Environmental Assessment
for
American Colloid Company
Amendment 11
to
State of Montana Mined Land Reclamation
Alzada South Permit 190
and
Plan of Operations MTM 106199

Prepared By
Bureau of Land Management
Miles City Field Office
and
Montana Department of
Environmental Quality
January 2015

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Acronyms

ACC – American Colloid Company
AMP – Allotment Management Plan
AUM – Animal Unit Months
BG/BSS – Black Greasewood/Big Sagebrush Shrubland
BSS – Big Sagebrush Shrubland
BLM – Bureau of Land Management
BPM – Bentonite Performance Minerals
CFR – Code of Federal Regulations
EA – Environmental Assessment
GPS – Global Positioning System

GSG – Greater Sage Grouse
HRRP – Habitat Recovery and Replacement Plans
MCFO – Miles City Field Office
MDEQ – Montana Department of Environmental Quality
MGP – Mixed Grass Prairie
NEPA – National Environmental Policy Act of 1969 as amended, 42 USC §4321 et seq.
NLEB – Northern Long Eared Bat (*Nyctophilus arnhemensis*)
PFYC – Potential Fossil Yield Classification
P/J – Ponderosa Pine/Rocky Mountain Juniper
PMM – Prime Meridian of Montana
PPH – Preliminary Priority Habitat
PS/LB/Sedge – Prairie Sandreed/Little Bluestem/Sedge
POO – Plan of Operations
RFD – Reasonably Foreseeable Development
RMP – Resource Management Plan
TDS – Total Dissolved Solids
TSS – Total Suspended Solids
USC – United States Code
VRM – Visual Resource Management

ENVIRONMENTAL ASSESSMENT (EA) NUMBER
DOI-BLM-MT-020-2014-0157

PROPOSED ACTION/TITLE TYPE
Plan of Operations (POO) for Amendment Eleven to the Alzada South Area

LOCATION OF PROPOSED ACTION
Township 9 South, Range 58 East, Prime Meridian of Montana (PMM)

Section: 29:	S½S½SW¼SE¼		7.7 Acres
		Subtotal	*7.7 Acres*
Section 32:	SE¼NE¼NW¼		10.0 Acres
	NW¼NE¼		40.0 Acres
	SE¼NW¼		40.0 Acres
	W½SW¼NE¼		20.0 Acres
	NE¼SW¼NE¼		10.0 Acres
	NE¼SW¼		40.0 Acres
	E½E½ Lot 4 in SW¼SW¼		7.0 Acres
	W½ Lot 3 in SE¼SW¼		14.0 Acres
		Subtotal	*181.0 Acres*
Section 33:	NW¼SW¼		40 Acres
		Subtotal	*40.0 Acres*
		TOTAL	**228.7 Acres**

PREPARING OFFICE
Miles City Field Office (MCFO)

APPLICANT
American Colloid Company (ACC)

DATE OF PREPARATION
January 8, 2014

BACKGROUND
ACC has been mining bentonite in the Alzada, Montana area since 1977. ACC has an office located in Belle Fourche, South Dakota. As bentonite reserve areas have been mined out, reclaimed and removed from the permit over the years, additional areas have been added. The purpose of this POO is to add additional reserves to the Alzada South Mining Area. ACC is currently permitted to mine in this area under a State of Montana Opencut Permit number 190. The proposed action is the eleventh amendment to this permit. This amendment includes only Federally owned surface managed by the Bureau of Land Management (BLM) requiring ACC to file a POO pursuant to 43 Code of Federal Regulations (CFR) §3809 et. seq. The BLM received this POO on June 27, 2013.

INCORPORATION BY REFERENENCE

Citation

Environmental Assessment DOI-BLM-MT-C020-2013-34 titled "Environmental Assessment for American Colloid Company Amendment No. 13 to POO MTM 77811 and State of Montana Mined Land Reclamation Permit No. 538 Carter County Montana" is hereby incorporated by reference into this document.

Summary

This document analyzed Amendment 13 to the POO for the Alzada North Area. This document analyzed the effects of bentonite mining by ACC in the same general area as this proposed action. This document defines the decisions to be made for a POO action as well as the various agency roles and responsibilities. This document analyzed effects to resources to include the cumulative effects of mining bentonite and included Alzada South area within the area of Reasonably Foreseeable Development (RFD). Only those site specific resources which are affected as a result of the proposed action and alternatives are analyzed herein.

Previous National Environmental Policy Act (NEPA) (42 United States Code [USC] §4321 et. seq.) Analysis Documents[1]

A. 1976, Environmental Impact Statement, Proposed Open Cut Mining Contract for American Colloid Company, Montana Department of State Lands, 50 p.
B. 1981, Environmental Assessment M-027-81-02P, Amendment One to American Colloid Company's Carter County Bentonite Mine MTM 77811, BLM, Miles City District Office 7 p.
C. 1993, Environmental Assessment MT-020-78-349, Plan of Operations for Amendment Five to Reclamation Contract Number 00297, BLM Powder River Resource Area 13 p.
D. 1997, Environmental Assessment MT-020-78-7-31, Environmental Assessment for American Colloid Company's Amendment Seven to Existing Plan of Operations MTM 77811 for Mining of Bentonite, Carter County, Montana, BLM, Powder River Resource Area, 23 p.
E. 2001, Environmental Assessment MT-020-99-216, American Colloid Company Amendment Nine to Plan of Operations MTM 77811, BLM, Miles City Field Office, 42 p.
F. 2004, Environmental Assessment MT-020-2004-176, American Colloid Company Amendment Ten to Plan of Operations MTM 77811, BLM Miles City Field Office and Montana Department of Environmental Quality, 57 p.
G. 2011, Environmental Assessment DOI-BLM-MT-020-2010-281, American Colloid Company Amendment Twelve to Plan of Operations MTM 77811 and State of Montana Land Reclamation Permit Number 00297, BLM, Miles City Field Office and MDEQ, 111 p.
H. 2013, Environmental Assessment DOI-C020-2013-34, American Colloid Company Amendment Thirteen to Plan of Operations MTM 77811 and Sate of Montana Mined Land Reclamation Permit Number 538, Carter County, Montana, BLM Miles City Field Office and MDEQ, 106 p.

1 Previous NEPA Analysis Documents are Available for Review at the BLM, MCFO

CONFORMANCE WITH APPLICABLE LAND USE PLAN

Land Use Plan Name: Powder River Resource Management Plan (RMP)

Date Approved/Amended: 1985

The proposed action analyzed in this document is within the geographic area covered by the Powder River Resource Area RMP, approved March 15, 1985, and is in conformance with this plan. The Powder River RMP Record of Decision of 1985, states on page 3 "(Locatable Minerals) Mineral exploration and development in the Resource Area will continue to be administered through existing surface and mineral management regulations (43 CFR §3800 and 43 CFR §3809)."

PURPOSE AND NEED

The purpose is to provide the BLM the opportunity to consider approval of ACC's Alzada South POO MTM 106199. The need is to comply with 43 CFR §3809 et seq. and the Powder River Area RMP thereby allowing the BLM to meet its multiple use mandate under the Federal Land Policy and Management Act of 1976 as amended 43 USC § 1701 et seq.

The BLM multiple use management decisions will recognize that mineral development can occur concurrently or sequentially with other resource uses, providing that appropriate stipulations or conditions of approval are incorporated into authorizations to prevent unnecessary or undue degradation, reduce environmental impacts and prevent jeopardy to Federally listed species or their designated critical habitat. Furthermore the BLM works with mine operators such that design features are incorporated within the POO that reduce the potential for unnecessary or undue degradation. The BLM managed lands in the POO project area are open to mineral entry, and mining claims have been filed on them. The mining claimant has the right to mine and develop the mining claims as long as it can be done without causing unnecessary or undue degradation and is in accordance with pertinent laws and regulations.

The purpose for ACC is to provide for a continuation of orderly, efficient and environmentally responsible mining of bentonite. The amendment is needed by ACC to meet customer demand. The various grades of bentonite have different uses requiring careful planning to be done such that the correct grades of bentonite are mined in the proper sequence in order to meet changing market demands.

ALTERNATIVE 1 - PROPOSED ACTION

Amendment Eleven would add 228.7 acres (all BLM managed) to the existing 4,747.6 acre Mined Land Reclamation Permit No. 190 (issued by Montana Department of Environmental Quality [MDEQ]) in Carter County, Montana. Within the existing permit boundary approximately 2.3 acres are BLM administered surface, and the remainder private surface. The project area is located in Carter County, Montana, approximately ten miles west of Alzada and one mile south of the Ridge Road, near the Montana/Wyoming State line. Approximately 132 acres of surface would be disturbed by ACC's proposed mine plan over ten years. Mining schedules and the sequence of the pits to be stripped would depend upon customer needs. Reclamation would occur in conjunction with, and following mining. Reclamation would occur as soon as practicable based upon the mining sequence.

Prior to any construction activity, all trees that meet the criteria set forth in the Northern Long-Eared Bat (NLEB) Interim Conference and Planning Guidance (United States Fish and Wildlife Service, 2014, pp. 2-3) document will be removed within the project area. This removal of trees will occur between October 1 and March 31. The removed trees would be either disposed of via a firewood cutting permit from BLM-MCFO or buried as part of backfilling pits. Trees to be buried would be stockpiled onsite between post removals while active mining was occurring prior to backfilling the given pit. This incorporated design feature will not be required in the event the NLEB is no longer considered a proposed or listed species under the Endangered Species Act 16 USC §1531 et seq.

Mining on Amendment Eleven would consist of surface mining for bentonite clay in the Clay Spur Bed, also known as the "C" bed. Several small pits would be stripped in a cut and fill operation. First, topsoil and subsoil would be salvaged from areas to be affected by stripping to depths recommended in the professional soils survey that was conducted in 2009.

The following equipment would be used during mining activities:

A. D-9N Caterpillars
B. Caterpillar 637 Scrapers
C. Caterpillar 988 Front-end Loaders
D. Caterpillar patrol/blades
E. haul trucks (25-30 ton capacities)
F. water wagons

The mining operation is designed to minimize surface disturbance. The topsoil stripping process would precede pit by pit to reduce the amount of land disturbed at any one time. Topsoil, subsoil as well as overburden/interburden would be handled separately; stockpiles would be situated to minimize environmental impacts. Topsoil and subsoil would be stripped from areas where overburden would be stockpiled, pits would be mined, or road spurs would be built and temporarily stockpiled or live spread (directly hauled onto backfilled and contoured areas that are ready for soil replacement). Temporarily stockpiled topsoil and subsoil material would be placed in areas where it would not be disturbed, contaminated, or lost to erosion, and the piles would be clearly marked with signs reading "Topsoil" and "Subsoil." These salvaged soils and subsoils would be replaced during reclamation. Soil stockpiles would be seeded the first seeding season, spring or fall following stockpiling, to reduce wind and water erosion.

Overburden would be ripped with D-9 Caterpillars and removed with scrapers. Overburden from the first pit in a mine series would be stockpiled. Depending on the design of the mine series in the immediate area, the overburden pile may be temporary or permanent. If the overburden pile would be permanent, it would be designed so that the best available material is placed near the surface and contoured to blend in with the surrounding topography prior to re-spreading topsoil over the area. Overburden thickness in the proposed pit series ranges from approximately two feet to 40 feet. The overburden volumes would range from about 14,000 cubic yards at the smallest pit (number D-1 in the NW¼SW¼, Section 33, T9S, R58E) to about 151,000 cubic yards at the largest pit (number B-1 in the SW¼NE¼, Section 32, T9S, R58E).

Bentonite in the sequences averages about three feet in thickness. The pit series which are identified as "A" through "D" are shown on Figure 1. Refer to Figure 1 for the layout of the proposed pits, soil placement areas, direction of overburden movement, haul road spurs, and proposed total area to be affected. The pit lines on the maps show the location of the bentonite reserve to be mined; however, because the removal of the various grades of bentonite is subject to customer needs, weather conditions, and mining efficiency, mine plan details are subject to revision at the actual time of mining; for instance, the sequence numbering may change, actual pit size may vary, the exact location of the soil piles and overburden piles may vary, etc.

Bentonite would be removed from the pits with scrapers for temporary stockpiling or field drying or would be immediately loaded into haul trucks with front-end loaders and hauled to ACC's processing plants at Colony, Wyoming. Because this would be a continuous backfill operation, reclamation activities would occur concurrently with mining and as soon as practicable after mining. Pits would be backfilled, soils would be replaced, the area would be contoured to blend into surrounding topography, and through drainage would be established as similar as practicable to the pre-mine conditions.

Approximately 132 acres of Federal surface would be disturbed on Amendment Eleven lands over a ten year period. This acreage includes approximately 30 acres to be affected for actual pits, seven and one half acres for haul road spurs as well as 94 acres for associated disturbance.

Haul Roads and Road Spurs
Access to Amendment Eleven is by two track trails north of and west of the project and a Bentonite Performance Mineral's (BPM) haul road in the east half of Section 33. With the agreement of BPM, ACC would build a haul road across BPM's Opencut Mining Permit number 717 in Sections 29 and 33 for hauling bentonite from Amendment Eleven. BPM would bond for the road as they plan to use it in the future when mining in the NW¼, Section 33.

ACC's method of road construction is as follows: based on the recommended salvage depths, soil is stripped and placed in temporary stockpiles; the road top is bladed to a forty foot width with ten foot wide ditch bottoms having three to one slopes to contain water run off along the roadway. Culverts are placed as necessary to allow flow to continue in its natural drainage.

Roads are constructed from existing materials at the site. No off site material is brought in for roads unless shale is available for road surfacing. Roads are located, constructed, and maintained in a manner that minimizes and controls erosion.

Newly constructed roads would be reclaimed unless the surface owner requests (on non-BLM-administered surface) that the roads be reduced to ranch roads (less than twenty feet wide) at the time of final reclamation. All newly constructed roads on BLM-administered surface would be reclaimed. Formal landowner requests would be documented during the bond release process with MDEQ. Additional access to the mine sites would be on temporary road spurs built across proposed pits and backfilled pits.

Water Management and Protection
ACC holds a stormwater permit from the State of Montana that requires best management practices to control the amount of sediment leaving a mine site. Controlling water run on would reduce run off from disturbed areas, thereby reducing sediment loading onto undisturbed lands.

Surface water would be temporarily diverted around active mining areas so there are minimal effects to watersheds. Surface flow would be diverted around the up slope of open pits with v-ditches and/or berms constructed with a patrol/blade. Flow would be channeled in the original direction so as not to affect the volume of water in the area.

If excessive erosion occurs within a diversion, sediment traps, rows of straw bales, waddles, sediment fences, and/or water bars can be installed to reduce erosion and protect undisturbed land from sediment deposition. Reclamation operations would include removal of temporary diversions and re-establishment of through drainage.

Sediment traps would be used where there is potential for sediment run off from active mining areas. Whenever possible, sediment traps would be placed at logical low points around the disturbed perimeter where water would be expected to exit. These sediment traps would typically be about twelve feet wide and twenty feet long and approximately two to three feet deep. Overburden stockpiles and soil stockpiles would not be placed in drainages.

Channel reconstruction would generally consist of flat, scraper width (twelve foot) bottoms (unless the watershed requires wider) which would meander as much as practical. The goal would be to approximate the pre-mine typical channel cross-section while minimizing potential for erosion. The channels would be seeded perpendicular to water flow, and Tall wheatgrass may be added to the standard seed mix in these areas to aid in erosion control.

Dust Management

Dust should not be a problem during site preparation, stripping, or mining and reclamation activities. ACC uses water trucks to spray water on haul roads to reduce dust emissions during hauling activities. The nearest occupied ranch buildings are located approximately 3.5 miles (in Wyoming) to 4.5 miles (in Montana) from proposed mining on Amendment Eleven. There are no sensitive areas such as livestock corrals, unique wildlife habitat, or cropland within 1,000 feet of the Amendment.

Waste Disposal

If any solid waste is generated during mining operations, it would be disposed of at ACC's permitted landfill on a bi-weekly basis. The landfill is located at the Colony West Plant in the SE¼SE¼NW¼ and the NE¼NE¼SW¼, Section 3, T56N, R61W, Crook County, Wyoming. All waste oil generated from equipment would be recycled and disposed of. No other waste would be generated by ACC's proposed mining operation.

Backfilling and Grading

Rubber-tired Caterpillar 637 Scrapers would backfill the open pits in a "tier" system. This consists of placing overburden from the first pit onto the overburden stockpile area, with the poorer quality overburden (the overburden closest to the bentonite) on the top of the pile. Then, the bentonite from the first pit would be removed.

The overburden swells sufficiently due to the breaking up of the platy shale to compensate for the bentonite removed. When the final contour configuration is approached, the tiers would be filled and blended to surrounding topography with a patrol and or blade. Reclaimed land would be graded to blend in with the surrounding topography and drainage ways and would be structurally stable. Most slopes would be no steeper than five to one which would provide stabilization against wind and water erosion.

Post-mine contours on the project would approximate the original contours except where shown on Figure 1 and would be suitable for post mine land use. Permanent overburden placement is proposed in two areas where it would be blended into hillsides and low areas.

Stockponds may be constructed as final reclamation features if determined to be beneficial for the post mine land uses for livestock and wildlife. One pond is currently proposed as a final reclamation feature, to be located at proposed Pit B-8 in the NE¼SW¼, Section 32. Per Montana Department of Natural Resources and Conservation rules, an Application for Provisional Permit for Completed Stockwater Pit or Reservoir would be filed at the appropriate time for any pond(s) constructed on Amendment Eleven.

Because this would be a continuous backfill operation, backfilling, contouring, and topographic reconstruction would commence during mining and directly behind mining.

Ripping, Soil Material Replacement, and Revegetation
Prior to reapplying topsoil, compacted areas (such as "run-on disturbance" areas) would be ripped with shanks attached to a D-9 Caterpillar. Ripping would be from ten to twelve inches deep and done in two passes at right angles. This procedure has been used for several years and has proven to be effective as exemplified in the reclamation success on Permit 190 lands.

Subsoil and topsoil would be reapplied from the soil stockpile areas. Soils would be replaced at the depths recommended in the pre-mine soils survey. The sites would then be bladed in preparation for seeding. This would be followed by either ripping with a motor patrol or immediately seeding with ACC's approved seed mix. When possible, topsoil and subsoil would be directly live spread.

Successful revegetation would result in vegetation which is perennial and self-sustaining without use of mulching, fertilizers, or irrigation. No soil amendments would be incorporated. Seeding would be done with a modified chisel plow/range seeder. This method provides a non-compacted, moderately rough seedbed which helps reduce erosion by wind and water and creates furrows which collect moisture. Seeding operations would be done along the contour or perpendicular to the prevailing winds whenever possible.

Generally, seeding would take place between October 1, and May 1. While late fall is the preferred planting season, weather conditions and the number of acres scheduled for seeding would largely dictate the actual time of seeding in any given year, which does not allow for a strict commitment to specific dates.

Reclamation seeding would be to rangeland for livestock grazing, the primary pre-mine land use, as well as wildlife habitat. The following seed mix was developed through consultation with ACC, BLM, MDEQ, Montana Fish Wildlife and Parks, and United States Fish and Wildlife Service in 2013 for the Amendment thirteen to Permit 538 Habitat Recovery and Replacement Plan (HRRP) (dated January 2013) and would be used for Amendment Eleven to Permit 190.

Table 1 Federal Surface Seed Mix for Amendment Eleven to Permit 190

Grasses:
The seed mix shall include at least three grasses with the following combination:
one bunch grass, one rhizomatous grass, and one warm season grass.

Grass Type	**Grasses and Sedges 70-75 Percent**	**percent range**	**scientific name**	**variety**
BG +	Little bluestem	0-10	*Schizachyrium scoparium*	badlands
RZ ^	Western wheatgrass/Thickspike wheatgrass*	20-30	*Pascopyrum smithii/Elymus lanceolatus*	Rosana/Critana
BG ^	Slender wheatgrass	7-12	*Elymus trachycaulus*	unspecified
BG ^	Green needlegrass[1]	7-12	*Nassella viridula*	Lodorm
RZ +	Sideoats grama	1-5	*Bouteloua curtipendula*	Pierre
RZ ^	Montana wheatgrass[1]	0-5	*Elymus albicans*	unspecified
BG^	Threadleaf sedge[1]	1-5	*Carex filifolia*	unspecified
BG ^	Needleleaf sedge[1]	0-5	*Carex duriuscula*	unspecified
BG +	Blue grama[1]	1-5	*Bouteloua gracilis*	Bad River
BG ^	Prairie junegrass[1]	1-5	*Koeleria macrantha*	unspecified
BG ^	Sandberg bluegrass[1]	1-5	*Poa secunda*	High Plains
BG ^	Plains reedgrass[1]	1-5	*Calamagrostis montanensis*	unspecified
RZ +	Buffalograss[1]	0-5	*Bouteloua dactyloides*	Bismark
BG ^	Indian ricegrass	0-5	*Achnatherum hymenoides*	Rimrock

BG=bunch grass, RZ=rhizomatous, +=warm season, ^=cool season

Forbs:
The seed mix shall include at least two forbs with one being a nitrogen-fixing forb.

Forb Type	Forbs Five to Ten Percent	Percent range	scientific name	variety
O	Blacksampson Echinacea	1-5	*Echinacea angustifolia*	Bismark
O	Silverleaf indian breadroot [1]	0-5	*Pediomelum argophyllum*	unspecified
N	Purple prairie clover[1]	1-5	*Dalea purpurea*	Bismark
N	White prairie clover	1-5	*Dalea candida*	Antelope
O	Hairy goldenaster	0-5	*Heterotheca villosa*	unspecified
O	Prairie thermopsis[1]	0-5	*Thermopsis rhombifolia*	unspecified
O	Upright prairie coneflower	1-5	*Ratibida columnifera*	Stillwater
N	American vetch[1]	1-5	*Vicia americana*	unspecified
O	Hood's phlox	0-5	*Phlox hoodia*	unspecified
O	Scarlet globemallow[1]	0-5	*Sphaeralcea coccinea*	unspecified
O	Western Yarrow	0-5	*Achillea millefolium*	Occidentalis

N=Nitrogen Fixing forb, O=Other

Shrubs:
The seed mix shall include at least three shrubs with one being Wyoming big sagebrush.

Shrubs and Subshrubs Five to Ten Percent	Percent range	scientific name	variety
Winterfat	1-5	*Krascheninnikovia lanata*	Open Range
Nuttall's saltbush[1]	1-5	*Atriplex nuttallii*	unspecified
Prairie rose[1]	1-10	*Rosa arkansana*	unspecified
Silver sagebrush[2]	0-10	*Artemisia cana*	unspecified
Wyoming big sagebrush	1-10	*Artemisia tridentata ssp. wyomingensis*	unspecified
Green rabbitbrush	0-5	*Ericameria teretifolia*	unspecified
Fringed sagewort[1]	1-5	*Artemisia frigida*	unspecified
Rubber rabbitbrush[1]	0-5	*Ericameria nauseosa*	unspecified
Greasewood[1]	0-10	*Sarcobatus vermiculatus*	unspecified
Skunkbush sumac	1-10	*Rhus trilobata*	unspecified
Shadscale	0-10	*Atriplex confertifolia*	unspecified

1. Known to exist within the landscape
2. Only known to occur within moist drainages

While this is the anticipated mix at this time, seed availability and cost, especially of forbs, and new information learned about reclamation species may require adjustments at the time of actual seeding. Additionally, reclamation success would be monitored, with adjustments made to the seed mix if necessary to improve re-establishment success.

Since 1988, ACC has included Winter wheat (Triticum aestivum) as a nurse crop in reclamation seed mixes. The nurse crop concept works well in controlling erosion and weed invasion. Within three years after initial seeding, little evidence is seen of wheat as the perennial grasses become established. ACC would include Winter wheat as a nurse crop at an individual species application rate of ten pounds of pure live seed per acre. In addition, Tall wheatgrass (Elymus elongatus) may be added to the seed mixes during seeding of ephemeral drainages to aid in erosion control.

ACC experience with spring and fall seeding times indicates that fall seeding consistently offers a higher potential for seedling establishment. However, on occasion, lands may be ready for spring seeding. During spring seeding, spring wheat would be used as the nurse crop.

Road Reclamation

Newly constructed roads would be reclaimed unless the surface owner requests (on land non BLM-administered lands) that the roads be reduced to ranch roads (less than twenty feet wide) at the time of final reclamation. All newly constructed roads on BLM-administered lands would be reclaimed. Formal landowner requests would be documented during bond release process with the MDEQ.

Road spurs and haul roads would be reclaimed by first ripping with a motor patrol to break up the roadbed and then graded to blend into surrounding topography. Subsoil and topsoil stockpiles would then be applied. These areas would then be seeded using a chisel plow and or range seeder with the nurse crop and appropriate seed mix.

Site Protection and Management

Reseeded areas would be protected by fencing until reclamation success is achieved which generally is at the end of two complete growing seasons but may be longer. ACC will coordinate with the BLM and grazing permittee as appropriate to determine when grazing can resume in reclaimed areas.

Reseeding or inter seeding efforts would be considered after three consecutive years of evidence that the initial seeding attempt has failed or if necessary to stabilize erosion. Regular monitoring of vegetation success would determine if reseeding is necessary.

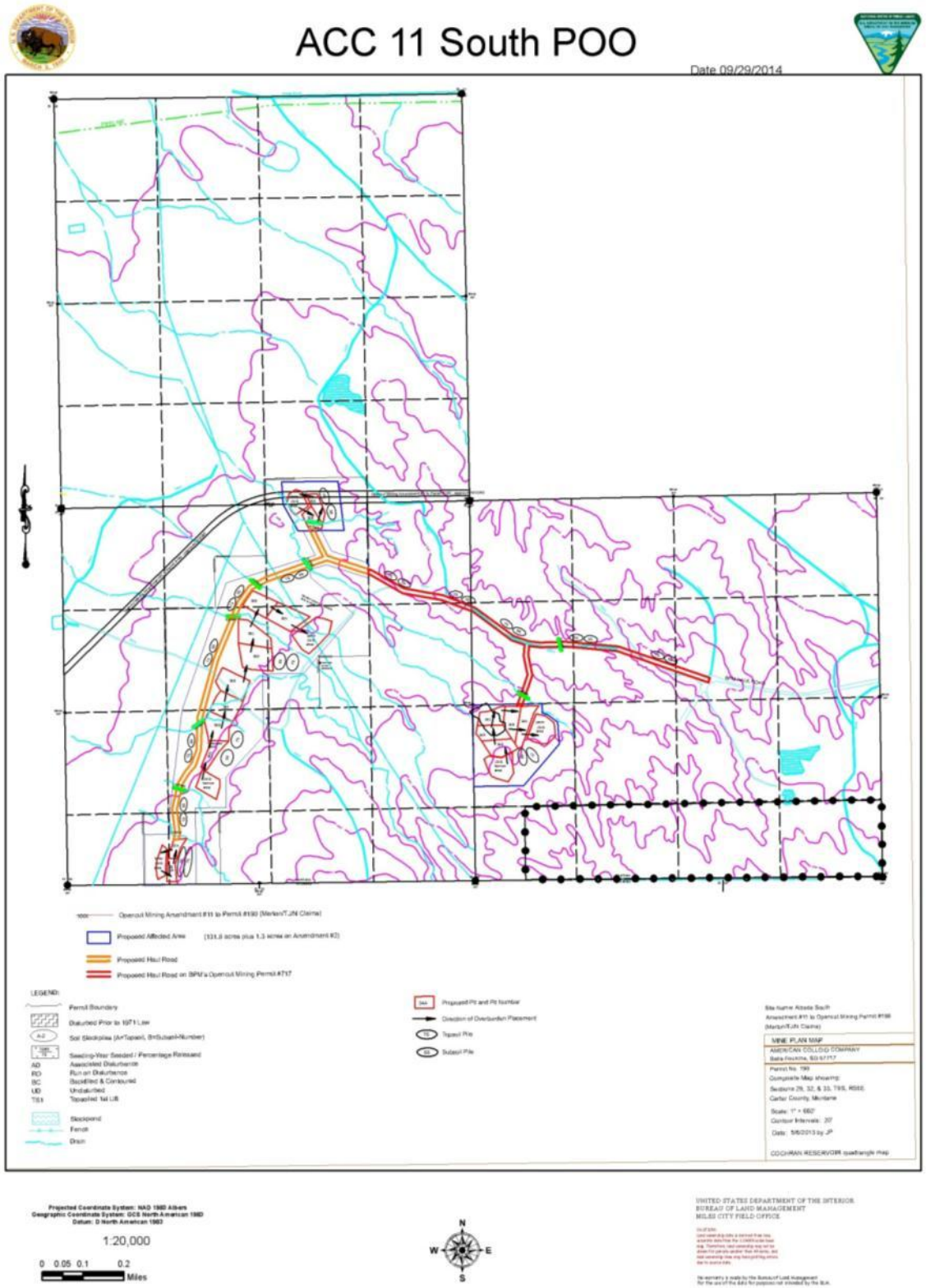

Figure 1 Map of ACC Eleven South Mining POO

Weed Control
The seed mix would be certified noxious weed seed free. In the event of any significant infestations of noxious weeds were to appear during the mining operation or reclamation, the weeds would be controlled by spraying. Spraying would be completed by a licensed contractor with BLM approved herbicides, surfactants, and adjuvants. Any treatments on BLM land will require a Pesticide Application Record to be filled out and turned into the MCFO within two weeks of application. All weed infestations must be mapped and will be turned into the MCFO Weed Specialist by August 31 of each year. Reclaimed lands are monitored periodically for revegetation success, and any concerns such as weeds or erosional features are noted and remedial action taken.

Concurrent and Final Reclamation
Mining on Amendment Eleven lands could commence immediately upon approval of this POO (and a sufficient financial guarantee is posted) and depending upon customer clay needs, the life of the mining in the POO area is projected to be ten years, with reclamation to be conducted in conjunction with mining and immediately following mining.

Reclamation would be as concurrent with mining operations as is reasonable feasible. Grading, replacement of soil material, and revegetation work would typically be completed within one year after mining and related activities have ceased however weather, etc. may result in this timeframe being longer.

All persons directly involved in the mining operation and reclamation process would be familiar with all aspects of the mining and reclamation plan for Amendment Eleven. A permanent copy of the Amendment application is on file in the Permitting and Reclamation Office of ACC, Belle Fourche, SD.

Reclamation success would be determined at the time of final bond release according to the following criteria:

A. erosional stability
B. the vegetation on the reclaimed areas is self-sustaining
C. the amount of vegetation canopy cover on reclaimed areas is comparable to or better than the pre-mine or adjacent native vegetation
D. species diversity and composition is suitable to the post-mining land uses

Before applying for final bond release, ACC would compare vegetation on the reclaimed lands to designated reference areas on adjoining undisturbed lands in a formal sampling program. Other tools for evaluation of reclamation success would be comparison to the baseline vegetation studies and photographs which document pre-mine conditions.

Final approval for bond release would require authorization from both the MDEQ and BLM.

Road and Boundary Markers
Main haul-roads and road spurs would follow the existing ranch trails or be flagged prior to construction. The disturbance boundary would be marked line of site when operations are occurring proximal to such boundary.

Other Commitments

1. Wildfire
   ACC would take proper precautions to prevent wildfires.

2. Archaeological and Historic Values
   Cultural resource inventories which were conducted across Amendment Eleven lands did not locate any cultural sites or isolated finds. If a discovery is made during mining activities, ACC would halt activity and notify the State Historic Preservation Office, Montana DEQ, and the BLM.

3. Annual Progress Report
   ACC would comply with the Annual Progress Report requirements for Permit 190.

4. Personnel Informed
   ACC would inform all necessary on-site personnel, including contractors, of the commitments made in the above mining and reclamation plan.

ALTERNATIVE 2 - NO ACTION

The No Action Alternative involves rejecting the Amendment Eleven South in its entirety; however selection of this alternative would not rescind or modify the current approved POO. The BLM and/or the MDEQ may withhold approval of the amendment application if it is found that the proposal would result in unnecessary or undue degradation of the public lands, or could not comply with the measures found in the Montana Opencut Mining Act. This alternative represents the status quo. Mining under the current plan would still occur until permitted reserves are exhausted. This alternative would not allow the BLM to meet its multiple wuse mandate under Federal Land Policy and Management Act of 1976 as amended, and therefore would not meet the purpose and need.

AFFECTED ENVIRONMENT
The following critical resources have been evaluated and are not affected by the proposed action or the alternatives in this EA.

Table 2 Critical Resources Table

Mandatory Item	**Potentially Impacted**	**No Impact**	**Not Present On Site**
Threatened and Endangered Species			X
Floodplains			X
Wilderness Values			X
ACECs			X
Water Resources	X		
Air Quality	X		
Cultural or Historical Values	X		
Prime or Unique Farmlands			X
Wild & Scenic Rivers			X
Wetland/Riparian			X
Native American Religious Concerns	X		
Wastes, Hazardous or Solids	X		
Invasive, Nonnative Species	X		
Environmental Justice		X	

The following non-critical resources will not be impacted by this proposed action; therefore they will not be analyzed in detail by this Environmental Assessment; floodplains, Wilderness, ACEC's, prime or unique farmland, wild and scenic rivers, and hazardous waste.

Cultural/Paleontological
The proposed tracts have been inventoried for cultural resources. No cultural resources were recorded within the inventoried areas. The proposed action would have no effect to historic properties. Geologically, the proposed action is in the Pierre Shale. The Pierre Shale Formation has a Potential Fossil Yield Classification (PYFC) rating of 3a. This means that while vertebrate and other scientifically important invertebrates are known to occur on a regular basis the action is thought to have a low potential to affect scientifically important paleontological remains (See BLM Cultural Resources inventory MT-020-14-206).

Minerals
Bentonite clay is a fine grained rock composed mainly of montmorillonite. The formation of bentonite is an in situ alteration of volcanic ash. Pyroclastic material was ejected into the atmosphere by volcanic activity and deposited as sediment in a marine environment. The resulting alteration of volcanic ash is the material we call bentonite. The material targeted for mining occurs in beds on the order of two to five feet in thickness at less than fifty feet in depth in the proposed project area in the Belle Fourche Shale Formation (Knechtel & Patterson, 1962).

Hydrology

Groundwater

Based on exploratory drilling by ACC, groundwater tables are below the deepest projected depth of mining (50 feet) within the project area. All mining would take place in the vadose (unsaturated) zone above the local and regional groundwater table. Natural saline seeps are common to the area, which are usually the result of pockets of perched water tables overlying impermeable shales, but none have been mapped within Amendment No. 11 South project area.

Review of data from Montana Bureau of Mines and Geology Groundwater Information Center (http://mbmggwic.mtech.edu/ [accessed October 20, 2014]) indicates no wells are present in Montana within one mile of Amendment No. 11 South. The nearest well is located in section 19, Township 9 South, Range 59 East PMM, about four miles east northeast of the proposed mining. The well depth is 720 feet completed in the Lakota Sandstone of the Inyan Kara Group. It is used as a source of domestic and stock water. Data available from the Wyoming Water Development Commission indicates 1 well is present in Wyoming approximately 0.6 miles southwest of the project area. The well is used as a source of stock water. No other information is available for this well.

Surface Water

The surface water hydrology within the project area is characterized by approximately 0.6 miles of unnamed ephemeral streams. No intermittent or perennial drainages, waterbodies, 100-year floodplains, or riparian-wetland areas are located within the Amendment No. 11 South project area.

The entire project area is within the Thompson Creek watershed (Hydrologic Unit code 1011020104). Thompson Creek is a tributary of the Little Missouri River. Proposed mining on Amendment No. 11 South will affect approximately 132 acres of the watershed. At the closest point, mining activity in the project area will occur approximately 1.2 miles from Thompson Creek.

Thompson Creek (MT39F001_010) is on the 2014 Montana DEQ Impaired Stream List (303d list) with aquatic life and warm water fishery beneficial uses listed as partially supporting. Primary contact recreation use is not assessed. The probable causes are cadmium, copper, iron, and zinc, and the only identified source or sources are natural ([accessed January 8, 2015]). The Little Missouri River (MT39F001_020) is listed on the 2014 Montana DEQ Impaired Stream List (303d list) with aquatic life and warm water fishery beneficial uses listed as partially supporting. Primary contact recreation use is fully supporting. The probable causes are cadmium, copper, iron, lead, total nitrogen, total phosphorus, and zinc, and the probable sources are natural, unknown, and agriculture (http://cwaic.mt.gov/ [accessed January 8, 2015]).

Lands/Realty

There are no existing BLM issued rights-of-way or permits in the area of the proposed action.

Soils

The soils in the proposed mining area are characterized by the presence of very shallow, shallow, moderately deep, and deep soils. Neldore clay loam (Map Unit Ne) ranges in depth from very shallow (three to nine inches deep) to shallow (ten to twenty inches deep), and is developing in slopewash alluvium and thin residuum from shale bedrock. Neldore clay loam is also mapped in complex with Iron Rock. Volborg clay (Map Unit Vo) is similar to Neldore clay loam except it is developing from acidic shale bedrock and typically has very low soil pH. Volborg, Saline-Alkaline, (Map Unit VoSA) also has very low pH, but also has very high salinity (very high EC) and very high sodicity (very high SAR). Marvan silty clay loam (Map Unit Ma) is typically a deep (40 inches or more to bedrock), sodic soil developing in alluvial materials from shale. Alzada loam and Teigen loam are deep, non-sodic soils developing in mixed fine-textured alluvium from shale on uplands. Shale-Bentonite Outcrop and previous bentonite mining disturbance also exist in the project area.

Vegetation

Initial surveys on this project began in 2004 and 2005 when ACC personnel mapped the vegetation communities with Global Positioning System (GPS) equipment and sampling was performed. The project was put on hold until 2012 when vegetation sampling was repeated and vegetation community species lists were complied.

Several vegetative communities are located within the proposed mining area, the most dominant including Prairie Sandreed/Little Bluestem/Sedge (PS/LB/Sedge), Black Greasewood/Big Sagebrush Shrubland (BG/BSS), Ponderosa Pine/Rocky Mountain Juniper (P/J), Big Sagebrush Shrubland (BSS) and Mixed Grass Prairie (MGP).

PS/LB/Sedge

This upland grassland type occurs on coarse, porous shale below the tree line in portions of Section 32. A few Rocky mountain juniper (*Juniperus scopulorum*) occur as inclusions within the type along with pockets of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*). The dominant species in order by relative cover are: Threadleaf sedge (*Carex filifolia*), Little bluestem (*Andropogon scoparius*), Prairie sandreed (*Calamovilfa longifolia*), Prairie sage (*Artemisia ludoviciana*), Blue grama (*Bouteloa gracilis*), Prairie junegrass (*Koeleria macrantha*), Prairie goldenpea (*Thermopsis rhombifolia*), and Plains prickly pear (*Opuntia polyacantha*). Cover sampling was performed here in July, 2012. Herbaceous canopy cover averaged 22.7 percent, with 47 percent lichen/litter/rock, and 42.6 percent bare ground.

BG/BSS

A mixed shrubland community of Black greasewood (Sarcobatus vermiculatus) and Wyoming big sagebrush was mapped on alkaline soils throughout the project, particularly along drainages and on iron rock flats at the north side of the Amendment. The amount of Black greasewood and/or Big sagebrush varies across the landscape, with more Black greasewood generally seen along the lower edges of drainages. Together the two shrubs provide approximately 48 percent of the total relative cover in the community. Dominant species in order by relative cover are Black greasewood, Wyoming big sagebrush, Western wheatgrass and wheatgrass species (*Pascopyrum smithii/spp*.), Plains prickly pear, Japanese brome (*Bromus japonicus*), Monolepis (*Monolepis nuttalliana*), Hood's phlox (*Phlox hoodii*), and Blue grama. Cover sampling was performed in July, 2012. Herbaceous canopy cover averaged 22.1 percent, with 46.5 percent lichen/litter/rock, and 38.3 percent bare ground.

P/J

A woodland community of Rocky mountain juniper and Ponderosa pine (*Pinus ponderosa*) was mapped along the north-facing ridge slope in the NW¼SW¼, Section 33 and scattered along the edge of the west-facing ridge slope in Section 32 and along the drainages. Inclusions of open grassland and Wyoming big sagebrush are common within this community. Juniper is more prevalent than Ponderosa pine on the project especially along the drainages and at the west side of the Amendment; more pines are seen on the higher part of the ridge beginning at about the 3,610' elevation in the S½NW¼SW¼, Section 33. In 2012 it was observed that some of the junipers are dead or dying with needles turning red; this may be caused by fungus infection or drought. Dominant understory species in order by relative cover are Threadleaf sedge, Blue grama, Western wheatgrass and wheatgrass species, Big sagebrush, Buffalo grass (*Buchloe dactyloides*), Prairie sandreed, Little bluestem, and Plains prickly pear. Cover sampling was performed across the community in July, 2012. Herbaceous canopy cover averaged 22.8 percent, with 47.5 percent lichen/litter/rock, and 39.9 percent bare ground.

BSS

Two main areas of Big Sagebrush Shrubland were mapped: at the north side of the Amendment in the SW¼SE¼, Section 29 and NW¼NE¼, Section 32 and in the S½, S½N½ of Section 32. These two general areas were sampled independently of each other because of the differences in canopy cover.

On the north side of the project, the type was mapped onto the flats and along the west slope of a deflated ridge spur displaying inclusions of bentonite outcrop and barren iron rock. Dominant species in order by relative cover are Wyoming big sagebrush, Western wheatgrass and wheatgrass species, Plains prickly pear, Scurfless saltbush (*Atriplex suckleyi*), Ball eriogonum (*Eriogonum pauciflorum*), Buffalo grass, Blue grama, and Japanese brome. Cover sampling was performed here in July, 2012. Herbaceous canopy cover averaged 16.5 percent, with 53.5 percent lichen/litter/rock, and 38.1 percent bare ground.

In the S½N½ and S½, Section 32, BSS was mapped on relatively flat to gently sloping areas along the west flank of the ridge. Inclusions of grasses, barren hardpan, Black greasewood, and Rocky mountain juniper occur within the community but were too difficult to map out separately. Dominant species in order by relative cover are Wyoming big sagebrush, Western wheatgrass and wheatgrass species, Plains prickly pear, Rubber rabbitbrush (*Chrysothamnus nauseosus*), Prairie junegrass, Blue grama, Green needlegrass (*Nassella viridula*), Prairie sandreed, Enland saltgrass (*Distichlis stricta*), and Buffalo grass. Cover sampling was performed here in July, 2012. Herbaceous canopy cover averaged 32.4 percent, with 42.3percent lichen/litter/rock, and 37.5percent bare ground.

MGP

MGP was mapped in two areas of the Amendment: in the SE¼NW¼, Section 32 and in the NW¼SW¼, Section 33. The two were sampled independently of each other because of the differences in canopy cover.

In the SE¼NW¼, Section 32 the type is located on relatively flat terrain, grading into Lowland Prairie near the drainage. The dominant species in order by relative cover are: Little bluestem, Western yarrow (*Achillea millefolium*), Prairie junegrass, Missouri goldenrod (*Solidago missouriensis*), Prairie goldenpea, Wheatgrass species, and Sandberg bluegrass (*Poa secunda*). Cover sampling was performed here in July, 2012. Herbaceous canopy cover averaged 24.1 percent, with 59.5 percent lichen/litter/rock, and 28.7 percent bare ground.

In the NW¼SW¼, Section 33 the MGP type is located along the toe of a ridge where wooded areas grade into grassland. The dominant species in order by relative cover are: Blue grama, Two-grooved milkvetch (*Astragalus bisulcatus*), Wyoming big sagebrush, Broom snakeweed (*Gutierrezia sarothrae*), and Scurfless saltbush. Cover sampling was performed here in July, 2012. Herbaceous canopy cover averaged 15.7 percent, with 73.3 percent lichen/litter/rock, and 17.3 percent bare ground.

Table 3 Mapped Vegetation Community Types for Amendment 11 South

Vegetation Type	Permitted Acres	Affected Acres
Prairie Sandreed/Little Bluestem/Sedge	46.0	22.8
Black Greasewood/Big Sagebrush Shrubland	45.0	22.5
Rocky Mountain Juniper/Ponderosa Pine	44.9	19.9
Big Sagebrush Shrubland	45.9	29.2
Mixed Grass Prairie	14.2	13.7
Prairie Cordgrass	9.7	4.8
Lowland Prairie	6.7	6.0
Inland Saltgrass Lowland Prairie	6.4	5.3
Barrens/Outcrops	2.2	0.8
Scurfless/Alkali/Barrens	2.6	2.6
Pre-Law Mine Disturbance	2.2	2.2
Prairie Cordgrass/Scurfless Satlbush	1.4	1.4
Eriogonum	1.1	0
Prairie Cordgrass/Prairie Sandreed/Little Bluestem	0.4	0.4
Totals:	**228.7**	**131.6**

No uncommon, threatened, or endangered plant species have been identified during ACC's vegetation studies.

Invasive Species – Noxious Weeds
One noxious weed species as listed on the Montana Weed Control Association web site and the Montana Department of Agriculture web site was noted: Canada thistle (Cirsium arvense).

Cheatgrass brome (Bromus tectorum) which is a regulated plant in Montana is not listed as a noxious weed but it has the potential to have negative impacts. It was seen in patches in the wooded areas of Amendment eleven.

Wildlife
A majority of the project area is comprised of Wyoming big sagebrush/Western wheatgrass and Black greasewood/Wyoming big sagebrush habitat types. Southern portions of the project area are interspersed with scattered Rocky mountain juniper and Ponderosa pine. Terrain is mostly flat to gently sloping with low ridges and valleys shedding water in a northwesterly direction.

The project area provides habitat for ungulate wildlife including mule deer and pronghorn. No portion of the project area is identified as winter range for either species.

Upland game birds such as Greater sage- and Sharp-tailed grouse occupy the project area, all of which is identified as preliminary priority habitat (PPH) as identified in Instruction Memorandum Number 2012-043. Greater sage-grouse (GSG) leks CA-037, CA-039, CA-040, CA-087 and "New Lek" are all within two miles of the proposed affected area. Leks CA-037, CA-039, CA-087 are confirmed active. Lek CA-040 is confirmed inactive and the "New Lek" is unconfirmed. Montana Fish, Wildlife and Parks closed the 2014 hunting season on GSG in portions of Montana, including that in the project area, as numbers have declined in recent years. One Sharp-tailed grouse lek, CA-024, is identified roughly one and one half miles northwest of the proposed affected area. This lek is unconfirmed with the last count of three males in 2009.

Non-game species such as raptors, migratory birds, and various small mammals, reptiles and amphibians also inhabit or frequent the area. Raptors such as Red-tailed hawk, Golden eagle, Northern harrier, American destrel, Cooper's hawk, and Short-eared owl have been observed on or near the project area while Rough-legged hawks and Bald eagles have been seen during winter surveys.

No known Prairie dog towns exist within the project area; however, a prairie dog town of unknown activity is identified to the northeast roughly two miles.

No listed threatened or endangered species or habitat for such is known to exist in the project area. The proposed endangered NLEB (*Nyctophilus arnhemensis*), however, may potentially range within portions of eastern Montana. The project area may provide suitable summer habitats for this species as roost sites, mainly trees greater than three inches in diameter at breast height, are present. No caves, mine shafts or other suitable winter habitat are known to exist within the project area. Specific surveys for this species have not occurred within the project area. The only noted location in Montana is in Richland County, 1978. This location is approximately 200 miles to the north of the proposed project area. Closer to the proposed project area, is the known roost locations in the Devils Tower area of Wyoming, roughly 30 miles to the south. Habitats suitable for winter hibernaculum are known to exist further to the southeast near Sturgis, South Dakota (Schmidt, 2003) (Tigner & Stukel, 2003).

Visual Resource Management (VRM)
The proposed project area is within a VRM Class III and VRM Class IV. Township 9 South, Range 58 East, Section 29 falls within a VRM Class III. Township 9 South, Range 58 East, Sections 32 and 33 fall within a VRM Class III and a VRM Class IV.

The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The objective of VRM Class IV is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Range Resources/Grazing

The Amendment eleven South area includes the Torgerson Draw Allotment number 10485, and the Wyotana Ranch Allotment No. 10615. The Torgerson Draw Allotment is authorized for cattle from May 15 through November 15. The allotment is on a five pasture rest rotation grazing system which is part of an allotment management plan (AMP) dated 1967 and revised in 1968, 1976, and 1986. The public land outside of the AMP is on an open season of use and numbers, as long as livestock are not on the public lands for the entire grazing season and only the public Animal Unit Months (AUM) present are utilized. The allotment was assessed for Standards for Rangeland Health in 1999 and 2009 and was found to be meeting all standards. The allotment is permitted for 1,086 public AUMs.

Livestock grazing in the Wyotana Ranch Allotment is administered under an AMP originally established in 1970 and amended in 1984 and 1989 to reflect changes in management. The AMP is grazed by both sheep and cattle, with sheep being grazed in the northeast and northwest pastures in a two pasture deferred rotation and the cattle being grazed in the southeast, middle and southwest pastures in a deferred rotation. The allotment was assessed for Standards for Rangeland Health in 1999 and 2012 and was found to be meeting all standards. The allotment is permitted for 726 AUMs.

ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

Cultural
The proposed action would not impact cultural or scientifically important vertebrate fossils. The proposed action would have no effect to historic properties.

Minerals
The bentonite reserves which lie within fifty feet of the surface will be removed by ACC's activities on Amendment Eleven lands. This represents an irretrievable commitment of the resource. Once it is mined, processed and shipped, that bentonite is lost to future users.

However, certain grades of bentonite, which are not considered mineable at this time and or bentonite that is deeper than fifty feet may be mined in the future, if economically feasible. No other mineral resource would be affected.

Hydrology
Groundwater
The downward migration of groundwater to deeper aquifers would be impeded. The removal of overburden and bentonite and replacement with spoils would disrupt groundwater flows and would potentially eliminate or change the water chemistry of saline seeps. A small amount of bentonite remaining would potentially establish perched groundwater tables and saline seeps on the ridges at the bentonite outcrops.

Based on the data that no useable groundwater is known to exist above the deepest projected depth of mining, it is not anticipated that aquifers would be impacted; however, changes in surface water drainage, infiltration rates, and water quality due to replacement of bentonite and overburden with spoils and leaching of salts from spoils would change groundwater hydrology and chemistry. Sediment escape from the site caused by wind, water, or mining related activities could introduce trace amounts of bentonite into surface water or cause decreases in surface water quality that would potentially impact groundwater through surface water connectivity.

Surface Water
Bentonite mining activities would affect surface water resources by disrupting natural surface water flow, altering drainage patterns, decreasing water quality, removing vegetation, changing infiltration rates, and increasing overland flow therefore increasing erosion and sedimentation. Soil compaction would further increase overland flow, erosion and sedimentation. Increases in erosion and sedimentation would persist during mining activities lasting through the establishment of sufficient vegetation. Sediment escape from the site caused by wind, water, or mining related activities could introduce trace amounts of bentonite into surface water.

During active mining operations and lasting until establishment of sufficient vegetation, water quality will decline due to an increase in total dissolved solids (TDS) and total suspended solids (TSS, or turbidity). Water would erode more sediment and other dissolved solids running through constructed ditches and diversions relative to the natural condition. Alteration of flow patterns of ephemeral drainages would occur during mining as flow is redirected around the active mine site on typically two to four acres at one time. Ephemeral drainages would be re-established during the reclamation process.

The reclaimed land will have gentler slopes which would reduce overland flow velocity and increase infiltration rates. However, due to the high clay content of the soils and soil compaction, infiltration rates could also be reduced.

Soils

Mining and infrastructure construction would disturb 132 acres of BLM administered surface, resulting in soil mixing, compaction, and ground cover removal. Soil mixing and ground cover removal would result in accelerated topsoil erosion by wind and water. Compaction would decrease nutrient cycling and increase overland flow until the site returns to natural rates due to freeze thaw cycles, root development, and the shrink swell action of clays.

Vegetative productivity would be reduced in areas where topsoil is thinner than pre-disturbance conditions. Clay hard pan soils would have increased infiltration following disturbance as a result of increased porosity; allowing vegetation to establish on areas that were sparsely vegetated prior to mining. Soil conditions particularly difficult to reclaim within the project area include high clay and salt content; droughtiness; rock, bentonite and shale outcrops; and soils highly susceptible to water erosion. Such areas would take greater than five years to recover from disturbance; however site specific reclamation would accelerate recovery.

Vegetation

During the mining operations, there will be a direct loss of 131.6 acres of native vegetation and potential for increased erosion until vegetation is re-established. By removing the native plant community and altering the soil structure during reclamation activities, plant succession as well as nutrient and carbon cycling will be altered for some time. Immediate post reclamation vegetative communities would be altered both functionally and structurally from current native communities affecting litter amounts, as well as infiltration and runoff rates. This will all lead to more altered microsites than currently present, affecting plant succession into the future. Reclamation is expected to eventually develop stable ecological systems, though in an altered state from current ecological conditions.

Reclamation activities will be conducted concurrently with mining on the backfilled pits and immediately following mining. This means that the entire mine site will not be stripped of vegetation at any one time, and seeding will be conducted each spring or fall on the lands that have been prepared for seeding. Reclamation will typically be initiated within one year of cessation of mining for each acre.

Most of the reclaimed Federal land will be seeded with a grass/forb/shrub mix. The mix consists of seeds that are perennial and self-sustaining without the use of fertilizers or irrigation. Since 1988, ACC has included Winter wheat in the seed mix as a nurse crop at the individual species application rate of ten pounds of pure live seed per acre. This practice has demonstrated that the nurse crop concept works well in controlling erosion and weed invasion. Within three years after the initial seeding, little evidence is seen of wheat as the native plant species become established.

There are no known threatened or endangered plant species within the study area; therefore, there should be no effects to these species.

Invasive Species – Noxious Weeds

Noxious weeds are invasive species that may become established on open rangelands, particularly on disturbed sites. They are commonly aggressive plants that compete with native species for space, sunlight, soil moisture, and nutrients. Once established, the noxious weeds may eventually outcompete desirable native species. If a seed source is present, noxious weed seeds can be physically transported to new areas by livestock movements, vehicular travel, human foot travel, and wildlife movement.

Wildlife

Direct effects to wildlife resources include loss of habitat through construction activities, location of infrastructure (haul roads, mine pits, etc.), and mortalities resulting from collisions with vehicles. A number of small animals, such as small mammals and reptiles, which cannot quickly leave the area, will be destroyed by the mining operations. In addition, if construction and habitat removal occurs during nesting or brood rearing seasons, upland game bird and songbird nests would be destroyed.

The proposed action would add 229 acres to ACC's POO, of which 132 acres would be disturbed by mining operations. This is a direct loss of 132 acres of wildlife habitat (both forage and cover). Successful reclamation would stabilize disturbed sites and attempt to restore disturbed areas to pre-disturbance conditions. Reclamation will not always recreate pre-disturbance values. Changing a shrub-grassland with intermingled forbs, to an environment characterized by a dominance of grasses, would affect those species of wildlife which are sagebrush obligates by reducing vital habitat and forage. Some species of passerine birds, some small mammals and reptiles, as well as GSG and Pronghorn antelope would be affected by this change.

Shrubs, particularly big sagebrush, are important in the winter diet of big game and GSG and provide cover for wildlife. Removal of shrubs during mining will decrease forage availability and reduce the winter carrying capacity of animals within these sagebrush habitats. Reclamation activities will produce forage vegetation (grasses and forbs) in a relatively short period of time (one to three years) although desired forbs are generally slower to re-establish than grasses and are typically only available during the summer period. Opportunistic forbs will also tend to re-establish naturally. Vegetation that is suitable for wildlife cover (shrubs) will require a longer time. As shrubs begin to grow in reclaimed areas, they, too, are primarily available in the summer months as forage. Until they grow into mature plants and are able to provide hiding and thermal cover (25 to 30 years), they provide reduced habitat value during winter months.

Mule deer and pronghorn antelope occupying habitat within and adjacent to the area are expected to be displaced or show a level of avoidance from the project area as a result of this action. This effect will be most notable during active mining, construction, and hauling activities. This action would affect more than the 132 actively mined acres.

GSG occupying habitat within and adjacent to the area of the proposed amendment will be effected by this action. Direct mortality may occur from increased vehicle traffic with the project area.

Limited research on the effects of mining on GSG has been conducted with some of this research being done on coal mining effects. Coal mining operations would be expected to differ from bentonite operations dependent on the scale and magnitude of the coal mining area. However, it is reasonable to assume that similar effects on GSG would be expected from similar activities, such as heavy equipment operations, truck hauling, human and vehicle presence, and other related activities. Coal mining activity in North Park, Colorado, resulted in a substantial decrease in sage-grouse lek attendance on two leks within 1.2 miles of development activities relative to leks located more than 1.2 miles from these activities (Remington & Braun, 1991).

Much research on oil and gas effects to GSG has been conducted in the recent past. In some instances, anthropogenic aspects of this research such as truck hauling, other traffic, and noise would be considered similar in effects to aspects of this proposal. Research in the Pinedale Anticline in Wyoming found that main haul roads within 1.9 miles of leks, and a length of greater than 3.1 miles of main haul road within 1.9 miles of leks negatively influenced GSG male lek attendance. Although there was no confounding influence of road visibility from leks or road direction to leks, the number of displaying males declined in response to road activity (i.e., traffic volume). Rates of male lek attendance were negatively associated with increased traffic volumes. Additionally, vehicle activity on roads during the daily strutting period (i.e., early morning) had a greater influence on male lek attendance compared to those roads with no vehicle activity during the daily strutting period. Although portions of two of the leks used for the traffic analyses were located on main haul roads, direct mortalities resulting from vehicle collisions were rarely observed. Further, because declines were associated with traffic volumes, they appeared to be related to male avoidance of traffic activity (Holloran, 2005). Remington and Braun (1991) reported that the upgrade of haul roads associated with surface coal mining activity in Colorado was correlated with declines in the number of displaying males on leks situated relatively near the road.

The same research in the Pinedale Anticline found declines in lek attendance were positively correlated with vehicle traffic levels, and vehicular activity during the daily strutting period on roads within 0.8 miles of a lek intensified the negative influence of traffic. Reducing overall traffic volumes and isolating traffic disturbance within gas fields could reduce road effects. Additionally, enforcement of daily travel timing restrictions could further diminish effects due to GSG road use (Holloran, 2005).

Portions of the western most proposed haul road, as depicted in Figure 1, is located in close proximity to known leks, with CA-040 within 0.4 miles and CA-149 and "New Lek" within 0.8 miles. Lek CA-040 last had males displaying in 2004 with seven counted. CA-149 had 19 males displaying when last observed in 2013. "New Lek" had as many as 16 total birds attending when surveyed in 2011. The proposed haul roads eventually tie into existing county roads with public vehicle traffic occurring regardless of this action. It is expected, however, that this increased mining activity and vehicle traffic within close proximity to the known leks will affect lek attendance. When effects occur that result in a decrease in numbers in an already small population, a rebound to stable numbers is less likely to occur or would be expected to take much longer barring other detrimental factors.

Many species of songbirds were identified as inhabitants within this general area. It is reasonable to assume there would be effects to nesting and migrating bird species from this proposal. Research in Sublette County, Wyoming on the effects of natural gas development on sagebrush steppe passerines documented negative effects to sagebrush obligates such as Brewer's sparrows, Sage sparrows, and Sage thrashers (Ingelfinger, 2001). The effects were reported greatest along roads where traffic volumes are high and within 328 feet of these roads. Sagebrush obligates were reduced within these areas by as much as 60 percent. Sagebrush obligate density was reduced by 50 percent within 328 feet of a road even when traffic volumes were less than 12 vehicles per day. It would be expected that similar effects would occur to any sagebrush obligate species using this area from mining actions.

Mitigation is not proposed for the protection of the BLM sensitive songbirds or other migratory songbirds during the nesting season. The Migratory Bird Treaty Act prohibits the take, capture or kill of any migratory bird, any part, nest or eggs of any such bird (16 USC §703(a)). NEPA analysis pursuant to Executive Order 13186 (January 2001) requires the BLM to ensure that Migratory Bird Treaty Act compliance and the effects of the BLM's actions and agency plans on migratory birds are evaluated, and should reduce take of migratory birds and contribute to their conservation. The actions associated with this proposal would be expected to destroy individual nests, eggs or birds, but would not be expected to affect regional populations of bird species.

Most nesting habitats within the permit area would not be expected to be directly disturbed during the nesting period as stripping occurs throughout the year, and the majority of lands affected would not be stripped during active nesting periods. In addition, the proposed reclamation standards would be expected to reduce to the extent practicable effects to migratory birds over the long term as reclamation goals are achieved. ACC has proposed a long term monitoring plan for migratory songbirds as described in the HRRP.

No listed threatened or endangered wildlife species will be affected by this action nor will designated critical habitat for wildlife species. The proposed NLEB does, however, potentially range within the proposed project area. No suitable wintering habit is known to exist within this area, however, suitable roost trees, as described in the NLEB Interim Conference and Planning Guidance (2014) document may be present. Removal of habitat will occur between October 1 and March 31. In the event the NLEB is using summer habitat in southern Carter County, additional treed habitat is available outside of the mined areas and adjacent to the activity. NLEB are not shown to have high sight fidelity to a particular roost site, but rather, are opportunistic in their selection.

VRM

The proposed project would create contrast between project features and the existing landscape by the strip process of mining. All the landscape character elements of the landscape (form, line, color, and texture) would be affected.

Building roads would superimpose visual lines that would appear in sharp contrast with horizontally aligned hills and any continuous, uninterrupted vegetation in the area. Removal of vegetation due to mining would expose bare soil much lighter (color) and smoother in texture than the surrounding vegetation. This would superimpose visible lines and openings in vegetation that is otherwise uniform and which covers all the surrounding landscape.

Even though the proposed project would cause strong or substantial impacts to all the elements of the visual landscape (form, line, color, and texture), it still would conform to the management objective for visual resources in the area.

Range Resources/Grazing

During the mining and the reclamation process, actively mined and recently reclaimed the BLM administered lands within the proposed action will be unavailable for livestock use; livestock grazing will be excluded through the construction of a fence placed around reclaimed areas that conforms to the BLM criteria. The BLM permits woven wire fence to be placed around reclamation areas as temporary fences.

The BLM will modify the grazing activities through the grazing decision process specified within 43 CFR §4160 et seq., to suspend some of the AUMs within the Amendment Eleven area. This would result in the suspension of approximately 20 AUMs within the Wyotana Ranch Allotment No. 10615 and 16 AUMs within the Torgerson Draw Allotment No. 10485.

In addition, the Wyotana Ranch AMP grazing schedule would be adjusted to reflect the reduction of Federal AUMs that would be available to livestock grazing. The pasture affected in the Torgerson Draw Allotment is on a custodial use permit so no change in the AMP rotation would be necessary.

After two growing seasons following reclamation, the BLM will use an interdisciplinary team to determine if permitting livestock grazing will meet rangeland health standards on the reclaimed BLM administered lands. The BLM will coordinate with the permittee to activate the suspended use if land health standards can be met. Suspended AUMs will not be authorized until the BLM determines land health standards can be met.

DESCRIPTION OF IMPACTS FROM ALTERNATIVE 2 - NO ACTION:
Under this alternative the plan would not be approved and additional mining would not take place on Federal lands. The no-action alternative would result in no additional direct habitat loss or wildlife disturbance on the proposed Federal lands. Removal of potentially suitable summer habitat for the NLEB would not occur.

CUMULATIVE IMPACTS:
As stated in 40 CFR §1508.7 " ... cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time ..."

This mine is located proximal to Amendment 13 to ACC's Alzada North mine POO. The cumulative effects of this action combined with all other reasonably foreseeable future actions was analyzed in Environmental Assessment DOI-BLM-MT-C020-2013-34-EA to which this document is tiered.

CONSULTATION/COORDINATION
Montana Department of Environmental Quality

LIST OF PREPARERS
Nate Arave – Geologist
Chris Robinson – Hydrologist
Doug Melton – Archeologist
Jesse Hankins – Wildlife Biologist
Dena Lang – Outdoor Recreation Planner
Dalice Landers – Realty Specialist
Philip Reierson – Range Management Specialist
Brenda Witkowski-Natural Resource Specialist/Weeds

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