeter berm to provide additional surface water controls. The rotomill constructs pit slopes at 1H:1V, with 10-foot wide benches constructed every 40 vertical feet. Intraburden is separated from gypsum (based on visual classification between material types) with a loader and stockpiled on the active pit floor prior to being hauled outside the pit.

Gypsum is hauled directly to American Gypsum's wallboard plant using over-the-road trucks and trailers with a 25-ton capacity. Intraburden is hauled to various locations, used to construct roads, as backfill material in progressive reclamation activities, or stockpiled/stored within approved disturbance areas. For the East Pit, overburden would be removed prior to active mining, using existing site access roads while overburden is excavated for use as fill material for the East Pit Access Road construction.

The Upper Pit and East Pit would be developed to allow for progressive or concurrent reclamation, where a portion of the completed pit is to be backfilled using overburden or intraburden removed after gypsum removal. This approach minimizes additional disturbance areas for overburden or intraburden storage, essentially using completed portions of the pit to store overburden or intraburden. Where possible, slopes will be backfilled to planned reclamation grades (2.5H:1V or shallower) to minimize material re-handling.

Although the primary mining method would be rotomills, drilling and blasting may be required throughout pit development. Periodically, isolated zones of hard anhydrite are encountered during open pit mining. The rotomill is unable to process the hard anhydrite, requiring drilling and blasting to continue pit development. In the past 12 years of operation, drilling and blasting has only been used twice. For the Upper Pit expansion and East Pit development, drilling and blasting may be used but would be extremely rare. If blasting is required for pit development, blasting agents would include ammonium nitrate/fuel oil (AN/FO). Blasting would be performed using cast booster and nonelectric and/or electric blasting caps. Since blasting will be subcontracted, blasting materials and equipment will not be stored on site; blasting materials will only be on site temporarily during blasting programs. Proper approvals would be obtained, and any required notifications made prior to blasting.

Table 6.5 summarizes mining type by ton and estimated surface disturbance. For quantity estimates, Tierra Group assumed 1% of the total mining would be performed using drilling and blasting.

TABLE 6.5: MINING METHOD SUMMARY

Type or Mining Method	Quantity of Material Removed (tons)	Estimated Area of Surface Disturbance (acres)
Upper Pit – Roto-Milling [1]	15.0	11.58
Upper Pit – Drilling/Blasting [1]	1.7	0.12
East Pit – Roto-Milling	29.6	81.76
East Pit – Drilling/Blasting	3.3	0.83
TOTAL	**49.6**	**94.29**

Notes: [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 6900 feet amsl.

If needed during the proposed mining activities, American Gypsum would contract a specialized contractor to perform drilling and blasting. Any necessary approvals would be obtained, and notifications made.

6.10.2 Underground Operations

No underground operations are anticipated for the Upper Pit and East Pit (and associated appurtenances).

6.11 Use and Occupancy

The proposed disturbance area would be used and occupied in a similar manner as the existing Mine, including all relevant permits. This includes items such as mining pits and access roads. There are no proposed changes to the Mine entrance or associated fences, gates, or signs. There are also no new structures (such as buildings) or enclosures associated with the proposed Modification. Drawing 15 shows a map of existing facilities at the Mine Office and staging area (see Table 1.4 for previous approvals). Table 6.2 contains a list of all equipment currently used at the Mine and proposed for continued use as a part of this Modification, including locations where equipment is left at the end of shift.

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 proposed East Pit area. Signs have been installed to alert recreationists to the potential hazard ahead.

The original Notice of Occupancy was submitted to the BLM on 03 October 1996. The updated Notice of Occupancy and site claim map was submitted to the BLM on 03 August 2016. The site claim map is included on Drawing 03; the list of applicable claims is shown in Table 1.5. A receipt for 2019 mining claim fees is provided in Appendix B. American Gypsum would maintain all right, title, and interest in and to each of the claims included as part of this Plan of Operations.

American Gypsum's use of public lands involves the continued use of roads and the maintenance of gates, fences, and signs. In accordance with 43 CFR § 3715, Table 6.6 documents structures

on public lands that are reasonably incident to American Gypsum's mining activities. Drawings 03 and 15 show the detailed locations of surface facilities.

TABLE 6.6: FACILITIES ON PUBLIC LANDS

Structure	Location	Estimated Period of Use	Schedule for Removal and Reclamation
Mine access and haul roads	Drawing 03	Duration of mine life	See reclamation plan
Mine entrance gate	Drawing 03	Duration of mine life	See reclamation plan
Shop and office facilities	Drawings 03 and 15	Duration of mine life	See reclamation plan
Growth medium stockpile	Drawing 03	Through initial reclamation	See reclamation plan
Mine pits	Drawing 03	Duration of operations	See reclamation plan
Equipment staging areas	Drawing 15	Duration of mine life	See reclamation plan

6.12 Hazmat

Gypsum is processed into wallboard directly at the plant; there are no on-site processing facilities and therefore no processing chemicals or acid-producing materials used or stored at the Mine.

Hazardous materials would not be stored within the proposed disturbance area. Spills would be reported and managed according to American Gypsum's Spill Prevention, Control, and Countermeasure (SPCC) Plan (Environmental Solutions, 2019).

6.13 Rock Characterization and Handling Plans

During drilling, material was classified as "gypsum" or "waste" (intraburden), characterizing intraburden as material with less than 85% gypsum. During active mining, material is characterized as gypsum or intraburden based on visual observations. Geotechnical investigations have characterized the density of the gypsum and intraburden material to be between 124-125 pcf.

6.13.1 Materials Characterized

Table 6.7 lists materials characterized, and method used for characterization.

TABLE 6.7: 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

6.13.2 Approach/Procedure for Characterization

During active mining, the rotomill grinds layers of gypsum and intraburden in approximately 6-inch layers. Intraburden is typically intermixed with gypsum, clearly identified by the distinct color variation. Gypsum is white in color while intraburden is a darker tan/brown color. Equipment operators (reporting to the Mine Superintendent) are responsible for segregating materials into separate stockpiles within the active pit, which are loaded and hauled to American Gypsum's wallboard plant (gypsum) or used for progressive reclamation, access road construction, or stockpiled within inactive portions of the Lower Pit, Upper Pit, and East Pit for final reclamation (intraburden/overburden).

6.13.3 Waste Rock (Intraburden/Overburden) Management Plan

Overburden is defined as material above the East Pit gypsum with little to no gypsum content, ranging in depth from 0 feet to 82 feet (using drilling data). Overburden would be removed during pre-production prior to active mining in the East Pit only. Intraburden is defined as inert, non-economic material to be removed during the East Pit and Upper Pit progression.

6.14 Quality Assurance Plan for Proposed Activities

A Quality Assurance Plan (QAP) is included as Appendix C. The QAP covers activities associated with culvert installation (including bedding, backfilling, and erosion controls) and road construction.

6.15 Spill Contingency Plan

Gypsum is processed into wallboard directly at the plant; 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 (Environmental Solutions, 2019).

6.16 Monitoring and Inspections

Monitoring (surface and groundwater quality and quantity, air quality, revegetation, stability, noise levels, etc.) would be conducted as required by existing approvals. Revegetation monitoring is discussed in Section 7.7.

Throughout operation, American Gypsum would perform additional inspections according to Table 6.8.

TABLE 6.8: INSPECTION SCHEDULE

Component	Inspection Frequency	Inspection Items
Culverts	- Quarterly - After high rainfall event (greater than 1.5 inches in 24 hours)	- Obstructions or other blockage that may inhibit flow - Signs of buckling or crushing of culvert material - Excessive erosion or loss of erosion control measures (riprap collars/aprons)
Road Fill/ Embankments	- Weekly	- Signs of geotechnical instability (bulging at toe, cracks at crest, sloughing, etc.) - Signs of erosional instability (material washing out, erosion gullies, exposed rocks without fine matrix, etc.) - Signs of subsidence such as depressions or unintentional low areas
Pit Slopes [1]	- Weekly - After high rainfall event (greater than 1.5 inches in 24 hours) - After seismic activity (magnitude greater than 3.0 within 50 miles of the pit) - If conditions vary significantly from previous inspection	- Cracks, bulges, or other signs of movement - Fractures in pit walls - Signs of subsidence such as depressions or unintentional low areas - Seeps or springs emanating from pit walls - In-pit stormwater storage “low area” away from pit wall
Pit Berms	- Daily - After high rainfall event	- Berms intact, continuous - Berm height adequate - No ponding water behind berms
Reclaimed and/or Backfilled Slopes [2]	- Weekly - After high rainfall event	- Signs of geotechnical instability (bulging at toe, cracks at top of slope, sloughing, etc.) - Signs of erosional instability (material washing out, erosion gullies, exposed rocks without fine matrix, etc.) - Signs of subsidence such as depressions or unintentional low areas

Note: [1] Pit slope inspections will be documented on an inspection form and/or log with photographs to document conditions.
[2] Inspections/monitoring for erosional success is discussed under Sections 7.7 and 7.10.

If conditions are observed that may be an early indicator of geotechnical instability (pits, reclaimed/backfilled areas, and road slopes), American Gypsum would inform the appropriate state and federal agencies (namely, BLM and CO DRMS) via telephone or email, increase inspection frequency, and (depending on the severity) would engage an engineering consultant to observe conditions and provide recommendations. If necessary, the impacted area would be blocked off until the potential hazard could be further evaluated or mitigated. Corrective actions would be completed as appropriate to the conditions encountered and plans would be submitted

to the appropriate state and federal agencies prior to beginning work if not in accordance with this Modification.

6.17 Interim Management Plan for Cessation of Activities

The proposed activities are a continuation of existing mining activities and there is no anticipated break or gap by American Gypsum between existing and proposed mining activities. However, if temporary cessation of mining activities are determined to be required, American Gypsum would perform the activities outlined below to prevent undue and unnecessary degradation of facilities, lands, and resources during an unplanned period of non-operation.

6.17.1 Measures to Stabilize Excavations and Workings

Pit slopes and pit floors would be assessed and any minor grading would be performed to ensure drainage into a low area of the pit floor, located away from pit walls (only minor grading would be required to prepare the pits for a temporary shutdown, as this would be part of normal operational practices);

Pit berms would be inspected and repaired as necessary to maintain a continuous berm around pits;

Stockpiles and un-vegetated progressive reclamation slopes would be stabilized;

Sediment control structures would be cleaned out to maintain the full capacity; and

Sediment control structure outlets (standpipes, spillways, etc.) would be inspected and repaired as necessary.

6.17.2 Measures to Isolate or Control Toxic or Deleterious Materials

Dust suppression surfactants or other chemicals or deleterious materials (none anticipated) would be relocated to the Plant.

6.17.3 Provisions for the Storage or Removal of Equipment, Supplies, and Structures

Equipment would be removed from the Mine; and

Temporary facilities such as restrooms, office trailers, etc. would be locked and secured.

6.17.4 Measures to Maintain the Project Area in a Safe and Clean Condition

The Mine would generally be inspected and cleaned up. All garbage would be removed from the Mine and any loose material (i.e. boxes, packaging, etc.) would be removed or otherwise secured in locked office buildings;

Roads would be assessed to ensure the road grades drain at approximately 1% on either side of the road (from the road centerline) to prevent water accumulation (roads will be maintained as such during normal mining operations and only minor grading may be required during a temporary shutdown);

Road berms would be inspected and repaired as necessary; and

Roads, including cut and fill slopes, would be inspected to ensure all stormwater runoff reports to existing sediment control structures (roads will be maintained as such during normal mining operations and only minor grading would be required to prepare the roads for a temporary shutdown).

6.17.5 Plans for Monitoring Site Conditions during Periods of Non-Operation

Site conditions would be inspected every 14 days or following periods of rainfall exceeding 1.5 inches in a 24-hour period.

6.17.6 Schedule of Anticipated Periods of Temporary Closure

No temporary closures are planned or anticipated. If a temporary closure is necessary, American Gypsum would notify state and federal agencies in writing within 90 days after work is suspended for more than 120 days. The notification would state the nature and reason for suspension of work, the anticipated duration of the suspension, and any event that would be reasonably expected to result in either the resumption of activities or the abandonment of the operation.

7.0 RECLAMATION PLAN

Reclamation would be carried out progressively or concurrently with mining activities because of the need to dispose of inert, un-economic material (intraburden/overburden) as mining progresses. Overburden and intraburden from each successive mining stage would be backfilled and stockpiled in prior workings or near the excavated pit. The overburden and intraburden are kept in the same stockpiles, while topsoil is kept separately for final reclamation efforts. Intraburden/overburden storage areas would be partially removed and used as backfill material for the final pit areas, with remaining material regraded to a 2.5H:1V (or flatter) slope. Sequencing of mining and stockpiling is listed within Table 6.2 and with locations provided within the attached drawings and volumes provided within the “Tabulated Mine Plan Quantities.xlsx.” 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. Drawing 11 shows conceptual reclamation grading for the pits and roads included with this Modification.

Following active mining and pit reclamation, haul roads would be regraded to expose culverts, using excavated material as backfill in remaining reclamation activities for the pits and roads. Culverts would be removed and native drainage channels would be re-established at pre-construction 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 all reclaimed slope areas would be compacted and sloped at a 2.5H:1V slope, and track-walked with a dozer or similar equipment to roughen the reclaimed slope prior to revegetation. Track-walking and revegetating reclaimed slopes 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. 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 on-going reclamation and revegetation requirement (not anticipated), excess growth medium stockpiles would also be seeded during the fall months to facilitate stabilization.

Juniper and pinion trees cleared ahead of the active mining area would be utilized in the reclamation process, placed perpendicular across reclaimed slopes. Pinion and juniper slash cleared at the Lower Pit have historically added success to revegetation plots. The technique has consisted of placing slash over plots graded with volcanic ash growth medium and then seeding the plot. The slash has shown to aid 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.

Table 7.1 lists required information and where it can be found in the provided reclamation maps.

TABLE 7.1: RECLAMATION MAP GUIDE

Required Information	Drawing Number
Gradient of all reclaimed slopes	Drawing 11
Cross-sections of reclaimed slopes	Drawing 12
Where vegetation will not be established and general areas for shrub or tree planting	Drawing 11 (all reclaimed areas would receive the same revegetation treatment)
Shore configuration of ponds and shallow areas if future land use is for wildlife	N/A
Average thickness of replaced intraburden/overburden by reclamation area or phase	Drawings 12 and 13
Average thickness of replaced growth medium by reclamation area or phase	Drawing 12

7.1 Drill Hole Plugging

Drilling may occur throughout the active mining phase of the proposed Upper Pit expansion and East Pit development. Prior to completing additional drilling, American Gypsum would develop drilling plans and obtain required permits, including drill hole plugging and reclamation plans. Drill holes would likely be mined out as the Upper Pit and East Pit are developed; however, drill holes would still be plugged to prevent impacts to aquifers (i.e. mixing), impacts to beneficial uses, downward/upward water loss, surface water flowing into the hole, or an open surface hazard.

Drill holes would be plugged in a manner appropriate to water conditions encountered during drilling, according to procedures outlined in the BLM Solid Minerals Reclamation Handbook (BLM, 1992) and Colorado Division of Water Resources (CO DWR) Code of Colorado Regulations (CCR) 2 CCR 402-2 (CO DWR, 2018). This would include the following:

Removing casing;

If more than one aquifer was perforated in single drill hole, backfilling with a cement grout plug at the confining layer above aquifers;

Backfilling unconfined/unconsolidated aquifers to the static water level with drill cuttings, clean sand, or clean gravel;

If water is not encountered, backfilling with drill cuttings; and

Backfilling the upper 5 feet (minimum) with clean native clay, cement, or high solid bentonite grout, including adequately compacting fill to prevent settling.

Materials used for backfilling would be clean, inert, and free from contaminants.

7.2 Regrading/Reshaping

The Upper Pit and East Pit would be backfilled using overburden or intraburden from open pit mining activities. Backfill material would be regraded to 2.5H:1V slopes or shallower, covered with 6 to 12 inches of growth medium, and track-walked using a dozer or similar equipment to aid in

revegetation. Where possible, regrading will attempt to mimic surrounding topography, incorporating benches on long slopes and periodic downslope channels.

Following active mining and pit reclamation, haul roads would be regraded using cut-to-fill methods. In the case of the Upper Pit 6900 Access Road, the stand-alone reclamation grading included with the permit submittal (Tierra Group, 2019) would need to be revised to accommodate the larger Upper Pit. The reclamation grading shown on Drawing 11 reflects the proposed changes to the Upper Pit 6900 Access Road to accommodate the larger Upper Pit footprint.

The original haul road would be abandoned and reclaimed during the Upper Pit development. Since the Upper Pit 6900 Access Road partial removal cannot occur until the new Upper Pit Access Road (shown on Drawing 06) is constructed, there would likely be two segments of the Upper Pit Access Road operating during the Upper Pit and East Pit development. As the Upper Pit encroaches on the southern half of the Upper Pit 6900 Access Road, the road will be abandoned and reclaimed. Based on construction timing, there may be a short window of time where all three roads on west side of the Upper Pit are actively used. Efforts would be made to reduce this time period and reclaim roads no longer needed as soon as possible.

7.3 Mine Reclamation

Mine reclamation would be ongoing throughout the active mining phase, as overburden and intraburden removed during gypsum mining would be used to backfill the Upper Pit and East Pit. Backfilling the Upper Pit and East Pit concurrently with mining activities achieves the following:

Reduces the level of effort required post-mining;

Reduces the portion of exposed steep slopes; and

Provides a storage repository for overburden and intraburden within disturbed areas, thus reducing the overall Mine footprint and surface disturbance.

7.4 Riparian Mitigation

Dry creek beds at the Mine rarely flow (only during isolated major storms). Following cessation of mining activities, culverts (constructed to convey flows under road fills during storm events) would be removed and road fill excavated to reestablish native drainage channels. As necessary, based on the conditions encountered during culvert removal, natural channels would be constructed with rock vortex weirs or isolated sections of riprap lining to prevent erosion.

7.5 Wildlife Habitat Rehabilitation

After cessation of mining activities, disturbed areas would be regraded and revegetated to provide wildlife habitat according to existing permits.

7.6 Growth Medium Handling

Growth medium removed from the native ground surface during East Pit clearing and grubbing activities would be stockpiled west of the Upper Pit (Drawings 06 and 08). An estimated 244,000 cubic yards of growth medium would be removed from the East Pit area, using an assumed depth of 6 inches over the northern two-thirds of the East Pit footprint. All material

removed during clearing and grubbing (including volcanic ash, biological soil crust, etc.) will be stockpiled in the location identified on Drawings 06 and 08, although efforts will be made to salvage biological soil crust in shallower areas of the stockpile.

The estimated 244,000 cubic yards of growth medium is not a sufficient volume of material to cover the proposed disturbance (including the Upper Pit expansion, East Pit, and roads) post-reclamation grading with 6 to 12 inches of growth medium. Additional growth medium would be required, using finer-grained inert overburden or intraburden encountered during open pit mining. This finer-grained material would be mixed with native growth medium (where possible), placed in uncompacted layers (6 to 12 inches deep) over regraded slopes, and track-walked to promote vegetation growth.

The site has used different blends of topsoil and intraburden in order to determine the ideal mixture for reclamation. While there isn't a sufficient record regarding the percentage of materials used in each blend, these prior examples serve to dictate better methods of soil compaction, volume of topsoil, and reseeding. It is ideal to deposit at least 2 inches of topsoil across the disturbed area. Should that volume be unavailable, mulch or other organic materials may be added to make up the difference. Figures 7.1 and 7.2 demonstrate successful and incomplete reclamation work.

Figure 7.1. Plot of land with successful reclamation work

Figure 7.1 demonstrates successful reclamation at the site. Efforts which made the reclamation successful included laying out at least 2" of topsoil and compacting the soil with a dozer with heavy and deep grousers. This photo was taken four (4) years after reseeding.

Figure 7.2. Plot of land with incomplete reclamation work

Figure 7.2 demonstrates a site with poor reclamation. Reclamation was unsuccessful in this location due to a lack of topsoil and compaction, as demonstrated by the ruts developed following rain events. The picture was taken approximately one year after reseeding.

7.7 Revegetation

Areas disturbed during proposed mining activities would be regraded, track-walked, and hydroseeded according to previous approvals (BLM, 2019) using an approved and certified weed-free seed mix. No seeding would occur until seed tags and or/other official documentation of the correct seed mix are submitted and approved by the BLM (BLM, 2013). Table 7.2 lists the proposed seed mixture, including application rate in pounds per acre (lb/ac).

TABLE 7.2: PROPOSED SEED MIXTURE

Species	Variety	Application Rate (lb/ac)
Bluebunch wheatgrass	CO/UT source preferred or Anatone, 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 Chrsothamnus nauseosus, CU/UT source preferred	0.25
Winterfat	CO/UT source preferred	1.5

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

Revegetation success will be determined and monitored according to the BLM Northwest Colorado District Recommended Outline for Surface Reclamation Planning (BLM, 2013) using current methods (USDA, 2017). An Annual Reclamation Report would be submitted by 31 December each year. If revegetation is not successful or making progress toward meeting successful revegetation criteria by the third growing season, additional action would be taken such as reseeding or adding soil amendments. Historically, there have been areas where revegetation attempts have not been successful, but the reclaimed surface does not erode and does not allow weed growth. Similar surfaces may be encountered during reclamation activities

for the proposed Modification and would be inspected annually for signs of erosion or weed growth. If conditions change, additional revegetation efforts may be implemented.

7.8 Deleterious Materials

Gypsum is processed into wallboard directly at the plant; there are no on-site processing facilities and therefore no processing chemicals or acid-producing, toxic, or deleterious materials used or stored at the Mine.

7.9 Buildings, Structures, and Support Facilities

No new buildings, structures, or support facilities would be constructed as part of the mining activities described herein. All buildings, structures, and support facilities for the mine are to be removed and reclaimed, with waste material being transported off site. Reclamation activities for existing support facilities are included in previous permit applications. Table 7.3 summarizes existing buildings and foundations at the Mine Office and staging area. Figures 7.3 and 7.4 show the locations of existing culverts on the site. Following completion of mining and reclamation activities, culverts and the gate at the entrance, shown in Figures 7.5 and 7.6, will be removed. Additionally, 1,635 ft of 4-foot fence installed north of the Upper Pit will need to be removed. Foundations listed as “cinder block” are stilts for an above-ground structure. All buildings are located on land managed by the BLM.

TABLE 7.3:EXISTING MINE OFFICE/STAGING AREA BUILDINGS/SUPPORTFACILITIES

Building	Description	Foundation Dimensions LxWxH (feet)	Foundation Type
Used Oils Tank	1,000-gallon tank	4.0 × 11.5	Cinder block cribbing
Flammable	Metal storage cabinet	4.0 × 10.5	Railroad ties
Clear Diesel Tank	5,000-gallon tank	8.0 × 16.5	Steel I-beams
Dyed Diesel Tank	10,000-gallon tank	11.0 × 30.0	Steel I-beams
Generator	Multi Quip 70-kw	4.0 × 11.0	Steel I-beams
Main Breaker Box	Electrical panel box	4.5 × 11.0	Steel I-beams
Parts Storage 1	Woodshed	13.0 × 33.0	Cinder block cribbing
Parts Storage 1 (Outer)	Reinforced concrete pad	11.0 × 15.5	6-inch thick reinforced concrete pad (12-inch rebar grid)
Maintenance Shop	Metal frame building with tarp cover	42.0 × 44.0 x 23.0	18-inch thick reinforced concrete pad
Parts Storage 2	Tractor trailer	9.0 × 42.0 x 12.0	N/A
Parts Storage 3	Woodshed	11.5 × 13.0	Wood floor
Mine Office	Single-wide trailer	55.0 x 14.0 x 12.0 × 56.5	Cinder block cribbing
Propane Tank	200-gallon capacity	4.0 × 8.5	Cinder block cribbing
Block Heater Breaker	Electrical panel box with wood frame cover	4.5 × 7.5	6-inch thick reinforced concrete (wire reinforcement)

Truck Shed	Metal Canopy	12 × 16, pad 12 × 30 × 12, shed	6-inch thick reinforced concrete (wire reinforcement)
Culvert 1	Corrugated steel pipe	320 (l) × 5 (d)	N/A
Culvert 2	Corrugated steel pipe	232 (l) × 3 (d)	N/A
Culvert 3	Corrugated steel pipe	142 (l) × 2 (d)	N/A
Culvert 4	Corrugated steel pipe	440 (l) × 5 (d)	N/A
Culvert 5	Corrugated steel pipe	284 (l) × 3 (d)	N/A
Culvert 6	Corrugated steel pipe	252 (l) × 3 (d)	N/A
Culvert 7	Corrugated steel pipe	143 (l) × 3 (d)	N/A
Culvert 8	Corrugated steel pipe	260 (l) × 3 (d)	N/A
Conexes (4)	Mobile Storage Boxes	8 × 40 × 12	N/A
Conex	Mobile Storage Box	8 × 20 × 12	N/A

Figure 7.3. Locations of culverts 1, 2, and 3

Figure 7.4. Locations of culverts 4, 5, 6, 7, and 8

Figure 7.5. Entrance gate to mine site


Figure 7.6. Entrance gate to mine site

7.10 Post-Closure Management

Post-closure activities would consist primarily of monitoring and inspecting reclaimed areas, with minor maintenance as necessary.

Reclaimed slopes would be inspected for signs of geotechnical instability (bulging at toe, cracks at crest, sloughing, etc.) annually for a period of 5 years after reclamation grading is complete. The annual estimated cost for the slopes to be surveyed is $10,000, with the associated labor estimate of less than 40 hours. If necessary, slopes would be regraded to eliminate any ponding or potential impacts from surface water or regraded to shallower slopes. Regraded slopes would be revegetated as described in Section 7.7.

Reclaimed slopes would be monitored for revegetation success as described in Section 7.7, for a minimum of 3 years after the last revegetation efforts. The annual estimated cost for the revegetation to be monitored is $4,000, with the associated labor estimate of less than 20 hours. If necessary, slopes would be revegetated and monitored for an additional 3 years for revegetation success.

Re-established drainage channels (where culverts were removed) would be inspected for signs of erosional instability (material washing out, erosion gullies, exposed rocks without fine matrix, etc.). Inspections would be performed annually and after heavy rainfall events (greater than 1.5 inches in 24 hours, corresponding to the 10-year, 24-hour event reported in Table 3.1) for a period of 5 years after reclamation grading is complete. The annual estimated cost for the erosion inspections is $8,000, with the associated labor estimate of less than 40 hours. If necessary, additional erosion protection such as rock vortex weirs, riprap, or riprap splash pads or aprons would be installed if inspections showed signs of excessive erosion in the re-established drainage channels.

8.0 WATER MANAGEMENT

8.1 Relationship to Surface Water and Groundwater

There are no rivers or streams within the proposed disturbance area; however, there are dry creek beds that flow during major storms, which are rare at the Mine. During normal precipitation events, the majority of runoff infiltrates into dry soils or geologic fractures. These dry creek beds rarely flow with appreciable water. Stormwater from the Mine and proposed disturbance area is not anticipated to report directly to the Eagle River without first passing through a sediment control structure.

The depth to groundwater at the Mine is not known; however, water has not been encountered in the Lower Pit or Upper Pit development to date. Also, previous drilling campaigns in the Upper Pit and East Pit area explored depths ranging from 10 to 250 feet below ground surface without encountering groundwater. As outlined in Section 6.0, additional drilling may be performed (within Upper Pit and East Pit disturbance limits) to further define the depth and extent of gypsum and depth to groundwater. Drilling permits (including drill hole plugging and reclamation) would be obtained prior to drilling and drill holes would be plugged in a manner appropriate to water conditions encountered during drilling as described in Section 7.1. If groundwater is encountered during drilling, the ultimate pit depths (Upper Pit and East Pit) may be reduced from what is described herein and shown on the Drawings to avoid impacting groundwater. There is no source of surface or groundwater within the area of mining activity, so the operation would not affect either surface or groundwater.

8.2 Water Use

Water required for dust suppression on haul roads would be acquired from the wallboard plant water supply system as per the current mining operation procedure. No other water use is anticipated for the proposed mining activities described herein.

8.3 Surface Water Management

8.3.1 Existing Sediment Ponds

Existing sediment ponds M5O1 and M6O1 will be used to temporarily store stormwater runoff and sediment from the Upper Pit Access Road and East Pit Access Road. M5O1 was constructed in 2004 (previously pond P4) and M6O1 was constructed in 2006 (previously pond P5). Three other ponds (M2O1, M3O1, and M4O1) were constructed in 2004 to temporarily store stormwater runoff and sediment from the haul road. Constructed pond locations and crest elevations differ slightly from the information provided to CO DRMS in TR-06 and TR-07 (see Table 1.4 for approvals).

Actual disturbance areas for the ponds, spillways, outlet structures, and access roads were accounted for in Table 1.2 and additional cultural resources surveys were completed in July 2019

(Section 3.4). Table 8.1 summarizes constructed conditions for sediment ponds M2O1 through M6O1.

TABLE 8.1: SEDIMENT POND M2O1 THROUGH M6O1 SUMMARY

Parameter	M2O1	M3O1	M4O1	M5O1	M6O1
Dam Crest Elevation	6819 feet	6832 feet	6847 feet	6709.5 feet	6684 feet
Dam Crest Width	32 feet	30 feet	36 feet	12 feet	15 feet
Dam Location	As designed	As designed	As designed	200 feet south of designed location	As designed
Primary Water Outlet	18-inch perforated Corrugated Steel Pipe (CSP) standpipe	18-inch perforated CSP standpipe	18-inch perforated CSP standpipe	18-inch perforated CSP standpipe	18-inch perforated CSP standpipe
Spillway Location	West of dam	West of dam	Northwest of dam	South dam face	North of dam
Spillway Invert Elevation	6817 feet	6831 feet	6846.5 feet	6709 feet	6683 feet
Spillway Depth	2 feet	1 foot	0.5 feet	1 foot	2 feet
Spillway Width	30 feet	40 feet	10 feet	10 feet	10 feet
Spillway Erosion Protection	Riprap	Riprap	Riprap	Riprap	Riprap

Note: Constructed conditions estimated from available topography and aerial imagery. Detailed surveys not available for M2O1, M3O1, and M4O1.

Based on anecdotal evidence, pond, spillway, and road areas were cleared of vegetation before construction. Juniper and pinion trees removed during vegetation clearing were stockpiled outside the construction area for use in future reclamation.

The ponds were created by constructing dams from indigenous fill material. Spillways were excavated into native ground. Spillways are lined with riprap (approximately 1 foot deep) for erosion protection. The CSP standpipes were constructed with a surrounding gravel pack and wire mesh screens to prevent clogging. The CSP standpipe outlets and spillways are protected against erosion with riprap splash pads. Construction records are not available; however, the ponds were constructed over 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 single-lane road between ponds was constructed using cut to fill methods, following existing terrain as much as possible to reduce surface disturbance. Ponds and roads will be reclaimed as described in existing permits (CO DRMS, 2001; BLM, 2002).

8.3.2 Stormwater Runoff within Disturbance Areas

Stormwater runoff within the Upper Pit and East Pit would be stored within the pits. Tierra Group developed SEDCAD models to determine the volume of sediment and water reporting to each pit and determined a minimum area and depth required to store the water and sediment from the 10-year, 24-hour event within each pit. The pits would be developed in a manner that creates a sloped surface, grading to drain to a low area within the pit. The location of the low area within each pit would change as the pit is developed and maintained so that water does not accumulate against the pit walls. Berms would be constructed at the pit perimeter as an additional measure to prevent runoff from exiting the pit.

Stormwater runoff from the new access roads would report to existing sediment control ponds M5O1 and M6O1. Tierra Group developed SEDCAD models for the existing sediment ponds, accounting for the additional sediment from the new disturbance areas. Tierra Group determined the existing sediment ponds can accommodate the additional sediment load. Table 8.2 summarizes required capacities for the 10-year, 24-hour event by facility, including existing sediment pond M5O1 and M6O1 surveyed capacities (with 1 foot of freeboard).

TABLE 8.2: REQUIRED STORMWATER RUNOFF CAPACITIES

Facility	Watershed Basin (acres)	Required Capacity (acre-feet)	Stormwater Runoff Reports To	Actual/Designed Capacity (acre-feet)
Upper Pit	53.65	4.9	Upper Pit in-pit storage	N/A
East Pit	Varies [1]	Varies [1]	East Pit in-pit storage	N/A
Upper Pit Access Road	53.44	0.43	M5O1	0.51 [2]
East Pit Access Road	42.61	0.57	M6O1	0.41 [3]

Notes: [1] Watershed basin varies from 54.0 to 82.6 acres throughout pit development. Required capacity varies from 5.0 to 7.7 acre-feet depending on the size of the active mining surface. Capacities to be revisited periodically throughout operations.
[2] Actual capacity of M5O1 used site survey data provided by American Gypsum (Gamba, 2018).
[3] Actual capacity of M6O1 used site survey data provided by American Gypsum (Slagle, 2019).

The surveyed capacity of pond M6O1 does not meet the required capacity of 0.57 acre-feet; however, additional sediment accumulation was present as of the 2019 survey and the pond would be cleaned out to maintain the 0.57-acre-foot required capacity before the East Pit area is disturbed. The existing stormwater management plan would also be modified and submitted to the appropriate regulatory agencies for approval before new areas are disturbed.

Drawing 14 shows drainage basin delineations and locations for existing sediment ponds. Appendix D contains SEDCAD model output files.

8.3.3 Culverts

Culverts would be constructed during operations to convey upland flows under new construction: one is anticipated west of the Upper Pit (under the road extension and growth medium stockpile) and a second is anticipated west of the East Pit (under the access road) as shown on Drawings 05

and 07. Culverts were sized to accommodate flows from the 100-year, 24-hour event using the upland drainage basin area and the United States Army Corps of Engineers (USACE) Hydrologic Modeling System (HEC-HMS) (2010). The west culvert would be an extension of the Upper Pit 6900 Access Road culvert (BLM, 2019; CO DRMS, 2019a), which was modified to a 30-inch 14-gage corrugated steel pipe to match the existing upstream culvert. The east culvert would be a 24-inch 16-gage corrugated steel pipe, as determined by the Federal Highway Administration (FHWA) HY-8 computer software (FHWA, 2015) and corrugated steel pipe manufacturer's design manual (Contech, 2018). Based on manufacturer's recommendations, the maximum cover height is 124 feet for both the 30-inch culvert (anticipated road height for the extended culvert is 80 feet) and 24-inch culvert (anticipated road height for the culvert is 20 feet). Culverts were also sized for the anticipated service life, which increased the wall thickness from 18-gage to 16-gage for the 24-inch culvert (Contech, 2018). A minimum of 4 feet of structural fill will be placed over the pipe prior to trafficking with mine haulage equipment for intraburden/overburden placement.

The west culvert would tie into the culvert for the Upper Pit 6900 Access Road (BLM, 2019; CO DRMS, 2019a) on the downstream side and the existing 30-inch culvert on the upstream side. The east culvert would terminate in a riprap apron/splash pad constructed in the natural dry creek bed (riprap would have a D_{50} of 6 inches). Drawing 14 shows the upland drainage basin areas used in the HEC-HMS modeling and Appendix D contains support calculations such as the HEC-HMS model inputs and results and HY-8 results. Drawing 10 shows typical culvert installation details.

During culvert installation, temporary sediment controls such as silt fences, straw bales, or straw wattles would be installed as necessary to prevent sediment from entering natural drainages downstream of the construction area.

8.3.4 Reclamation

When the access roads are no longer required, the road fill would be excavated to expose and remove the two new culverts described in Section 8.3.2 to re-establish the natural drainage channels at pre-construction grades and side slopes. Remaining fill outside the natural drainage channels would be graded at 2.5H:1V or shallower. Re-established natural drainage channels and remaining fill would be track-walked and revegetated using an approved seed mixture. If native slopes are steeper than 2H:1V, additional surface preparation may be required. This may include placing juniper and pinion slash from clearing and grubbing activities and riprap or rock vortex weirs in areas that may be susceptible to erosion. Depending on conditions encountered during construction, natural drainage channels may require erosion protection. Erosion protection would mimic natural conditions to the greatest extent practicable, including rock vortex weirs or isolated sections of riprap lining as necessary. Designs for rock vortex weirs or riprap lining would need to be completed during reclamation, as the designs will depend on the excavated channel geometry and final re-established channel conditions. Drawing 11 shows the conceptual road reclamation grading and Drawing 12 shows a typical cross-section for the East Pit Access Road.

9.0 RECLAMATION COST ESTIMATE

A reclamation cost estimate was not developed at this time.

10.0 OTHER PERMITS AND LICENSES

Table 10.1 summarizes other active permits and licenses for the current mining operation.

TABLE 10.1: EAGLE-GYPSUM MINE PERMITS AND LICENSES

Issuing Agency	Permit Type	Permit #
Colorado Division of Reclamation, Mining, and Safety (formerly Department of Natural Resources Mined Land Reclamation Division)	Mining and Reclamation Permit	M-1984-041
Bureau of Land Management	Mining Plan of Operations	COC-072973
Eagle County	Eagle County Special Use Permit	ZS-00071
Colorado Department of Public Health and Environment	Air Pollution Control Division Colorado Operating Permit	95OPEA041
Colorado Department of Public Health and Environment	Colorado Discharge Permit System (CDPS) General Permit	COG500000

Other permits or licenses that may be required for the operation are listed in Table 10.2. American Gypsum would comply with all applicable State and Federal laws.

TABLE 10.2: OTHER PERMITS AND LICENSES [1]

Issuing Agency	Permit Type
Colorado Department of Public Health and Environment	National Pollutant Discharge Elimination System (NPDES)
CO DWR	Drilling permit for “Test Holes” per 2 CCR 402-2 and abandonment report (form GWS-9)

Note: [1] List of potential permits and licenses only. Copies would be provided to State and Federal regulatory agencies as required.

11.0 GEOTECHNICAL STABILITY

Appendix E includes a technical memorandum summarizing Tierra Group's geotechnical slope stability analyses for proposed pits and roads. Section 6.16 addresses monitoring and inspections for pits and road slopes.

12.0 REFERENCES

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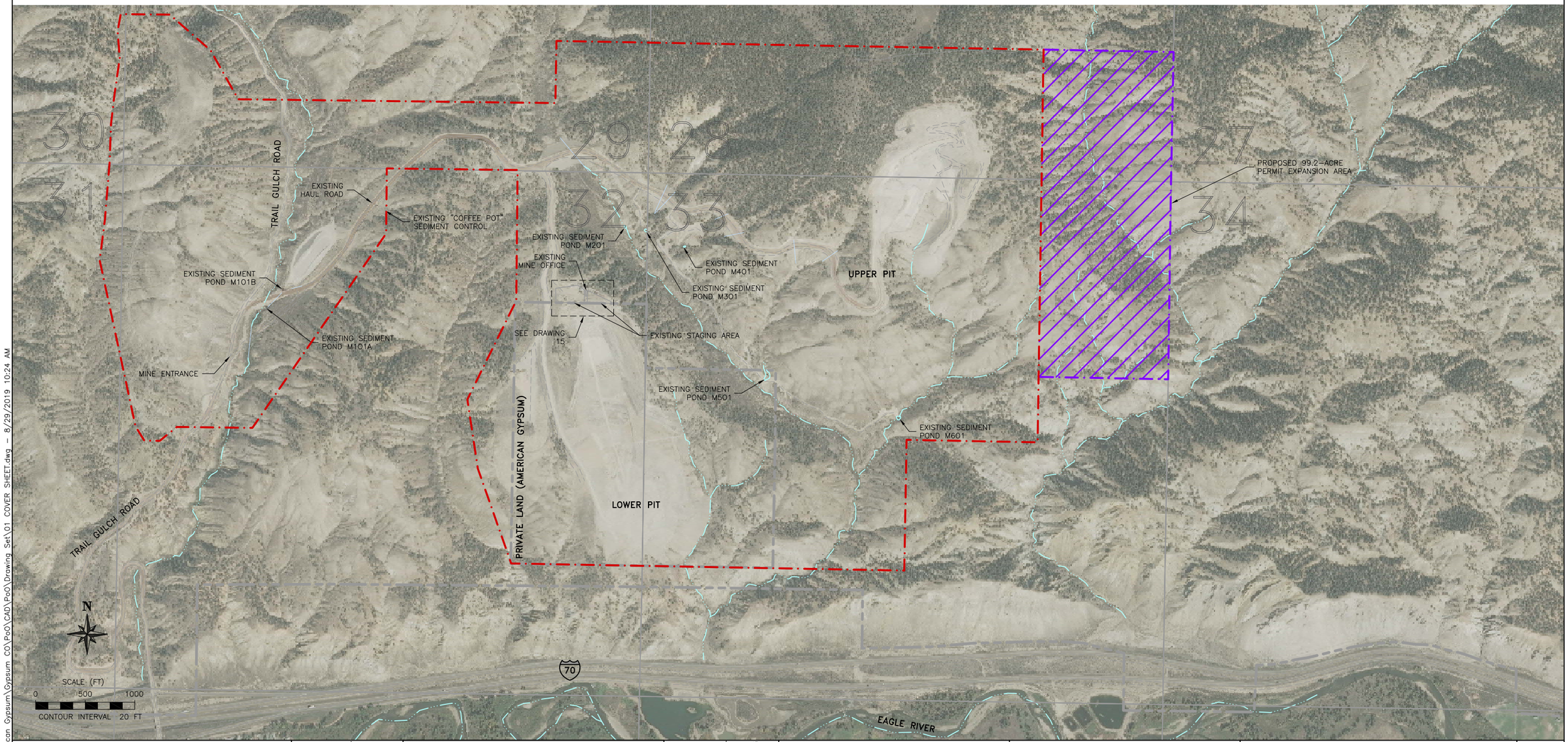
DRAWINGS

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



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REFERENCE:
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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 16

LEGEND:

- 7000 EXISTING CONTOURS
- 7000 PROPOSED CONTOURS
- 7000 UPPER PIT 6900 ACCESS ROAD CONTOURS (BLM, 2019; CO DRMS, 2019)
- EXISTING ROADS
- PROPOSED ROADS
- EXISTING FENCE (APPROXIMATE)
- EXISTING SEDIMENT POND
- EXISTING DRAINAGE
- EXISTING CULVERT
- PROPOSED CULVERT
- UPPER PIT 6900 ACCESS ROAD CULVERT
- APPROVED 830.2–ACRE PERMIT AREA
- PROPOSED 99.2–ACRE PERMIT EXPANSION AREA
- PERMITTED DISTURBANCE AREA (BLM, 2002; CO DRMS, 2001)
- EXISTING HAUL ROAD DISTURBANCE AREA (CO DRMS, 2003)
- PERMITTED DISTURBANCE AREA (BLM, 2019; CO DRMS, 2019)
- PROPOSED ACTIVITIES WITHIN PERMITTED DISTURBANCE
- PROPOSED ACTIVITIES – NEW DISTURBANCE
- POTENTIAL FUTURE DRILLING
- 200–FT OFFSET FROM PROPOSED EXPANSION AREA
- CLAIM BOUNDARY
- EGL #25 CLAIM NAMES
- SECTIONS (TOWNSHIP 4S RANGE 85W)
- 28 SECTION NUMBERS
- PRIVATE LAND
- BLM LAND

SOIL GROUP LEGEND:

- SOIL GROUP A
- SOIL GROUP B
- SOIL GROUP D

THICKNESS OF REPLACED OVERBURDEN LEGEND:

- OVERBURDEN THICKNESS 75 TO 400 FT
- OVERBURDEN THICKNESS 50 TO 75 FT
- OVERBURDEN THICKNESS 25 TO 50 FT
- OVERBURDEN THICKNESS 0 TO 25 FT
- OVERBURDEN THICKNESS –25 TO 0 FT
- OVERBURDEN THICKNESS–75 TO –25 FT

WATERSHED AND DRAINAGE LEGEND:

- M501 WATERSHED BASIN
- M601 WATERSHED BASIN
- PIT AREAS
- ROAD/STOCKPILE LIMITS
- CULVERT WATERSHED BASIN

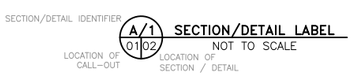
DISTURBANCE AREA LEGEND:

- PIT AREA WITHIN PERMITTED DISTURBANCE
- PIT AREA, NEW DISTURBANCE
- ROAD AREA WITHIN PERMITTED DISTURBANCE
- ROAD AREA, NEW DISTURBANCE
- STOCKPILE AREA WITHIN PERMITTED DISTURBANCE
- STOCKPILE AREA, NEW DISTURBANCE

MATERIAL TYPES LEGEND:

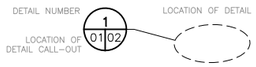
- INTRABURDEN/OVERBURDEN
- STRUCTURAL FILL
- NATIVE GROUND
- RIPRAP
- BEDDING MATERIAL

SYMBOLS & LABELS:



CALLOUT LABEL


CUT/FILL ARROWS



DETAIL CALLOUT

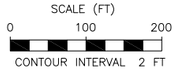
GENERAL LABEL

GENERAL LABEL

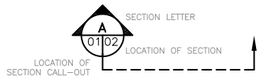
HIGHWAY MARKER

INTERSTATE MARKER

NORTH ARROW



SCALEBAR



SECTION CALLOUT

SLOPE LABEL

DRAWING INDEX

SHEET NUMBER	SHEET TITLE	REV
01	COVER SHEET	2
02	LEGEND	2
03	LAND STATUS AND INFORMATION MAP	2
04	PROPOSED DISTURBANCE AREA MAP	2
05	SOILS AND VEGETATION MAP	2
06	PROPOSED UPPER PIT EXPANSION MAP	2
07	PROPOSED UPPER PIT EXPANSION CROSS–SECTIONS	2
08	PROPOSED EAST PIT MAP	2
09	PROPOSED EAST PIT CROSS–SECTIONS	2
10	PROPOSED CULVERT SECTIONS AND DETAIL	2
11	PROPOSED DISTURBANCE RECLAMATION GRADING MAP	2
12	PROPOSED DISTURBANCE RECLAMATION GRADING CROSS–SECTIONS	2
13	PROPOSED DISTURBANCE RECLAMATION GRADING ISOPACH	2
14	WATERSHED AND DRAINAGE MAP	2
15	MINE OFFICE AND STAGING AREA FACILITIES	2
16	HAUL ROAD PLANNING	2

GENERAL CONSTRUCTION NOTES:

1. ALL CONSTRUCTION SHALL BE COMPLETED ACCORDING TO THE PROJECT SPECIFICATIONS AS WELL AS MINE SAFETY AND HEALTH ADMINISTRATION (MSHA) SPECIFICATIONS, LOCAL AND STATE REGULATIONS AND AMERICAN GYPSUM STANDARDS AND POLICIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING UNDERGROUND UTILITIES PRIOR TO BEGINNING WORK.
3. THE CONTRACTOR SHALL MAKE INDIVIDUAL ASSUMPTIONS REGARDING THE GEOLOGY UNDERLYING THE PROJECT SITE.
4. THE CONTRACTOR SHALL NOT CHANGE OR DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE OWNER AND ENGINEER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS NOT OBTAINED BY THE OWNER OR OWNER'S REPRESENTATIVES, AND PAY ALL FEES AS REQUIRED BY THE CONSTRUCTION COVERED IN THESE PLANS.
6. ALL WORK AND MATERIALS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE OWNER, MSHA REPRESENTATIVES, OR ANY LOCAL OR STATE AGENCY.
7. ALL ESTIMATES OF QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR AND SUBCONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES. CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS AS STATED IN THE SCOPE OF WORK.
8. ALL PERSONNEL SHALL BE REQUIRED TO OBTAIN MSHA 24–HOUR TRAINING AND ALL SITE–SPECIFIC TRAINING PRIOR TO PERFORMING WORK.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR JOB SITE SAFETY OF CONTRACTOR'S OWN PERSONNEL, ALL VISITORS TO THE SITE, AND THE GENERAL PUBLIC.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL EXISTING DISTURBED AREAS, FENCES, WALLS, SHEDS OR OTHER STRUCTURES DAMAGED DURING GRADING ACTIVITIES TO EQUAL OR BETTER CONDITION, AS AGREED UPON BY THE OWNER.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DUST, EROSION, AND SURFACE WATER FLOWS DURING CONSTRUCTION.
12. THE CONTRACTOR SHALL REMOVE ALL DEBRIS RESULTING FROM WORK UNDER THIS CONTRACT TO AN APPROVED DUMP SITE.
13. ALL DIMENSIONS AND ELEVATIONS ARE IN FEET OR INCHES (LOCAL MINE DATUM).
14. ALL STATIONING IS IN FEET, MEASURED HORIZONTALLY.
15. IN CASES WHERE DISCREPANCIES OCCUR BETWEEN SPECIFICATIONS AND DRAWINGS, SPECIFICATIONS WILL GOVERN. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OWNER IN A WRITTEN REQUEST FOR INFORMATION.

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4. COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY (CO DRMS), DEPARTMENT OF NATURAL RESOURCES, 2019A. LETTER TO JON EDEEN. RE: EAGLE–GYPSUM MINE, PERMIT NO. M_1984_041, TECHNICAL REVISION (TR–11) APPROVAL, 09 JANUARY 2019.
5. COMPASSDATA, 2015. "GYPSUM_5FT_CONTOURS_NAD83_COLORADO_CENTRAL_NAVD88.DXF"
6. COMPASSDATA, 2016. "5117_GYPSUM_3FT_CONTOURS.DWG"
7. DATA ACQUISITION DATE: 20 NOVEMBER 2016.
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14. UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT (BLM) COLORADO RIVER VALLEY FIELD OFFICE, 2019. LETTER TO JON EDEEN. RE: COC–072973 (3809–CON040), MINOR PLAN OF OPERATIONS MODIFICATION APPROVED. 06 MAY 2019.

TECHNICAL SPECIFICATIONS:

CLEARING AND GRUBBING NOTES:

1. PERFORM CLEARING AND GRUBBING ONLY IN DESIGNATED AREAS. CLEAR AND GRUB ALL AREAS WHERE PROJECT WORK IS TO TAKE PLACE.
2. CLEAR AND GRUB BORROW AREAS TO THE EXTENT NECESSARY TO PROVIDE FILL MATERIALS FREE OF ALL OBJECTIONABLE MATTER.
3. VEGETATION LOCATED OUTSIDE OF CONSTRUCTION LIMITS SHALL NOT BE DISTURBED.
4. ALL BRUSH VEGETATION, RUBBISH, ORGANIC SOILS, AND OTHER DEBRIS FROM THE CLEARING AND GRUBBING OPERATIONS, INCLUDING ALL DEBRIS REMAINING FROM PREVIOUS CLEARING AND GRUBBING OPERATIONS, SHALL BE DISPOSED OF IN ACCORDANCE TO AMERICAN GYPSUM'S REQUIREMENTS AND IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL LAWS, RULES, AND REGULATIONS.
5. GROWTH MEDIUM SHALL BE STRIPPED FROM FOUNDATION AREAS AND STOCKPILED AS SHOWN ON DRAWINGS FOR FUTURE RECLAMATION ACTIVITIES.

BEDDING MATERIAL NOTES:

1. BEDDING MATERIAL IS DEFINED AS ENGINEERED FILL OBTAINED FROM ON–SITE STOCKPILES, EXCAVATION, BORROW SOURCES, OR OTHER AREAS THAT MEET THE REQUIREMENTS OF THESE SPECIFICATIONS.
2. BEDDING MATERIAL SHALL BE FREE OF ORGANIC MATERIAL AND FREE OF FROZEN MATERIAL, ICE, SNOW, OR EXCESSIVE MOISTURE.
3. BEDDING MATERIAL SHALL BE WELL–GRADED. NO GAP–GRADED MATERIAL, AS DETERMINED BY AMERICAN GYPSUM SHALL BE ALLOWED. THE BEDDING MATERIAL SHALL CONSIST OF MATERIAL CONFORMING TO THE FOLLOWING GRADATION LIMITS:

BEDDING MATERIAL GRADATION		
STANDARD SIEVE SIZE	MIN. PERCENT PASSING	MAX. PERCENT PASSING
#10	100	100
#40	50	90
#200	25	70

4. BEDDING MATERIAL SHALL BE PLACED AND SPREAD IN LIFTS NOT EXCEEDING 12 INCHES IN THICKNESS AFTER COMPACTION.
5. AFTER BEDDING MATERIAL PLACEMENT, SPREADING, AND LEVELING TO THE APPROPRIATE LIFT THICKNESS, ALL MATERIAL SHALL BE UNIFORMLY COMPACTED TO 95.0% OF MAXIMUM DRY DENSITY BY ASTM D698 (STANDARD PROCTOR USING HAND COMPACTION EQUIPMENT).

STRUCTURAL FILL NOTES:

1. STRUCTURAL FILL IS DEFINED AS ENGINEERED FILL MATERIAL OBTAINED FROM ON–SITE STOCKPILES, EXCAVATIONS, BORROW SOURCES, OR OTHER AREAS.
2. STRUCTURAL FILL SHALL BE FREE OF ORGANIC MATERIAL AND FREE OF FROZEN MATERIAL, ICE, SNOW, OR EXCESSIVE MOISTURE.
3. STRUCTURAL FILL SHALL BE WELL–GRADED. NO GAP–GRADED MATERIAL, AS DETERMINED BY AMERICAN GYPSUM, SHALL BE ALLOWED. THE STRUCTURAL FILL SHALL CONSIST OF MATERIAL CONFORMING TO THE FOLLOWING GRADATION LIMITS:

STRUCTURAL FILL GRADATION		
STANDARD SIEVE SIZE	MIN. PERCENT PASSING	MAX. PERCENT PASSING
2–INCH	100	100
#4	30	100
#50	10	60
#200	5	20

4. STRUCTURAL FILL SHALL BE PLACED AND SPREAD IN LIFTS NOT EXCEEDING 12 INCHES IN THICKNESS AFTER COMPACTION.
5. AFTER STRUCTURAL FILL PLACEMENT, SPREADING, AND LEVELING TO THE APPROPRIATE LIFT THICKNESS, ALL MATERIAL SHALL BE UNIFORMLY COMPACTED TO 95.0% OF MAXIMUM DRY DENSITY BY ASTM D698 (STANDARD PROCTOR).

INTRABURDEN/OVERBURDEN NOTES:

1. THESE SPECIFICATIONS PERTAIN TO INTRABURDEN/OVERBURDEN PLACED AND COMPACTED BY THE OWNERS AS ROAD FILL
2. INTRABURDEN/OVERBURDEN IS DEFINED AS NON–ACID GENERATING ROCK OR SOIL OBTAINED FROM THE EXCAVATION OF THE OPEN PIT MINING OPERATIONS, EXCAVATIONS AT THE PROJECT SITE, OR OTHER APPROVED AREAS AS DETERMINED BY THE OWNER.
3. INTRABURDEN SHALL BE FREE OF ORGANIC MATERIAL AND FREE OF FROZEN MATERIAL, ICE, SNOW, OR EXCESSIVE MOISTURE.
4. INTRABURDEN/OVERBURDEN SHALL BE WELL–GRADED. NO GAP–GRADED MATERIAL, AS DETERMINED BY AMERICAN GYPSUM, SHALL BE ALLOWED. MAXIMUM PARTICLE SIZE OF INTRABURDEN/OVERBURDEN USED IN ROAD FILLS IS 12 INCHES.
5. INTRABURDEN/OVERBURDEN SHALL BE PLACED AND SPREAD IN LIFTS NOT EXCEEDING 18 INCHES AFTER COMPACTION.
6. COMPACTION WILL BE ACHIEVED BY CONTROLLED ROUTING OF THE HAULING EQUIPMENT ACROSS THE FILL OR ANY OTHER METHODS APPROVED BY THE ENGINEER. ACCORDINGLY, IT IS NECESSARY THAT THE TRAFFIC ROUTES BE MOVED ACROSS THE FILL TO ACHIEVE UNIFORM COMPACTION AS MUCH AS POSSIBLE.

RIPRAP NOTES:

1. RIPRAP IS DEFINED AS HARD, ANGULAR, DURABLE ROCK PARTICLES OBTAINED FROM ON–SITE STOCKPILES OR OTHER APPROVED MATERIALS.
2. RIPRAP SHALL BE FREE OF ORGANIC, OVERSIZED, DELETERIOUS, OR OTHER UNSUITABLE MATERIALS.
3. RIPRAP MUST BE HARD, DURABLE AND NOT SUBJECT TO GRAIN CRUSHING. INDIVIDUAL ROCK FRAGMENTS SHALL BE DENSE, SOUND, AND RESISTANT TO ABRASION AND SHALL BE FREE FROM CRACKS, SEAMS, AND OTHER DEFECTS THAT WOULD TEND TO INCREASE THEIR DESTRUCTION FROM WATER AND FROST ACTIONS.
4. RIPRAP SHALL BE WELL–GRADED WITHIN THE SPECIFICATION LIMITS WITH A UNIFORM GRADING OF COARSE TO FINE PARTICLES. NO GAP–GRADED MATERIAL, AS DETERMINED BY AMERICAN GYPSUM, SHALL BE ALLOWED.
5. RIPRAP SHALL CONSIST OF CLEAN ROCK MATERIAL WITH A D_{50} OF 6 INCHES.
6. EACH PIECE SHALL HAVE NO DIMENSION GREATER THAN THREE TIMES ITS LEAST DIMENSION.
7. RIPRAP SHALL BE PLACED AND SPREAD IN A SINGLE LIFT.

CULVERT PIPE NOTES:

1. CORRUGATED METAL PIPE (CMP) FOR UPPER PIT ACCESS ROAD SHOULD BE 30–INCH DIAMETER 14–GAGE POLYMER–COATED STEEL.
2. CMP FOR EAST PIT ACCESS ROAD SHOULD BE 24–INCH DIAMETER 16–GAGE POLYMER–COATED STEEL.

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

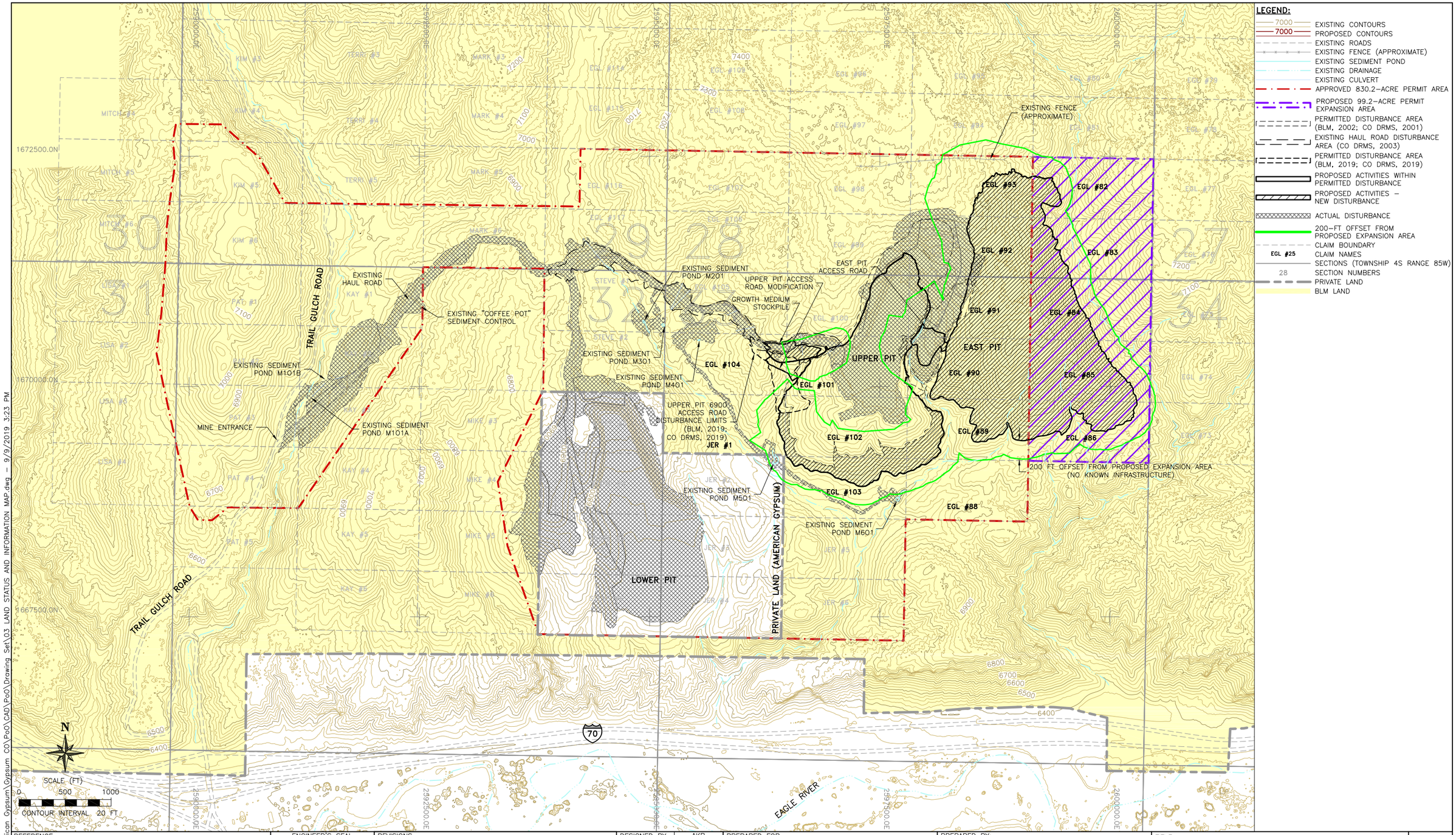
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: LEGEND

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	02
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 02 OF 16



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REFERENCE:
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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

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

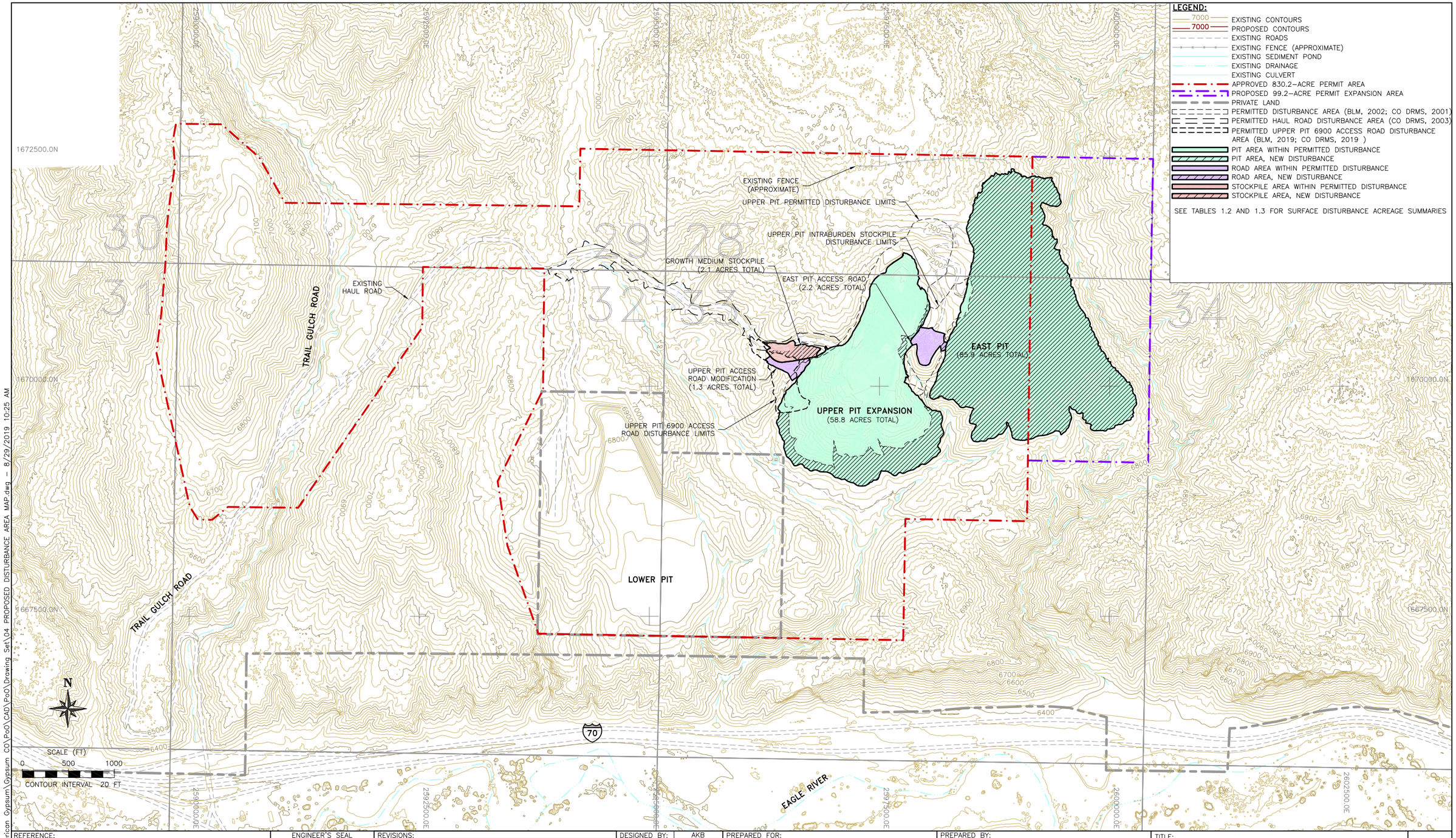
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: LAND STATUS AND INFORMATION MAP

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	03
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 03 OF 16



Adrien Butler – Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\04 PROPOSED DISTURBANCE AREA MAP.dwg – 8/29/2019 10:25 AM

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

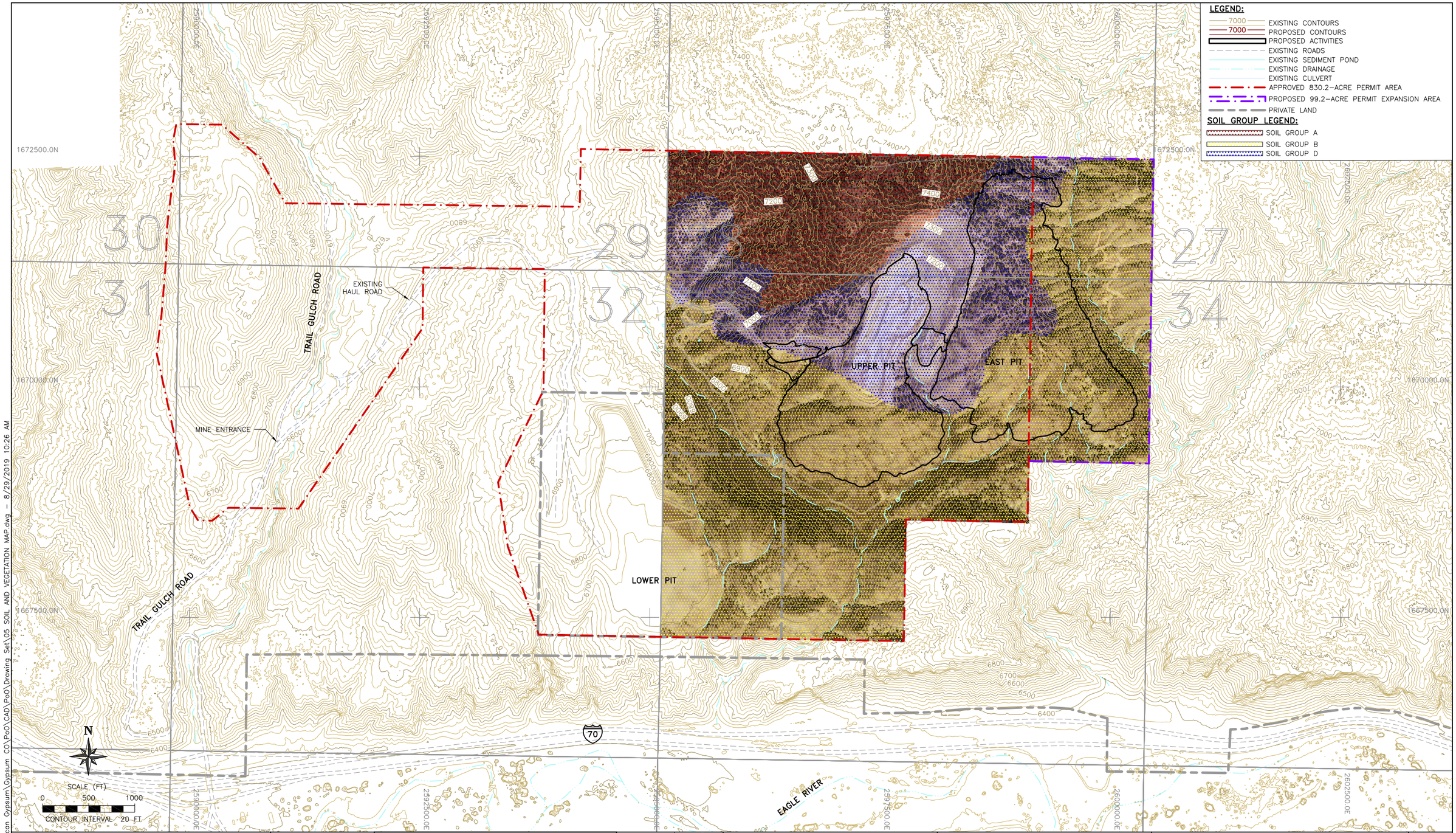
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: PROPOSED DISTURBANCE AREA MAP

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	04
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 04 OF 16



Adrien Butler - Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\05 SOIL AND VEGETATION MAP.dwg - 8/29/2019 10:26 AM

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

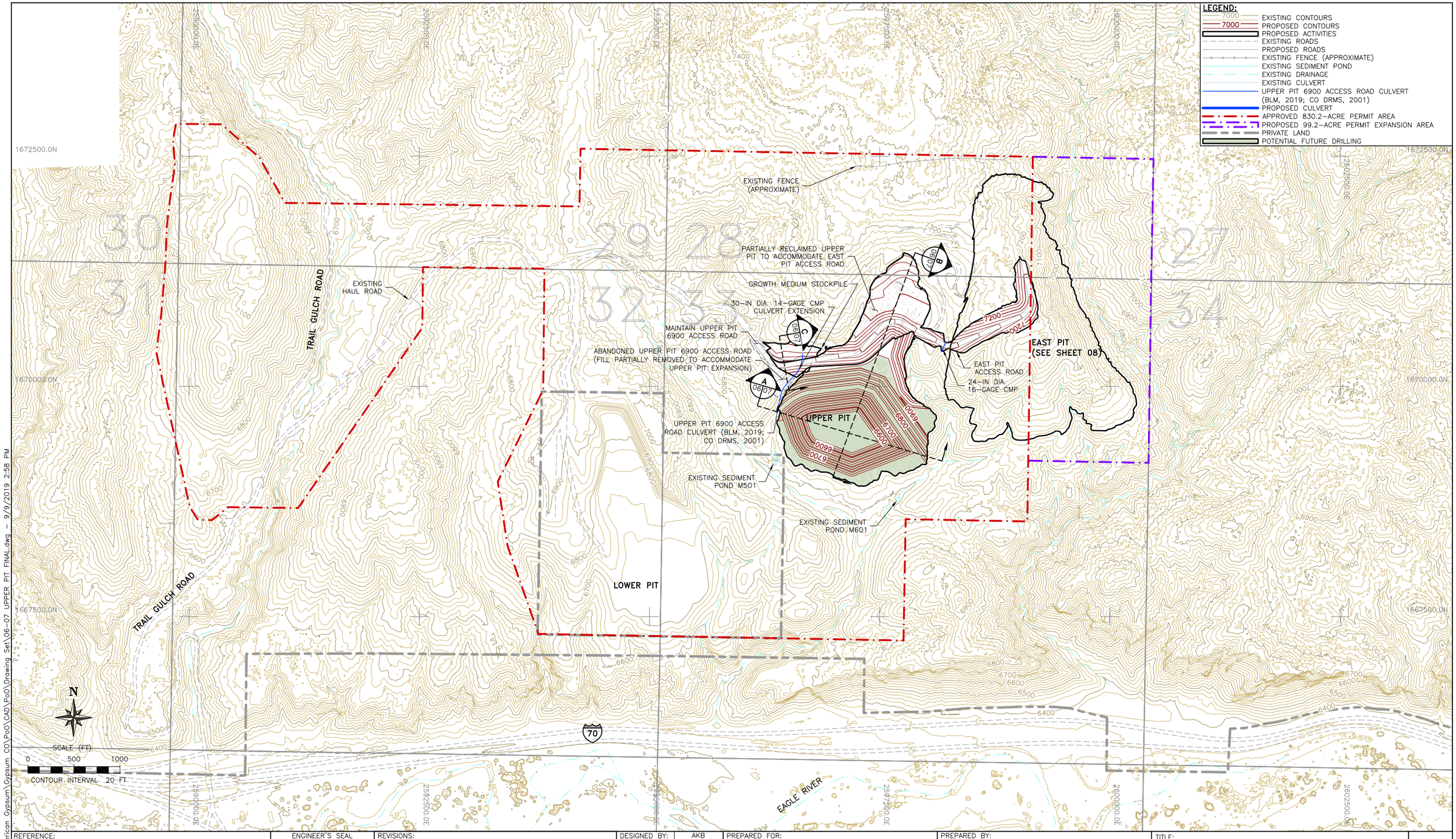
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: SOILS AND VEGETATION MAP

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	05
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 05 OF 16



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

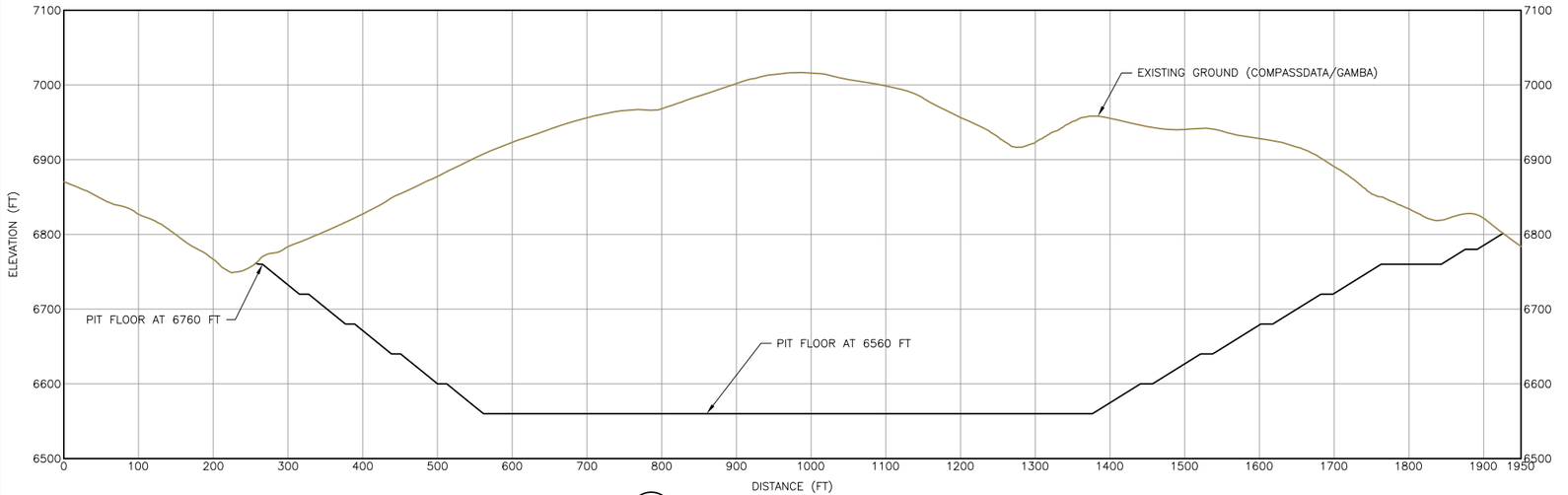
PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: PROPOSED UPPER PIT EXPANSION MAP

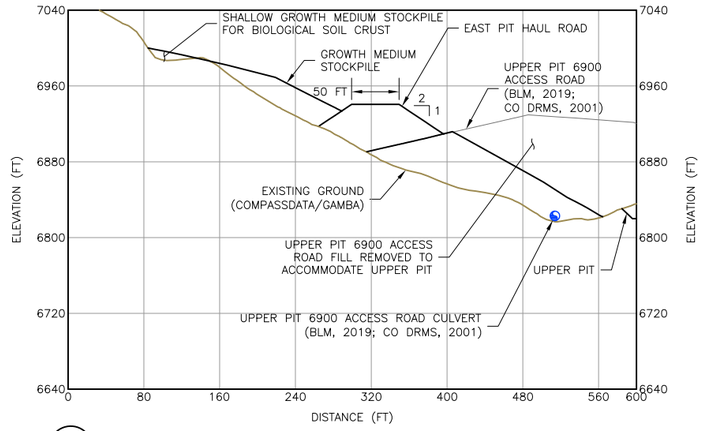
2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	06
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 06 OF 16

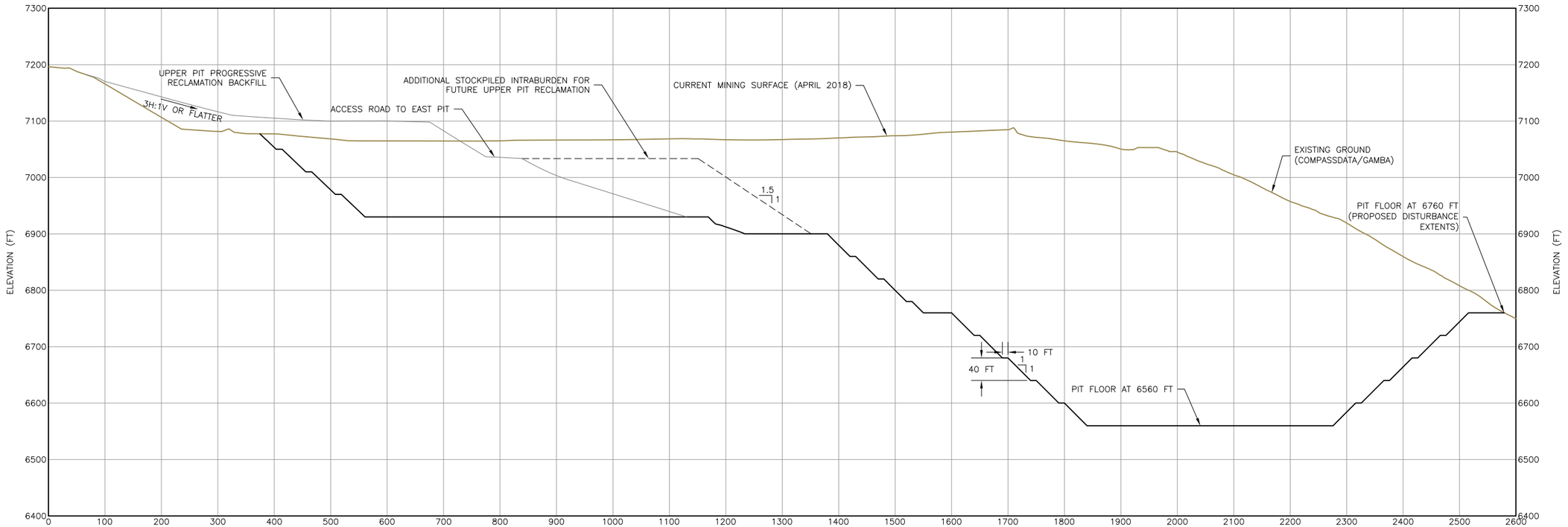
Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\06-07 UPPER PIT FINAL.dwg – 9/9/2019 2:58 PM – Adrien Butler



A 06|07 **UPPER PIT TRANSVERSE SECTION**
SCALE AS SHOWN



C 06|07 **UPPER PIT ACCESS ROAD AND GROWTH MEDIUM STOCKPILE TYPICAL SECTION**
SCALE AS SHOWN



B 06|07 **UPPER PIT LONGITUDINAL SECTION**
SCALE AS SHOWN

Adrien Butler – Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\06-07 UPPER PIT FINAL.dwg – 9/9/2019 3:24 PM

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

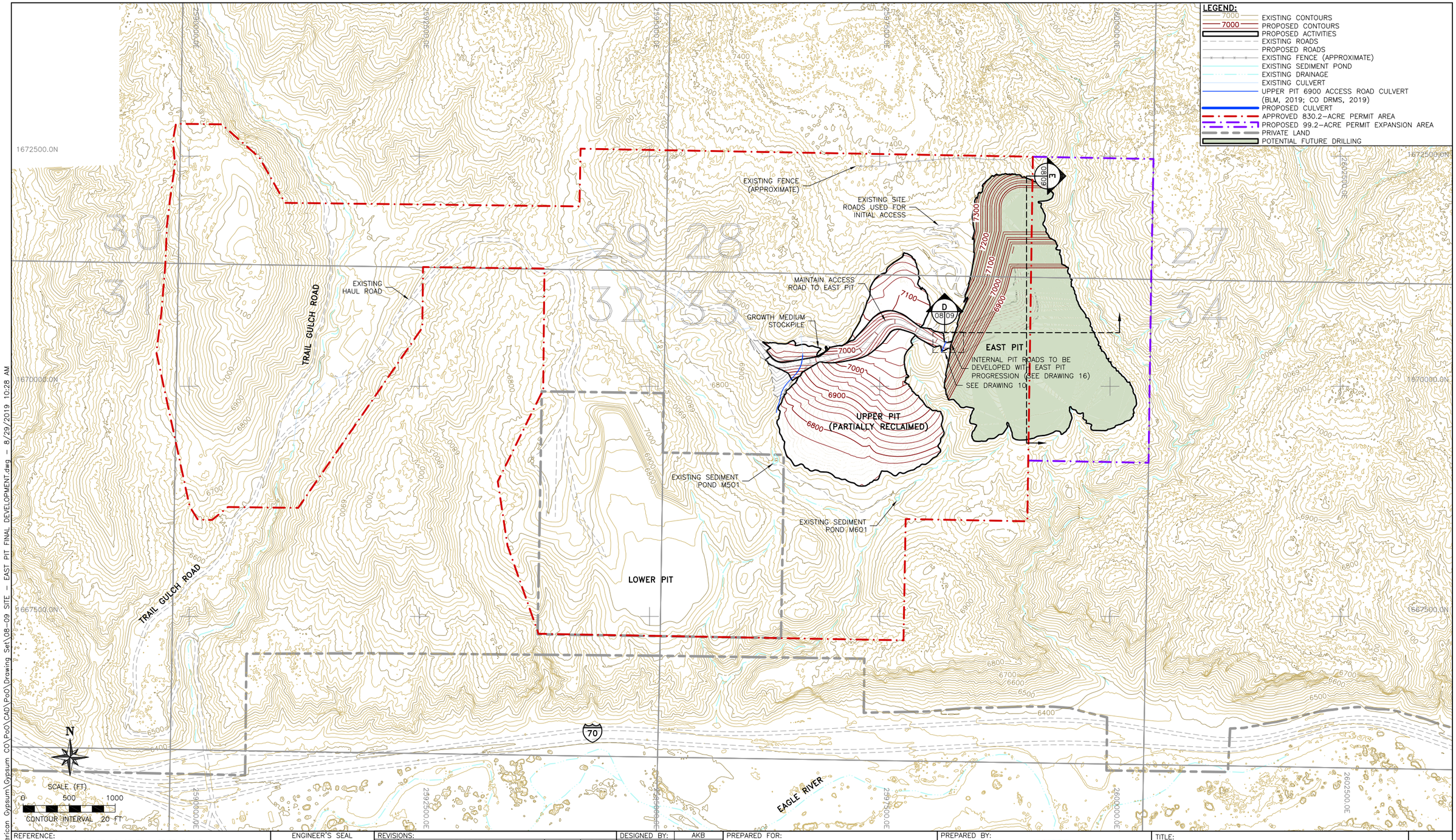
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:
PROPOSED UPPER PIT EXPANSION CROSS-SECTIONS

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	07
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 07 OF 16



Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\08-09 SITE - EAST PIT FINAL DEVELOPMENT.dwg - 8/29/2019 10:28 AM

Adrien Butler

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

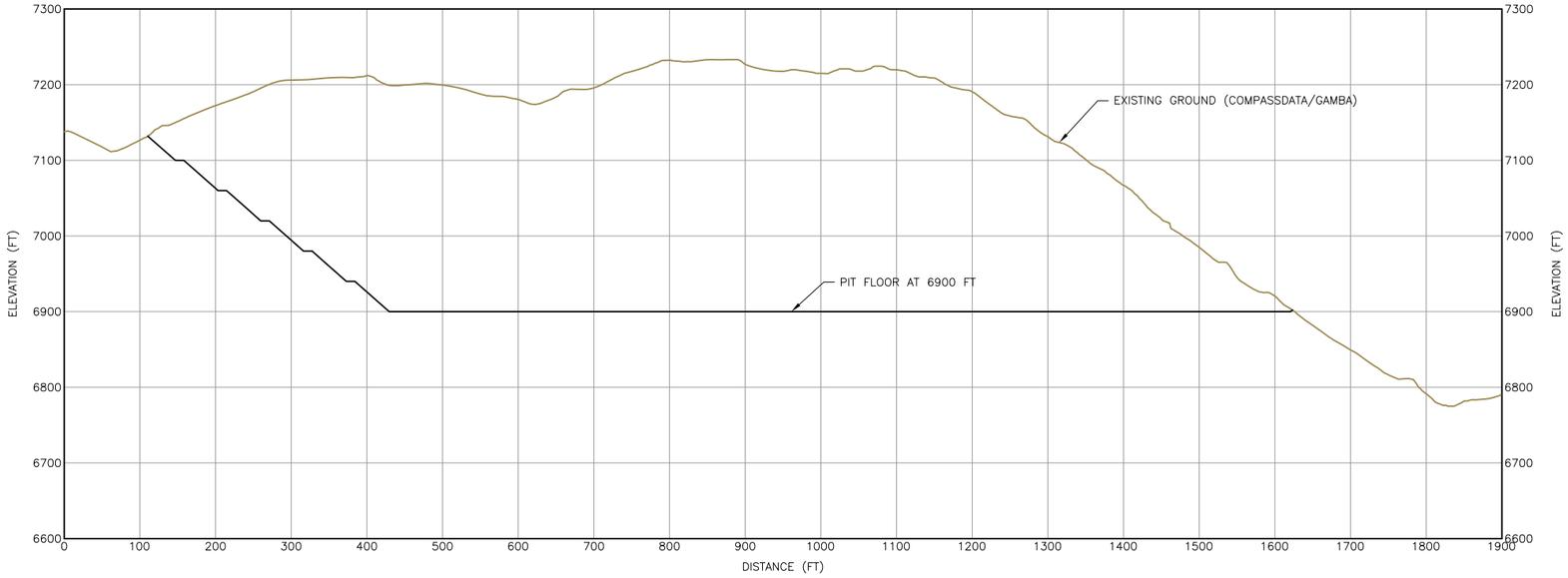
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

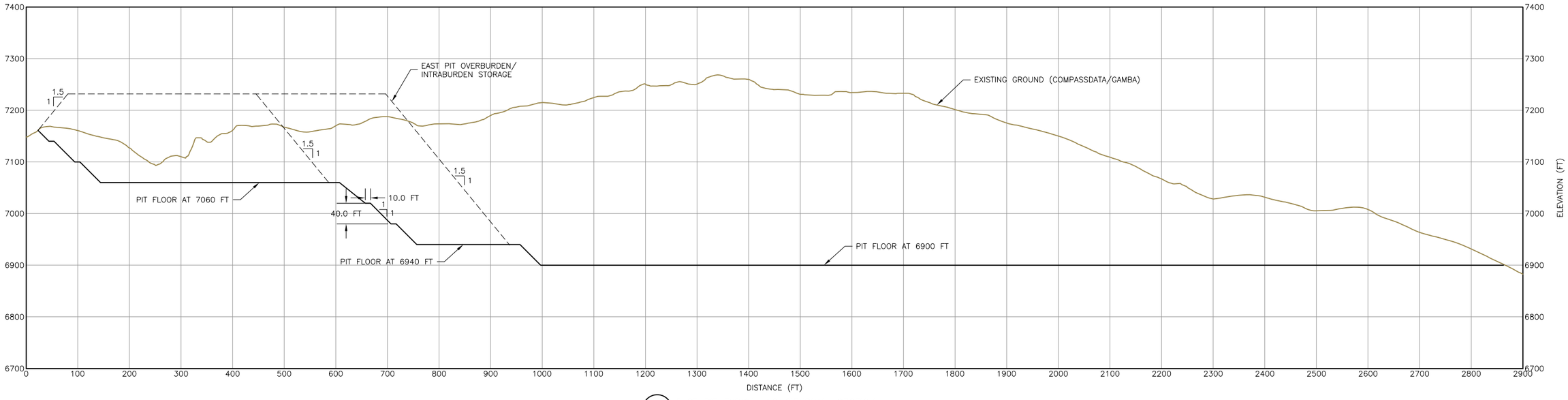
TITLE: PROPOSED EAST PIT MAP

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	08
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 08 OF 16



D 08|09 **EAST PIT TYPICAL TRANSVERSE SECTION**
SCALE AS SHOWN



E 08|09 **EAST PIT TYPICAL LONGITUDINAL SECTION**
SCALE AS SHOWN

Adrien Butler – Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\08-09 SITE – EAST PIT FINAL DEVELOPMENT.dwg – 8/29/2019 10:28 AM

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

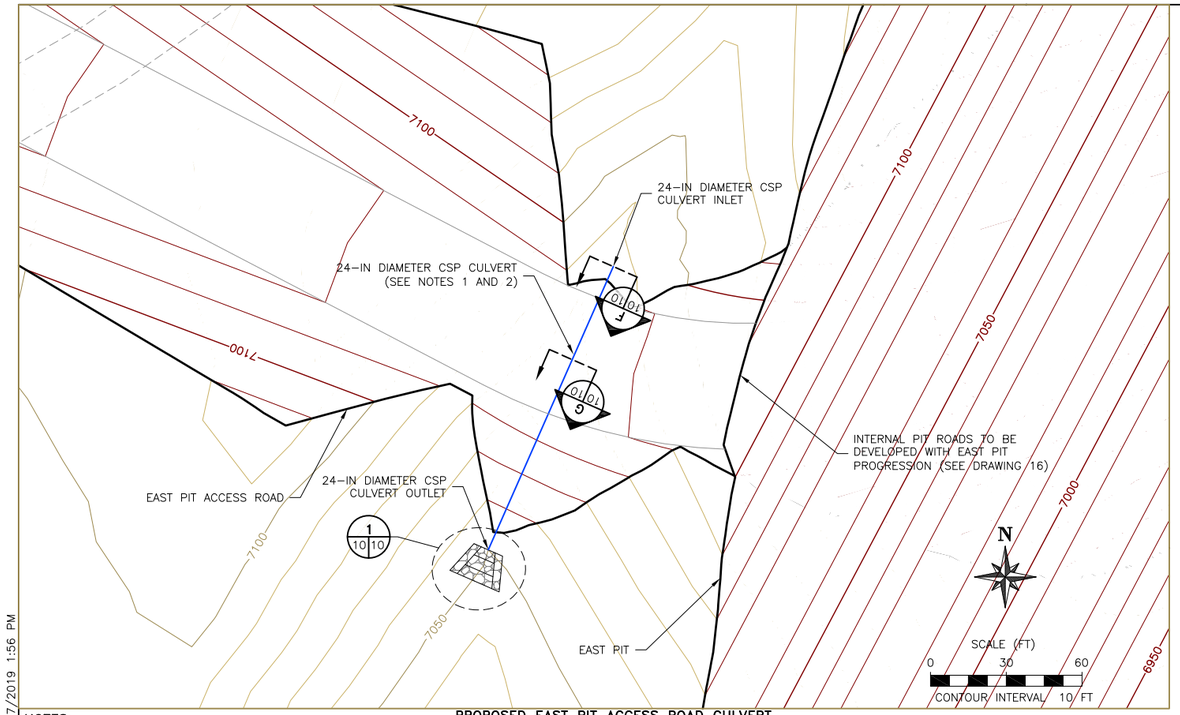
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:
PROPOSED EAST PIT CROSS-SECTIONS

2 REVISION

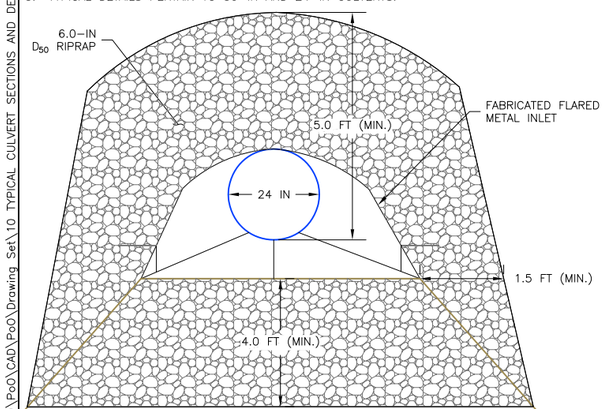
PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	09
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 09 OF 16



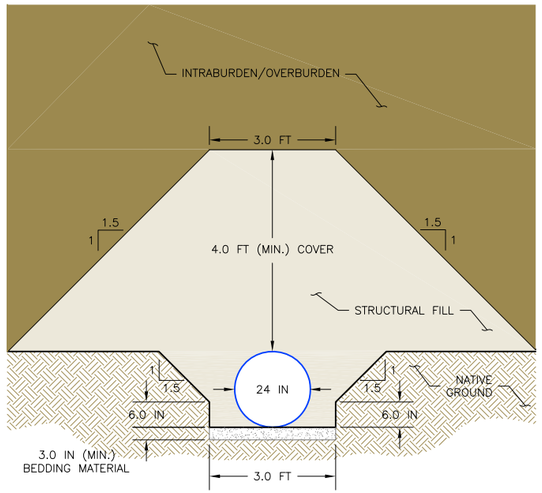
PROPOSED EAST PIT ACCESS ROAD CULVERT

NOTES:

1. CULVERT AT EAST PIT ACCESS ROAD TO BE BURIED, 24-IN DIAMETER, 16-GAGE POLYMER-COATED CSP. CULVERT EXTENSION AT UPPER PIT ACCESS ROAD TO BE BURIED, 30-IN DIAMETER, 14-GAGE POLYMER-COATED CSP.
2. CULVERT ALIGNMENT TO BE MODIFIED DURING CONSTRUCTION TO FIT LOW POINT IN DRAINAGE AND MINIMIZE CUT/FILL, WHILE MAINTAINING 19.0% GRADE. IF NEEDED, USE CONNECTION GASKETS TO ACHIEVE HORIZONTAL BEND.
3. TYPICAL DETAILS PERTAIN TO 30-IN AND 24-IN CULVERTS.



F 10|10 **CULVERT INLET RIPRAP COLLAR SECTION**
NOT TO SCALE



G 10|10 **TYPICAL CULVERT SECTION**
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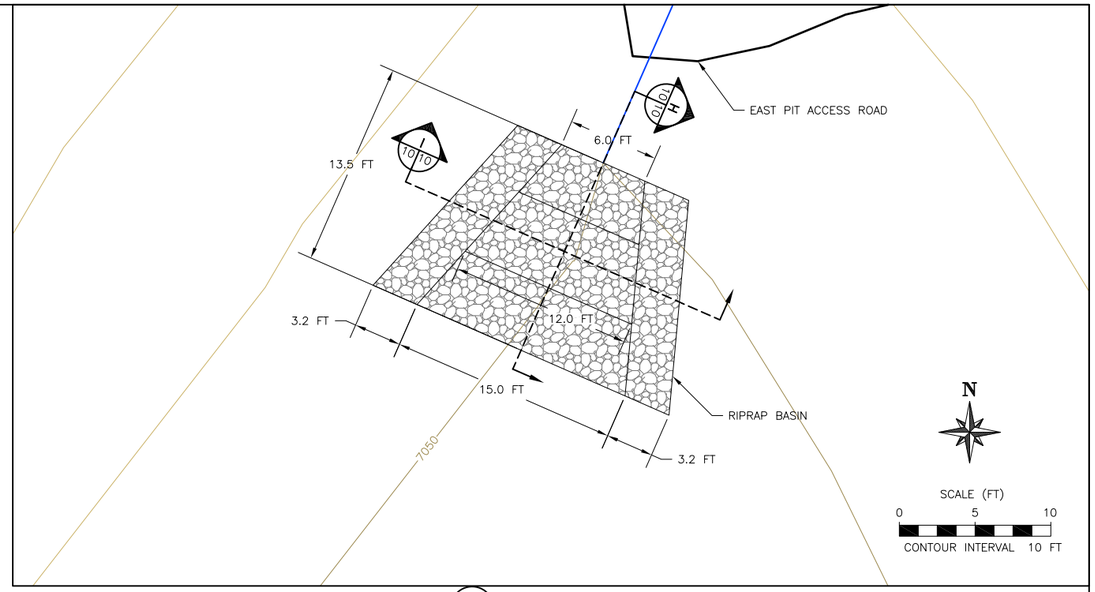
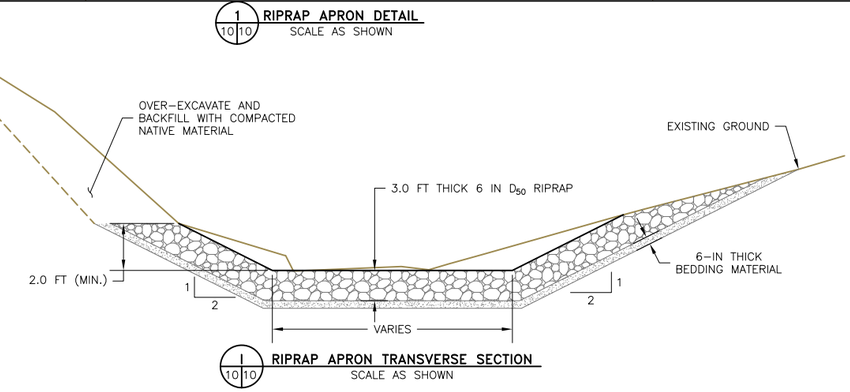
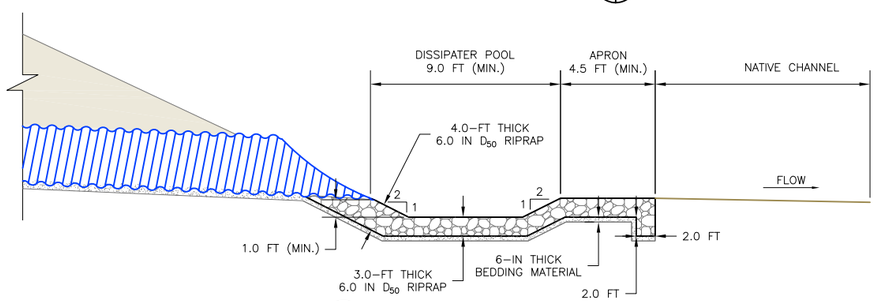


1 10|10 **RIPRAP APRON DETAIL**
SCALE AS SHOWN



I 10|10 **RIPRAP APRON TRANSVERSE SECTION**
SCALE AS SHOWN



H 10|10 **RIPRAP APRON LONGITUDINAL SECTION**
NOT TO SCALE

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

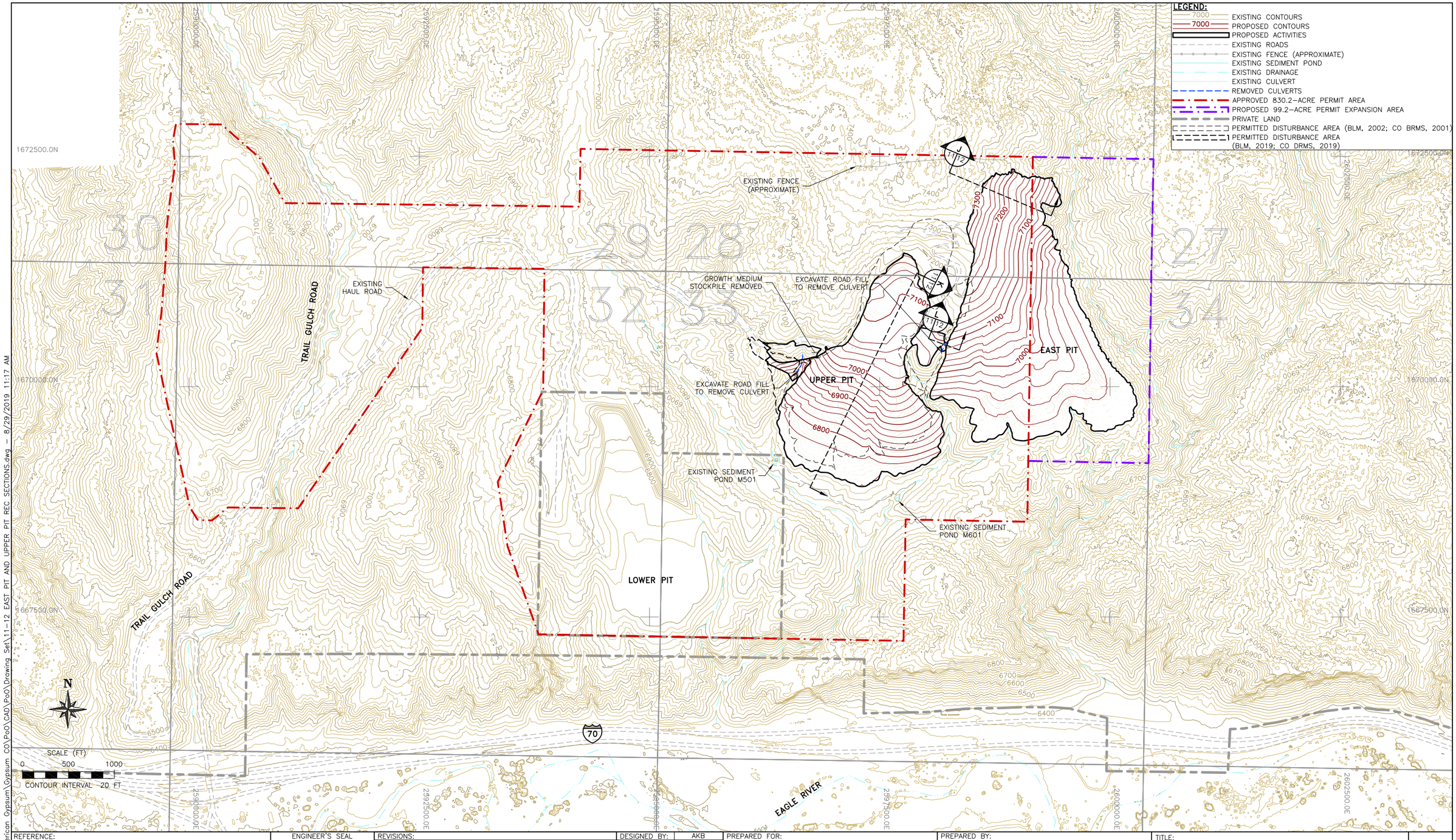
PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE: **PROPOSED CULVERT SECTIONS AND DETAIL**

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	10
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 10 OF 16

Adrien Butler – Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\10 TYPICAL CULVERT SECTIONS AND DETAILS.dwg – 5/17/2019 1:56 PM



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

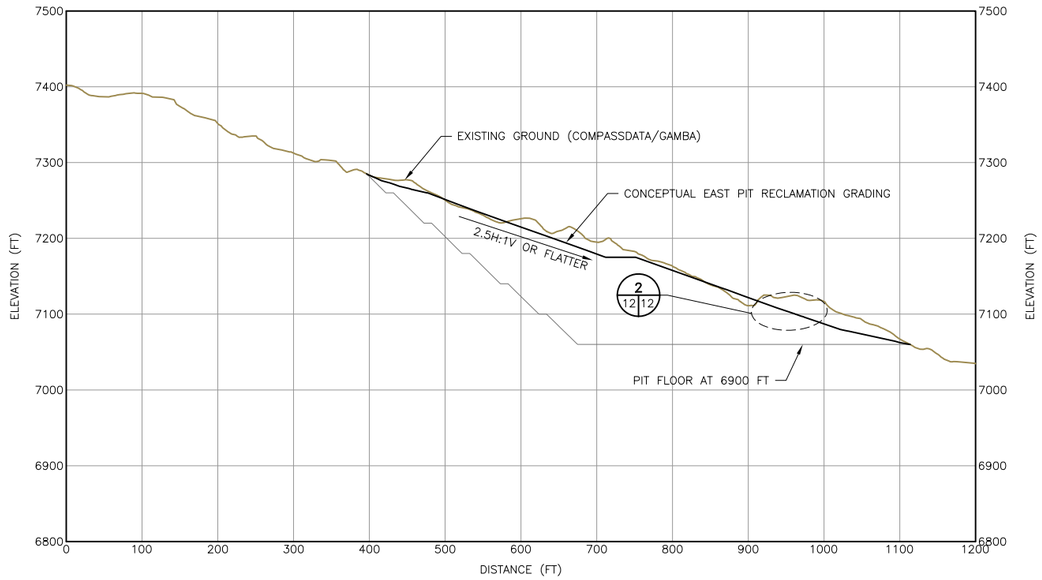
PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:
PROPOSED DISTURBANCE RECLAMATION GRADING MAP

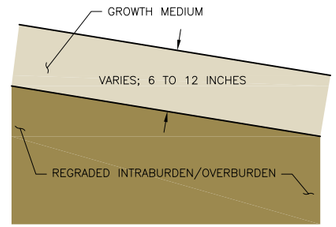
2 REVISION

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

Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\11-12 EAST PIT AND UPPER PIT REC SECTIONS.dwg — 8/29/2019 11:17 AM — Adrien Butler



J 11|12 **PROPOSED EAST PIT RECLAMATION GRADING TYPICAL CROSS-SECTION**
SCALE AS SHOWN



2 12|12 **PROPOSED GROWTH MEDIUM DETAIL**
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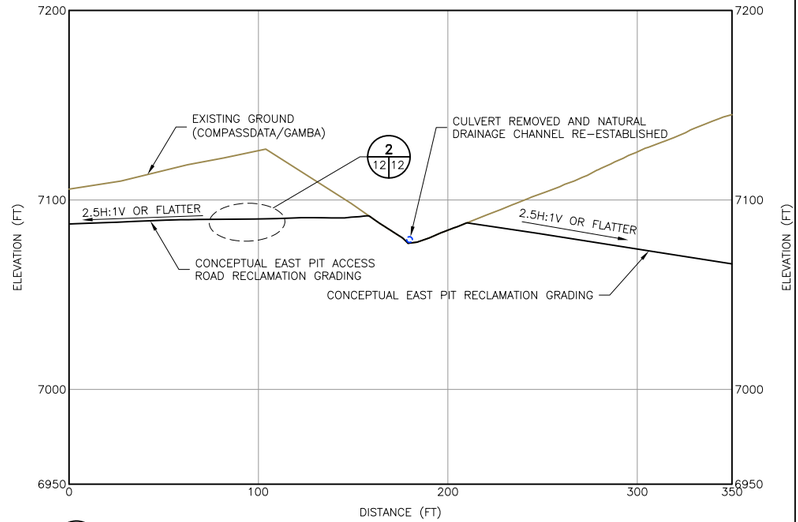
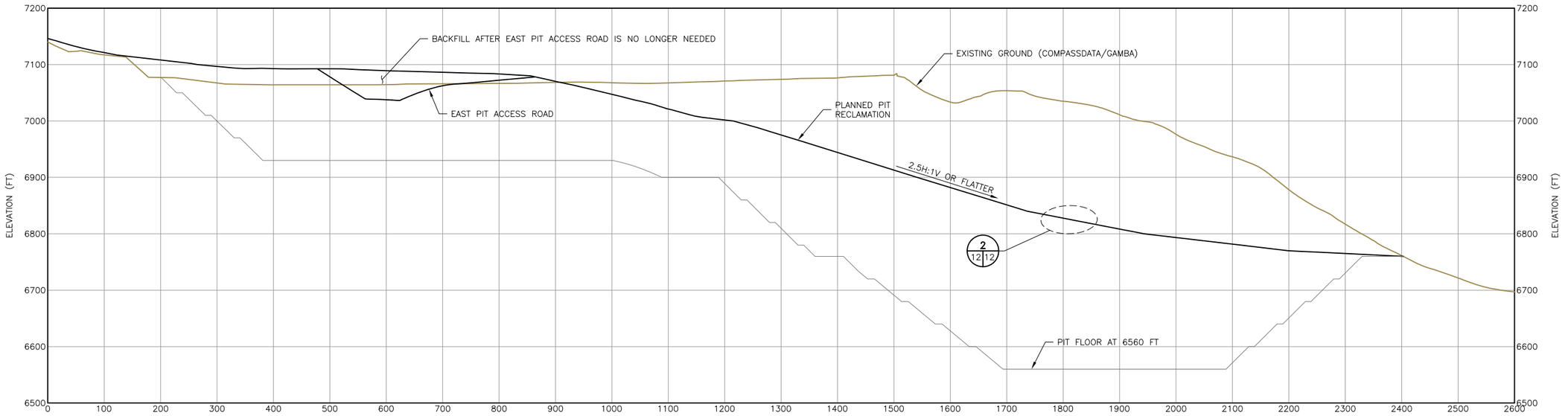


L 11|12 **PROPOSED EAST PIT ACCESS ROAD RECLAMATION GRADING TYPICAL CROSS SECTION**
SCALE AS SHOWN



K 11|12 **PROPOSED UPPER PIT RECLAMATION GRADING TYPICAL CROSS-SECTION**
SCALE AS SHOWN

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

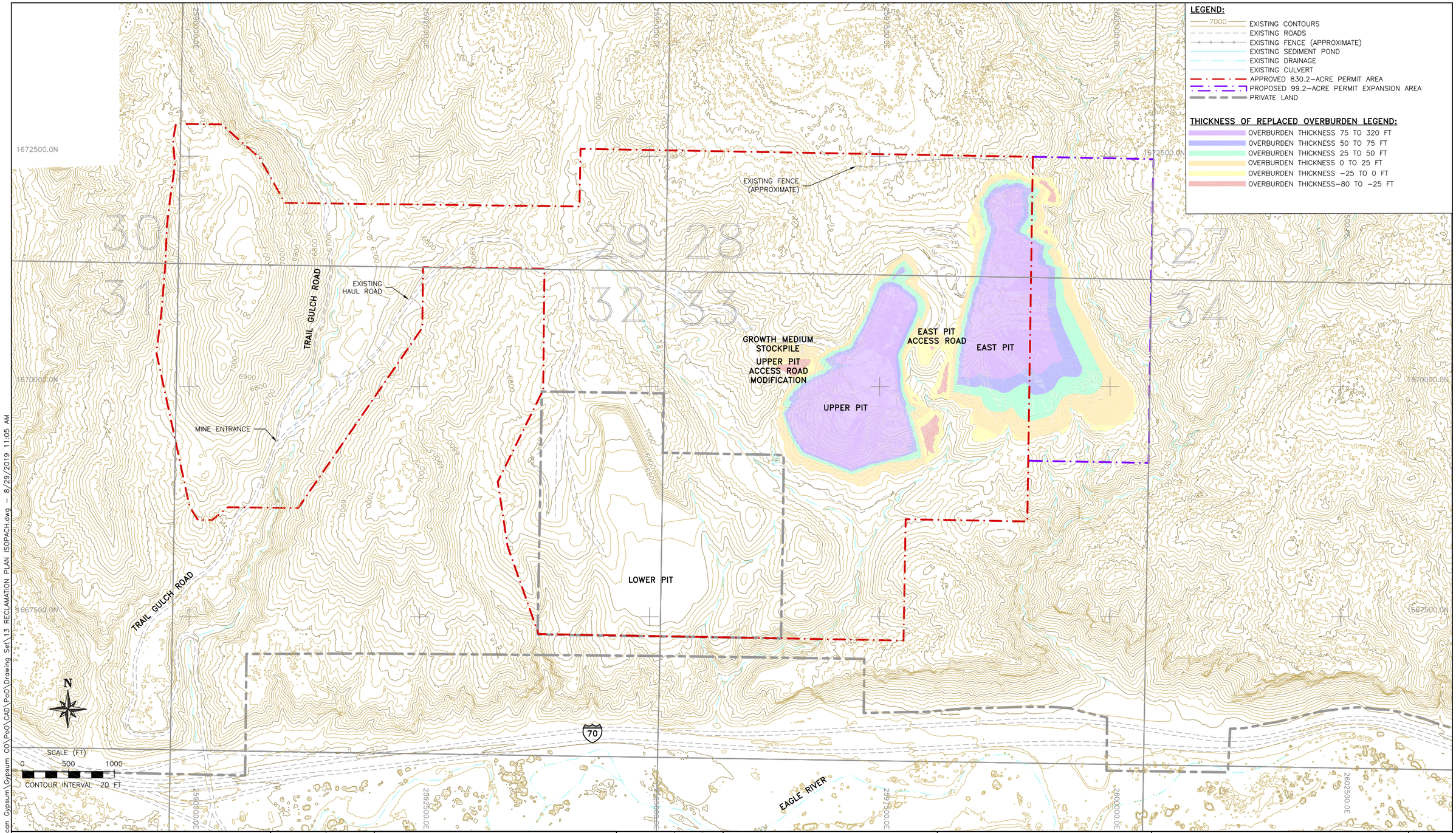
PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:
PROPOSED DISTURBANCE RECLAMATION GRADING CROSS-SECTIONS

2 REVISION

PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	12
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 12 OF 16

Adrien Butler – Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\11-12 EAST PIT AND UPPER PIT REC SECTIONS.dwg – 8/29/2019 11:17 AM



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Adrien Butler

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

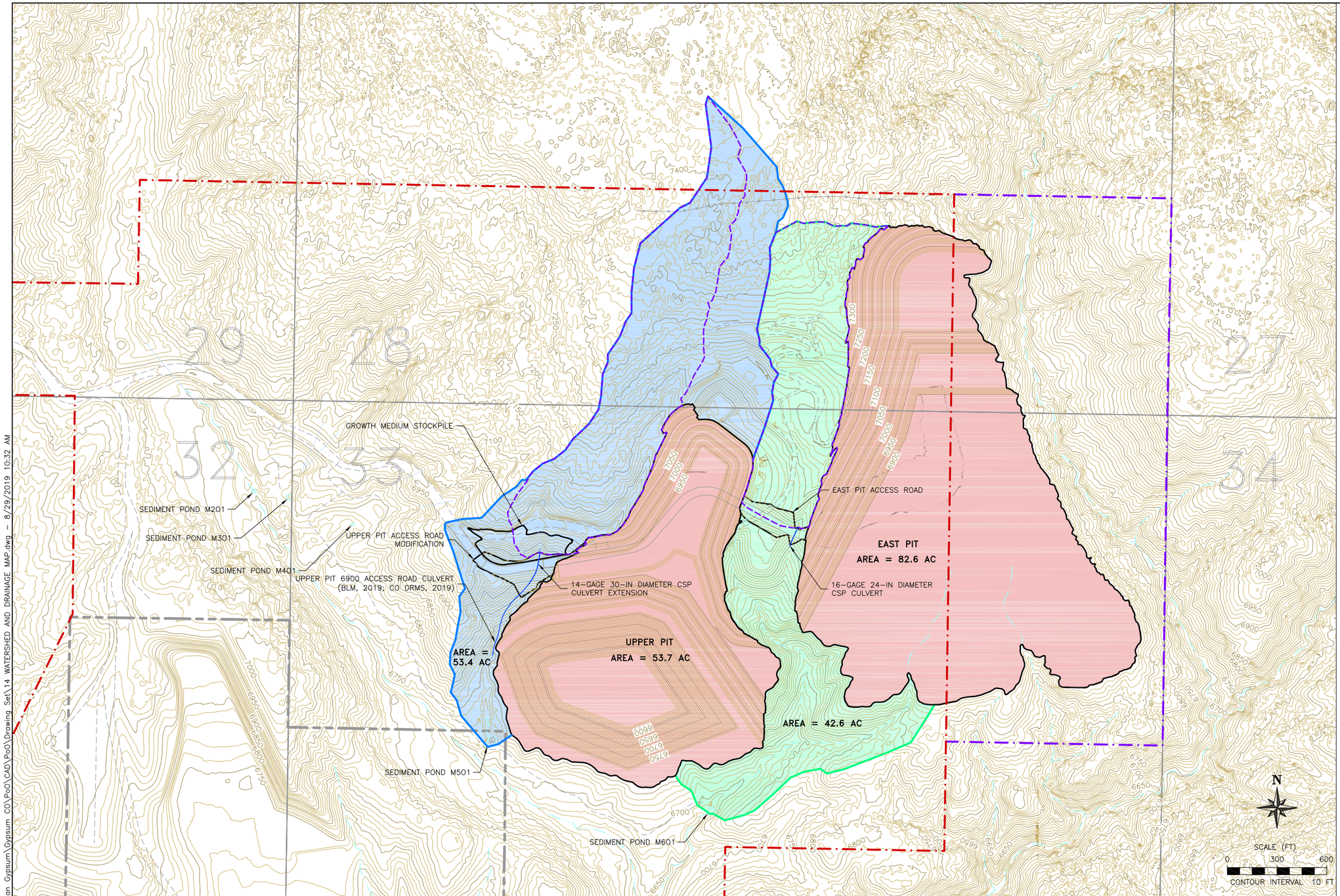
PREPARED FOR: AMERICAN GYPSUM

PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:
PROPOSED DISTURBANCE RECLAMATION GRADING ISOPACH

2 REVISION

PROJECT: PLAN OF OPERATIONS	PROJECT #: 375	DRAWING #: 13
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 13 OF 16



LEGEND:

- 7000 WATERSHED CONTOURS
- PROPOSED ACTIVITIES
- EXISTING ROADS
- PROPOSED ROADS
- EXISTING SEDIMENT POND
- EXISTING DRAINAGE
- EXISTING CULVERT
- UPPER PIT 6900 ACCESS ROAD CULVERT (BLM, 2019; CO DRMS, 2019)
- PROPOSED CULVERT
- APPROVED 830.2-ACRE PERMIT AREA
- PROPOSED 99.2-ACRE EXPANSION AREA
- PRIVATE LAND
- M501 WATERSHED BASIN
- M601 WATERSHED BASIN
- PIT AREAS
- ROAD/STOCKPILE LIMITS
- CULVERT WATERSHED BASIN

Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\14 WATERSHED AND DRAINAGE MAP.dwg - 8/29/2019 10:32 AM - Adrien Butler

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

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REVISIONS:

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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 16

Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\15 MINE OFFICE AND STAGING AREA FACILITIES.dwg – 7/26/2019 10:43 AM – Adrien Butler

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

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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

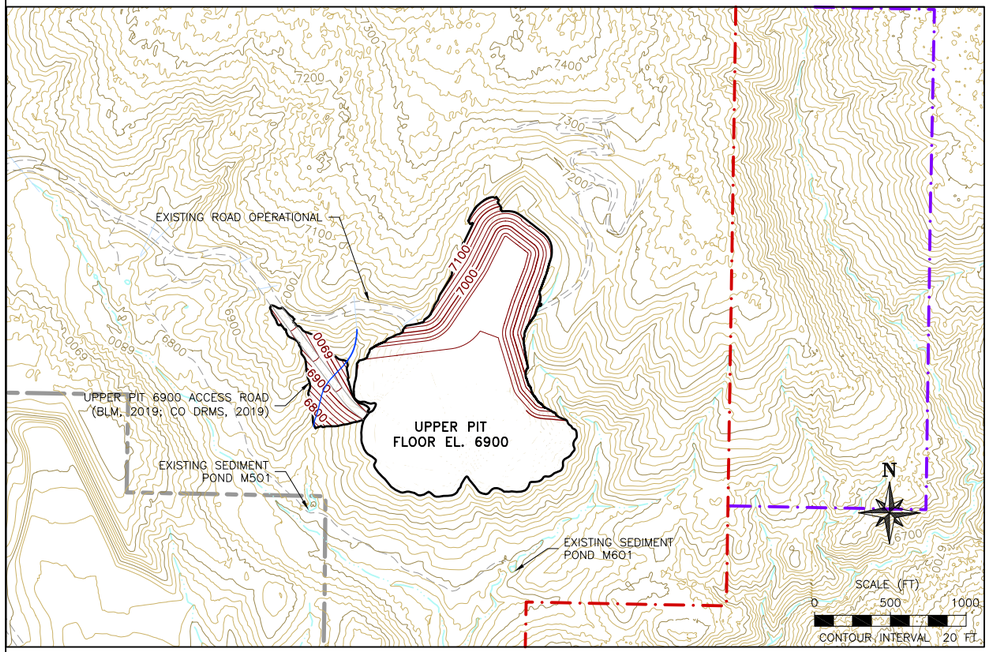
PREPARED BY: TIERRA GROUP INTERNATIONAL, LTD.

TITLE:

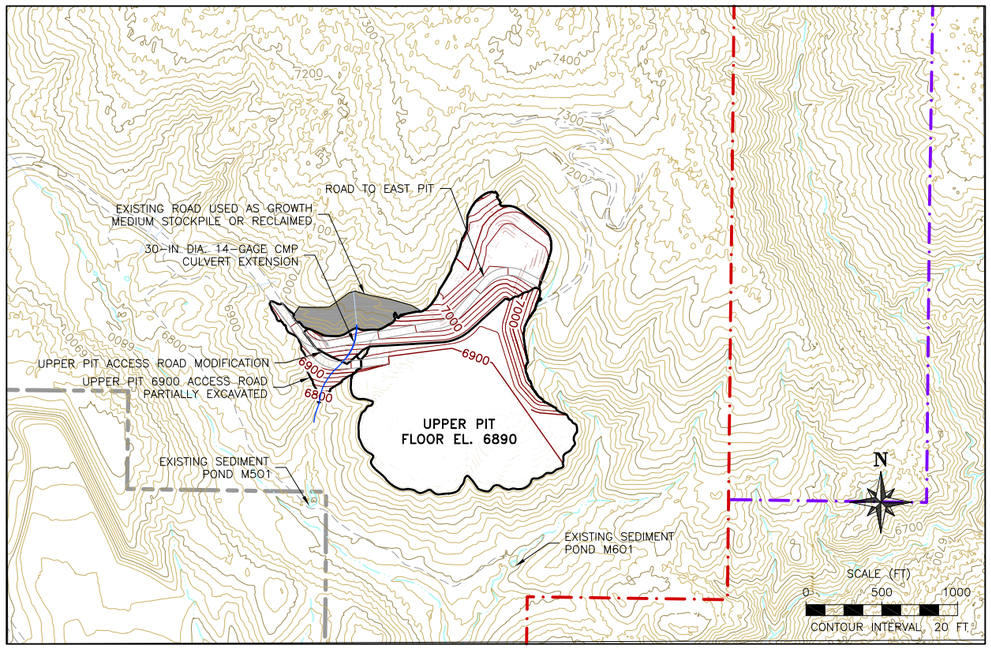
MINE OFFICE AND STAGING AREA FACILITIES

2 REVISION

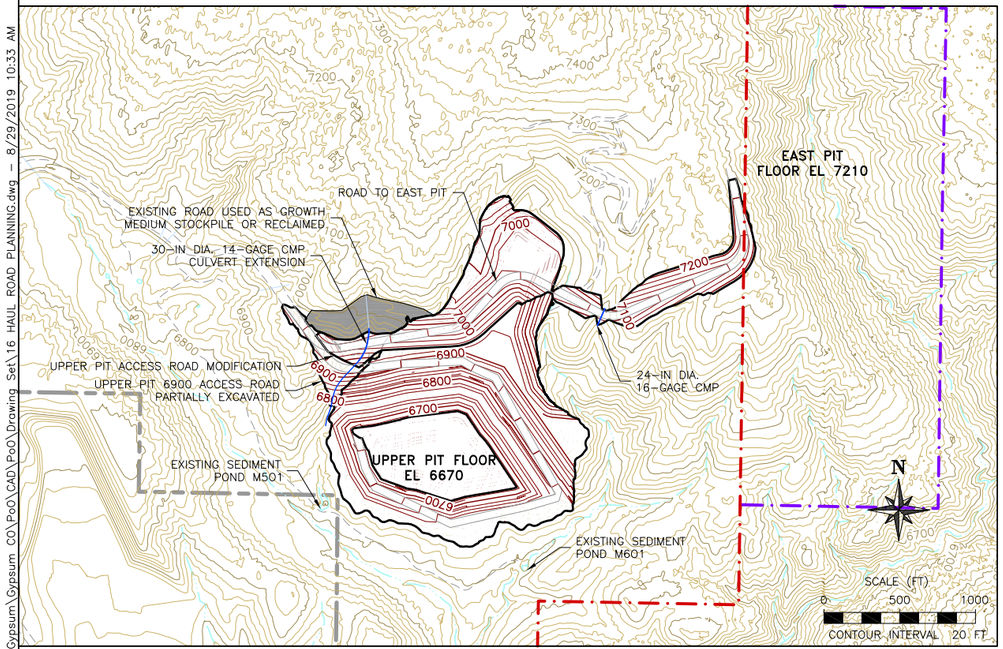
PROJECT:	PROJECT #:	DRAWING #:
PLAN OF OPERATIONS	375	15
LOCATION: GYPSUM, COLORADO	DATE: SEPTEMBER 2019	SHEET: 15 OF 16



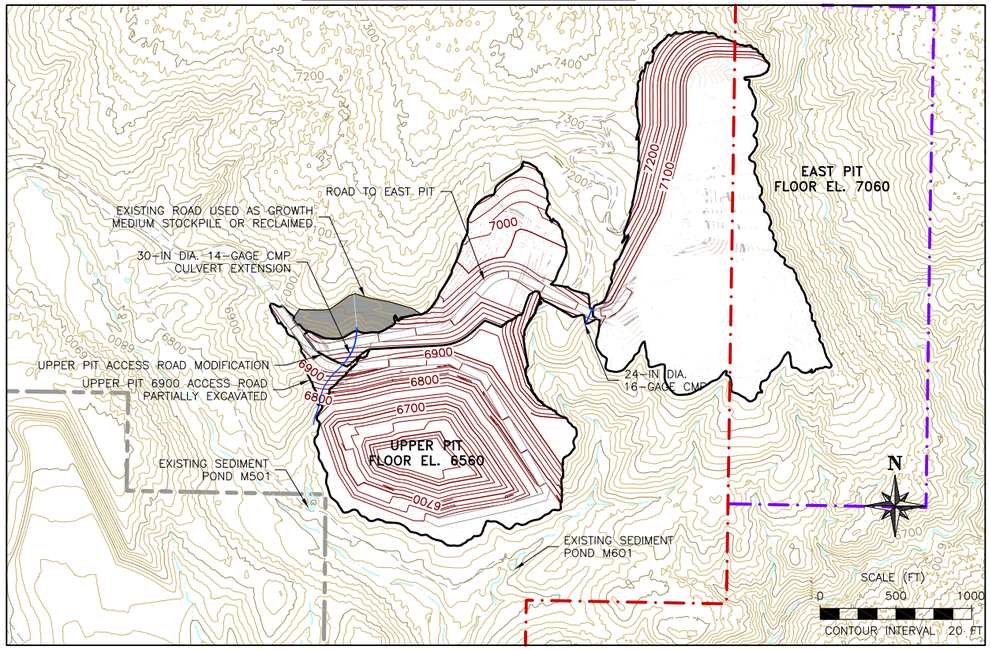
UPPER PIT 6900 ACCESS ROAD COMPLETED



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 99.2-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 16

Z:\American Gypsum\Gypsum CO\PoO\CAD\PoO\Drawing Set\16 HAUL ROAD PLANNING.dwg — 8/29/2019 10:33 AM
Adrien Butler

Attachment 3 - Tabulated Mine Plan Quantities

				Count	1	2	3	4	5	6	7	8	9
				Year	2020	2021	2022	2023	2024	2025	2026	2027	2028
Scenario # - Activity	Material	Cut (-) Fill (+)	Amount	Unit									
0 - Existing Stockpiles													
Stockpile 1	Storage	+	3,000	YD3									
Stockpile 2	Storage	+	10,000	YD3									
1 - Fall 2020 Mining Progress					1 - F20 Mining Progress								
Partial Lower Pit Road	Storage	+	403,000	YD3	403,000								
Upper Pit Floor El. 7046 to 7030	Waste	-	(172,000)	YD3	(172,000)								
Upper Pit Floor El. 7046 to 7030	Gypsum	n/a	0	MT	0.37								
2 - Lower Pit Extent					2 - Lower Pit Extent								
Lower Pit El. 6600	Waste	-	(1,642,000)	YD3	(205,250)	(205,250)	(205,250)	(205,250)	(205,250)	(205,250)	(205,250)	(205,250)	
Lower Pit El. 6600	Gypsum	n/a	4	MT	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	
Lower Pit Road	Storage	+	1,484,000	YD3	185,500	185,500	185,500	185,500	185,500	185,500	185,500	185,500	
Upper Pit 6900 Acess Road	Storage	+	256,000	YD3	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	
Growth Medium Stockpile	Storage	-	(16,000)	YD3	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	
Upper Pit 6900 Acess Road Extension to 7030 Pit	Waste	-	(138,000)	YD3	(17,250)	(17,250)	(17,250)	(17,250)	(17,250)	(17,250)	(17,250)	(17,250)	
East Pit Initial Clear and Grub	Waste	-	(16,000)	YD3	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	(2,000)	
3 - Upper Pit North Extent												3 - Upper Pit North Extent	
Lower Pit West Waste Rock Dump	Storage	+	1,153,000	YD3								128,111	128,111
Lower Pit Road	Storage	+	331,000	YD3								36,778	36,778
Lower Pit East Waste Dump	Storage	+	253,000	YD3								28,111	28,111
Upper Pit Floor El.7030 to 6930	Waste	-	(1,887,000)	YD3								(209,667)	(209,667)
Upper Pit Floor El.7030 to 6930	Gypsum	n/a	4	MT								0.45	0.45
Upper Pit Backfill	Storage	+	99,000	YD3								11,000	11,000
			Annual - Waste	YD3	(396,500)	(224,500)	(224,500)	(224,500)	(224,500)	(224,500)	(224,500)	(434,167)	(209,667)
			Annual - Storage	YD3	618,500	215,500	215,500	215,500	215,500	215,500	215,500	419,500	204,000
			Annual Material Balance To Reclamation	YD3	656,000	647,000	638,000	629,000	620,000	611,000	602,000	587,333	581,667

Key:

Storage = Final Placement

Waste = Cut material to be relocated into storage

Gypsum = taken off site

Attachment 3 (Continued)

Activity	Material	Amount	Unit
1 - Fall 2020 Mining Progress			
Partial Lower Pit Road	Storage	403000	YD3
Upper Pit Floor El. 7046 to 7030	Waste	172000	YD3
Upper Pit Floor El. 7046 to 7030	Gypsum	0.37	MT
2 - Lower Pit Extent			
Lower Pit El. 6600	Waste	1642000	YD3
Lower Pit El. 6600	Gypsum	3.52	MT
Lower Pit Road	Storage	1484000	YD3
Upper Pit 6900 Acess Road	Storage	256000	YD3
Growth Medium Stockpile	Storage	16000	YD3
Upper Pit 6900 Acess Road Extension to 7030 Pit	Waste	138000	YD3
East Pit Initial Clear and Grub	Waste	16000	YD3
3 - Upper Pit North Extent			
Lower Pit West Waste Rock Dump	Storage	1153000	YD3
Lower Pit Road	Storage	331000	YD3
Lower Pit East Waste Dump	Storage	253000	YD3
Upper Pit Floor El.7030 to 6930	Waste	1887000	YD3
Upper Pit Floor El.7030 to 6930	Gypsum	4.05	MT
Upper Pit Backfill	Storage	99000	YD3
4 - Permitted Upper Pit			
East Pit Access Road	Storage	538000	YD3
Upper Pit Floor El. 6930 to 6900	Waste	511000	YD3
Upper Pit Floor El. 6930 to 6900	Gypsum	1.05	MT
5 - Revised Upper Pit Access Road			
Realigned Upper Pit 6900 Acess Road	Waste	97000	YD3
East Pit Access Road	Storage	296000	YD3
Upper Pit Floor El. 6900 to 6890	Waste	170000	YD3
Upper Pit Floor El. 6900 to 6890	Gypsum	198000	MT
6 - Upper Pit Expansion			
Lower Pit Closure El. 6660	Storage	2194000	YD3
Upper Pit North Waste Rock Dump	Storage	665000	YD3
Upper Pit Floor El. 6890 to 6760	Waste	2898000	YD3
Upper Pit Floor El. 6890 to 6760	Gypsum	3.39	MT
7 - Upper Pit Interior Benches			
Lower Pit West Waste Rock Dump Raise	Storage	1415000	YD3
Upper Pit Central Waste Rock Dump	Storage	256000	YD3
Upper Pit Floor El. 6760 to 6560	Waste	1761000	YD3
Upper Pit Floor El. 6760 to 6560	Gypsum	2.06	MT
Upper Pit East Waste Rock Dump	Storage	33000	YD3
8 - East Pit Initial Development			
Upper Pit North Waste Rock Dump El. 7200	Storage	162000	YD3
Upper Pit South Waste Rock Dump El. 6560 to 6675	Storage	1011000	YD3
East Pit Floor El. 7210	Overburden	528000	YD3
East Pit Floor El. 7210	Waste	651000	YD3
East Pit Floor El. 7210	Gypsum	0.54	MT
9 - East Pit North Extension			
Upper Pit South Waste Rock Dump El. 6675 to 6830	Fill	4495000	YD3
East Pit Fill El. 7210 to 7060	Overburden	499000	YD3
East Pit Fill El. 7210 to 7060	Waste	3963000	YD3
East Pit Fill El. 7210 to 7060	Gypsum	4.64	MT
10 - East Pit Central Extent			
Upper Pit South Waste Rock Dump El. 6830 to 6950	Storage	4364000	YD3
East Pit Floor El. 7060 to 6940	Waste	4836000	YD3
East Pit Floor El. 7060 to 6940	Gypsum	5.66	MT
East Pit Waste Rock Dump	Storage	558000	YD3
11 - East Pit South Extent			
Upper Pit South Waste Rock Dump El. 6950 to 7000	Storage	165000	YD3
East Pit Floor El. 6940 to 6900	Waste	1943000	YD3
East Pit Floor El. 6940 to 6900	Gypsum	2.27	MT
East Pit Waste Rock Dump	Storage	275000	YD3
12 - East Pit Reclaimed			
Upper Pit North Waste Rock Dump Excavated for East Pit Reclamation	Waste	303000	YD3
Upper Pit South Waste Rock Dump Excavated for East Pit Reclamation El. 7000 to 6790	Waste	7401000	YD3
East Pit Reclaimed	Storage	163000	YD3
East Pit Reclaimed	Storage	7705000	YD3
13 - Lower Pit and Upper Pits Reclaimed			
Lower Pit West Waste Rock Dump Excavated for Upper Pit Reclamation	Waste	2624000	YD3
Upper Pit Road Reclaimed	Storage	146000	YD3
Upper Pit Road Reclaimed	Storage	17000	YD3
Lower Pit East Waste Rock Dump Excavated for Upper Pit Reclamation	Waste	253000	YD3
Growth Medium Stockpile Reclaimed	Storage	16000	YD3
Upper Pit Reclaimed	Storage	3312000	YD3
Upper Pit Reclaimed	Storage	339000	YD3
East Pit Road Reclaimed	Storage	28000	YD3
East Pit Road Reclaimed	Storage	14000	YD3