

Chapter 4

Environmental Consequences

4.1 Introduction

The anticipated direct and indirect impacts of the Proposed Action and Alternatives are discussed in this chapter. For each resource, potential mitigation measures and residual impacts are also described. Cumulative impacts are described for those resources for which a direct or indirect impact has been identified. 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. . .”

Potential mitigation measures are identified, where necessary, in response to anticipated impacts of the Proposed Action. Mitigation measures can be required by BLM as a condition of approval (Decision Record) and are implemented by incorporating them into the Plan of Operations. Residual impacts are those impacts remaining after implementation of mitigation measures. Cumulative effects result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions.

4.2 Assumptions and Analysis Guidelines

In order to evaluate potential environmental impacts resulting from the Proposed Action and any other long range future actions, the agencies evaluate the potential mining development of the mine areas using existing levels of development, a mine plan developed by ACC for the amendment lands as well as a Reasonably Foreseeable

Development (RFD) scenario for long term future development. ACC developed mine plans for two areas identified as the West Area and the East Area, which constitutes all the lands ACC wishes to add through Amendment #10 (Figure 1.1).

The duration of the possible impacts is analyzed and described as short-term or long-term; short-term is up to 5 years and long-term is 5 to 20 years.

The RFD area is regarded by BLM as lands that might contain some potential for future mining and could be permitted within the next 10 to 15 years by ACC. The lands are largely unexplored, there are no mine plans drawn at present, and the RFD represents a best guess scenario as to what lands could be mined in the future. The RFD will be used solely to allow BLM to analyze the cumulative (future) impacts in the area (Figure 1.1).

The impact analysis is based on previous events, experience of personnel and their knowledge of resources in the area.

4.2.1 Assumptions Common to All Alternatives and Resources

4.2.1.1 Past and Present Developments (Existing)

The ACC project area lies within a larger mining region in which two companies operate. The Amendment #10 project area lies within the Alzada North mine area. Most of the mine related disturbance in this area is north of the Ridge Road, within the Willow Creek watershed. Direct and indirect impacts from the proposed action would be confined mainly to the Alzada North Mine area. The other mine area within the region which will be considered for cumulative impact analysis, is the Alzada South mine area, located south of the Ridge Road

within the Thompson Creek watershed. The Alzada South Area, also includes activity by Bentonite Performance Minerals.

American Colloid Company

The ACC has been mining bentonite in the Alzada, Montana area under State of Montana Mined Land Reclamation Permit #00297 (Alzada North) since 1977. As active areas have been mined out reclaimed and removed from the permit over the years, additional acreages have been added through nine amendments to the permit.

The permit currently contains 3,600 acres (Permit #00297). About 2,070 acres have been disturbed by mining within the current permit, 1,640 acres have been reclaimed through the seeding stage and about 300 acres are currently under some phase of mining. In addition, 1,443 acres have been released from bond and removed from the permit, 300 acres of which were disturbed and reclaimed.

About 821 acres in the permit are federally owned and administered by BLM and 2,779 acres are privately owned.

The Alzada South area is south of the Ridge road and consists of two different State of Montana mining contracts, which were recently merged into one existing Permit #00164.

Permit #00164 was issued to International Minerals & Chemical Corporation (IMC) in 1973 and was transferred to ACC in April, 1988 and Permit #00455 was issued to ACC in 1981. All together, the Alzada South area contains about 4,370 permitted acres. About 1,045 acres have been disturbed by mining within the current permit, 575 acres have been reclaimed through the seeding stage, and 420 acres are currently in some stage of mining. In addition, 300 acres have been released from bond and removed from the permit, 24 acres of which were disturbed by mining and reclaimed.

In total, ACC has about 7,970 acres under state permit in Montana and about 3,115 acres have been affected by mining activities within the current permit boundaries. A total of 1,743 acres have been released from bonding, 313 acres of which were disturbed and reclaimed. Total disturbance inclusive of released areas adds up to 3,428 acres. This acreage includes haul roads.

Bentonite Performance Minerals

Bentonite Performance Minerals (BPM) has about 3,550 acres of mixed federal and private lands permitted in this area of which 501 acres are BLM lands.

According to BPM's 2002 Annual Mining Report, mining in this area has disturbed about 671 combined private and federal acres including about 50 acres of BLM lands. About 507 of the combined federal and private acres have been reclaimed including about 26 acres of BLM lands.

Montana has released reclamation bond on 73 acres.

There is also an estimated 252 acres of unreclaimed abandoned mine lands in the Alzada South area, which were mapped by the State of Montana AML program in 1988. Bentonite Performance Minerals re-disturbed about 53 acres of pre-law disturbance and have reclaimed about 46 acres.

BPM intends to continue mining in this vicinity into the foreseeable future.

The combined BPM/ACC permitted acreage in Alzada North and South areas is about 11,520 acres of which about 3,786 acres (including roads) have been disturbed by mining (Table 4.2.1.1-1).

About 1,816 acres have been fully released from bonding liability and have been removed from the permit. About 386 acres had mine related disturbance and 1,430

acres were never disturbed. About 252 acres of AML exist in the Alzada South Area.

lands, those fully released from bond, and un-reclaimed AML sites totals about 4,424 acres.

The total mine related disturbance in the combined North and South areas including currently permitted lands, fully reclaimed

Table 4.2.1.1-1 Current Permitted Acres

	ACC Alzada North	ACC Alzada South	BPM Alzada South	Totals
Acres Presently Permitted	3,600	4,370	3,550	11,520
Acres Undisturbed	1,530	3,325	2,879	7,734
Acres Reseeded	1,640	575	507	2,722
Acres in Active Mining	300	420	164	884
Acres Haul Roads	130	50	*	180

Table 4.2.1.1-2 Released Acres

	ACC Alzada North	ACC Alzada South	BPM Alzada South	Totals
Acres Fully Released From Bond	1,443	300	73	1,816
Acres, Disturbed, Reclaimed and Released	289	24	73	386
Acres, Undisturbed and Released	1,154	276		1,430

Table 4.2.1.1-1 Total Disturbed Acres

	Acres Mine Related Disturbance Within Permits	Acres of Mine Related Disturbance Released From Bond	Acres of AML Sites	Total Mine Related Disturbance
Acres of Mine Related Disturbance	3,786	386	252	4,424

4.2.1.2 Proposed Action and Reasonable Foreseeable Development

Amendment #10, if approved as submitted, would increase the permit by 1,487 acres, of which 583.8 acres would be federal (BLM) and 903.2 would be private ownership. The disturbed area, which would include mined areas plus mine related disturbances such as haul roads and stockpiles etc., would total 686 acres.

The RFD area would involve adding about 1,500 acres of Federal land and 1,500 acres of private land to the Alzada North permit and about 350 acres would be added to the Alzada south permit. Mining and reclamation could occur on about 50% of the permitted land using the above described methods. These acreages are a rough estimate, “best guess” scenario based on limited exploration drilling. As bentonite reserves are identified and mine plans are developed, acreages will change.

4.3 Topography

4.3.1 Proposed Action, Direct and Indirect Impacts

The proposed action will result in alteration of the existing landscape during mining of the area. During reclamation activities, the affected land will be contoured to blend in with the surrounding topography, and generally slopes will be no steeper than 5:1 which will help provide stabilization against wind and water erosion.

Bentonite on the proposed mine sites lies in a deposit 2 -5 feet thick; however, the reduction in elevation will be generally less than the thickness of the bentonite seam removed because of overburden swelling. On relatively level sites, post-mine contours will approximate the original contours.

The restored land surface will have less topographic diversity than before mining. Reduction of topographic diversity can reduce vegetation and habitat diversity,

which can result in a reduction of wildlife carrying capacity in restored areas for some species.

A flatter surface will decrease the surface water run-off rates after precipitation events, thereby reducing the erosion on reclaimed soils and a flatter surface will allow for greater infiltration of precipitation.

4.3.1.1 Proposed Action, Cumulative Impacts

The proposed action would add 686 more acres to the total 4,424 acres of disturbed land on both North and South mine areas. This will result in more land with gentler slopes and lower topographic diversity to that which already has been impacted by mining. This impact would be a permanent affect to the landscape.

4.3.2 Alternative A (No Action), Direct and Indirect Impacts

The additional impacts to the topography as described in the proposed action would not occur, but permitted mining areas would continue to be impacted until currently permitted reserves are exhausted.

4.3.2.1 Alternative A (No Action) Cumulative Impacts

There would be no additional cumulative impacts beyond that which would occur from already permitted mining if the proposed action was denied.

4.3.3 Mitigation

Additional mitigation for topographic impacts would not be necessary.

4.4 Air Quality

4.4.1 Proposed Action, Direct and Indirect Impacts

Fugitive dust generated by wind erosion on the moderate to severely susceptible soils

would elevate total suspended particulates (TSP) on an average background concentration of 15 $\mu\text{g}/\text{m}^3$; this would continue on a long-term basis. Land treatments would increase surface exposure and raise fugitive dust concentrations to about 30 $\mu\text{g}/\text{m}^3$ over the short term, until vegetation is well established. Increased vegetative production would have a positive effect on reducing fugitive dust generation from wind erosion. Chemical control of noxious weeds could produce very localized, short term, virtually unmeasurable impacts to air quality by drifting in and around the treatment areas.

Bentonite mining and hauling activities are a source of particulate and gaseous emissions. Fugitive dust emissions are generated by mining, hauling and stockpiling operations. Gaseous air pollutants include sulfur dioxide (SO_2), carbon monoxide (CO), oxides of nitrogen (NO_x) and volatile organic compounds (VOC). The source for these emissions is the diesel-fired engines used to power mining equipment and haul trucks. All of the emissions from mining bentonite are fugitive emissions emitted at ambient temperature with no momentum. These emissions are not expected to impact visibility or air quality to a measureable degree. Product from the East Area would be transported about 3 miles via new haul road to Highway 212.

4.4.1.1 Proposed Action, Cumulative Impacts

Fugitive dust and gaseous emissions produced from this action could be cumulative to dust and emissions contributed by adjacent mining. However, as mining occurs in the proposed area, mining in other areas may cease without any true cumulative impacts to air quality from the mining activities. It is unlikely that direct air quality impacts from the proposed action will violate any local, state, tribal or federal air quality standards.

4.4.1.2 Mitigation

Dust emissions are partly mitigated by intermittent dust suppression of the haul roads.

4.4.2 Alternative A (No Action), Direct and Indirect Impacts

The no action alternative would not have additional impacts to air quality beyond those already expected in currently permitted mining as no newly permitted mining would take place.

4.4.2.1 Alternative A (No Action) Cumulative Impacts

There would be no cumulative impacts beyond currently mined and permitted acreage limits as no new mining would take place.

4.4.2.2 Mitigation

The main haul roads are watered to suppress dust from hauling the bentonite.

4.5 Hydrology

4.5.1 Groundwater, Proposed Action, Direct and Indirect Impacts

Bentonite mining rarely occurs at depths sufficient to contact groundwater. When exploratory bentonite drilling does occasionally encounter shallow groundwater, a perched water table; it is not of sufficient quantity to provide livestock or domestic use but may produce small wet areas high on the ridges. These areas are avoided by mining because of the high cost to recover the clay in wet areas.

During the mining procedure, a small amount of bentonite is usually left in situ. The small amount of bentonite left in the excavated pit, impedes downward migration of waters from the overlying reclaimed land and may re-establish the perched groundwater and the subsequent wet areas

on high on the ridges at the bentonite outcrops.

Based on the data that no significant groundwater is known to exist above the deepest projected depth of mining and there is no known aquifer recharge area within the mine area, it is not anticipated that groundwater will be impacted.

4.5.2 Surface Water, Proposed Action, Direct and Indirect Impacts

During active mining operations, water quality will decline due to an increase in total suspended solids (TSS) during storm events. Because of the diversion around the mine, the water picks up more sediments and other dissolved solids running through constructed ditches and diversions than it normally would flowing across the native prairie. However, since the native undisturbed soils in the area are naturally erosive and dispersive, and with sediment control measures taken by ACC and with the filtering action of the off site vegetation as the runoff water leaves the disturbed area; it is anticipated that there will not be a discernable impact from the background sediment yield or the general quality at any intermittent drainage.

Post-mine reclamation of the land may actually enhance the long-term surface water quality because post-mine vegetative cover often exceeds that of the native vegetation, which will decrease erosion, thereby increasing water quality.

Water quantity from the reclaimed areas will not be significantly reduced as a result of mining. The reclaimed land will have gentler slopes, which tends to reduce surface run-off rates by increasing infiltration rates. However, the areas reclaimed in relationship to the total watershed acres of the intermittent drainages are small and the yields are not reduced significantly because the high clay content of the soils tends to seal over relatively quickly, reducing infiltration and not greatly affecting the

runoff quantity. Small pits may be left for stockwater but these will retain runoff from relatively small areas, less than 30 acres, therefore the changes at an intermittent drainage will not be measurable.

4.5.2.1 Surface water, Proposed Action Cumulative Impacts

Only ephemeral drainages are affected by actual mining activity. Culverts have been placed in an intermittent stream that is crossed by a primary haul road. Alteration of flow patterns of ephemeral drainages occurs during mining by redirecting flow around the active mine site, which is typically 2-4 acres. An increase in suspended and dissolved solids in runoff waters from the disturbed areas occurs during the period of mining and until the areas are revegetated. Location and courses of ephemeral drainages are re-established during the reclamation process. Reclaimed land typically exhibits more vegetative cover than pre-mine conditions, which helps reduce the sediment load in run-off of the overall permit area.

Within the permitted lands, approximately 2,111 acres have been disturbed, approximately 1,247 acres are in some stage of reclamation where sedimentation has been reduced or eliminated. The remaining disturbed acres, along with haul roads and spur roads, will continue to contribute suspended and dissolved solids to run-off waters until fully revegetated. The proposed action would cause additional sedimentation during mining activities; however, concurrent reclamation will tend to minimize it.

Stockponds are sometimes constructed by ACC during the reclamation process at the request of the landowner. In addition to enhancing the water resources for livestock grazing, these stockponds also provide wetland habitat for wildlife and serve as a sediment filtration system, improving the quality of runoff water. In accordance with MTDNRC rules, Application for Beneficial

Water Use Permit will be filed with the Water Resources Division for all permanent stockwater or sediment retention ponds.

Since ACC has been mining under contract in the Alzada area, six stockponds have been created for landowners.

Federal pre-FLPMA (1976) and State pre-Law (1980) acres of disturbance have not been reclaimed. Without the reshaping of the spoils, which reduces the gradient, re-establishment of drainage ways and the vital topsoil plus vegetation has left areas that continue to produce excessive sediment. As noted in previous chapters, the re-establishment and maintaining of the vegetative cover is the critical element in reduction of sediment. These pre-FLPMA areas continue to produce sediment in quantities exceeding any other area, other than where the vegetation has been removed or not available because of the soil types on the surface.

4.5.3 Surface Water, Alternative A (No Action), Direct and Indirect Impacts

Without the removal of the vegetative cover or topsoil, there is no expected increase in water quality or an expected decrease in water quantity.

4.5.3.1 Surface Water, Alternative B (No Action), Cumulative Impacts

Excessive sediment and a subsequent decrease in water quality is expected from the pre-FLPMA and pre-Law mining areas.

4.5.4 Mitigation

Surface flow will be diverted around the upslope side of mining operations by constructing v-ditches and/or berms with a patrol/blade. Water will be channeled within the original watershed to lessen the effect on water distribution in the area. Controlling run-on will reduce water run-off from disturbance areas, minimizing potential pollution due to suspended and dissolved

solids. Sediment control devices will be employed where excessive run-off threatens to carry sediment to undisturbed lands.

Stormwater originating from disturbed lands where topsoil has been removed will be directed into small catch basins wherever possible to allow the heavier sediments to remain within the limits of the disturbed area. These sediment traps will typically be 12 feet wide and 20 feet long and approximately 2-3 feet deep. They will be placed at logical low points around the disturbed perimeter where stormwater would be expected to exit. The traps will be maintained on a regular basis so they do not become overfilled with sediment.

No drainage will be blocked by stockpiling of overburden or soils. If excessive erosion occurs within a diversion, sediment pits, rows of straw bales, sediment fences, and/or water bars will be installed. Reclamation operations will include removal of all temporary diversions and reestablishment of through drainage. No perennial or intermittent streams will be disturbed by the mining operations. Only ephemeral drainages will incur actual surface disturbance from mining activity, and these drainages will be re-established after mining.

Two of the largest drainages, both ephemeral, will be temporarily diverted and then reconstructed in close proximity to their original location. Constructed channels will slope 1% or less for the purpose of minimizing water velocity to reduce erosion. The flat-bottom trapezoidal channels will be designed according to watershed size, peak flow, and velocity calculations. If topography is not conducive to maintaining 1% grade, steep slope channel design practices will be employed, such as installing rip-rap or rolled erosion control products. Generally, ephemeral channel construction will consist of a flat, scraper width (12 foot) bottoms that will meander as much as possible. The goal will be to approximate original pre-mine channel cross

section and to minimize erosion. To achieve this goal some experimental channels will be designed and built for a 2 year, bankfull discharge event. Typically this design would call for a 3-6 foot wide channel bottom about ½ to 1 foot deep and a 4:1 side slope. The reasoning behind the smaller channel is that most erosion occurs during repetitive smaller events rather than the infrequent large event. Consequently, a smaller “pilot” channel will naturally develop within a 12 foot wide bottom. A channel specifically created for these smaller events may help reduce erosion by eliminating the process, which creates the pilot channel in a wider bottom.

In all reconstructed channels, seeding will be done perpendicular to water flow to reduce erosion, and water bars and/or straw bales may be installed to encourage meandering within the channel. Tall wheatgrass may be added to the standard seed mix where applicable for erosion control and wildlife cover.

4.6 Wetlands

4.6.1 Proposed Action, Direct and Indirect Impacts

No new ponds or pits are proposed in the mine area, so there will be no impact.

4.6.1.1 Proposed Action, Cumulative Impacts

No change from the present is expected.

4.6.2 Alternative A (No Action), Direct and Indirect Impacts

No change is expected because no new water source is being constructed.

4.6.2.1 Alternative A (No Action), Cumulative Impacts

Ponds or pits have been constructed throughout the previous mined areas. These were constructed for livestock water

sources, but also serve to benefit other species by providing a continual source of water. The previous addition of stockwater ponds or sediment retention ponds and the general seclusion of the area has benefited wildlife species such as waterfowl and some mammals.

4.6.3 Mitigation

No additional mitigation is required.

4.7 Wildlife

4.7.1 Proposed Action, Direct and Indirect Impacts

Direct Impacts

Direct impacts 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.

The proposed action would add 1,487 acres to ACC’s plan of operations, of which 686 acres would be disturbed by mining operations. This is a direct loss of 686 acres of wildlife habitat (both forage and cover). Successful reclamation would stabilize disturbed sites and attempt to restore disturbed areas to predisturbance conditions. Reclamation will not always recreate predisturbance 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 sage grouse and pronghorn antelope would be affected by this change. Due to the relatively small number of acres directly impacted, and the result of ACC wildlife surveys associated with previous mining

operations, showing relative low and stable wildlife populations, this loss of habitat should not affect the long term viability of these species in the project area.

Shrubs, particularly big sagebrush, provide important winter forage for big game, and cover for sage grouse. Removal of shrubs during mining will decrease forage availability and reduce the winter carrying capacity of sagebrush areas. Reclamation activities will restore forage vegetation (grasses and forbs) in a relatively short period of time (1-3 years), but the forage will typically be available only during the summer period because during the winter months it is often unavailable under snow. Although cicer milkvetch is a planted species, the forbs generally are slower to re-establish than grasses. Forbs will also tend to re-establish via natural resources. Vegetation that is suitable for wildlife cover (shrubs) will require a much longer period of time. As shrubs begin to grow in reclaimed areas, they too are primarily available in the summer months as forage, and until they grow into mature plants, able to provide hiding and thermal cover (25-30 years), are also often unavailable during winters.

The increase in vehicle traffic because of new roads would result in the increase in collision-related mortalities to all wildlife species. The most notable species impacted include mule deer, upland and passerine birds, small mammals and reptiles/amphibians. These additional mortalities would not have a noticeable impact on the local populations of the species affected.

No known threatened or endangered wildlife species will be affected by ACC's operations. No critical habitats for wildlife species are present or will be affected by mining.

Indirect Impacts

Indirect impacts from development actions

occur to wildlife species that are sensitive to human activities, require large blocks of uniform cover, or are displaced by other species or individuals of their own species. In addition to the 686 acres that would be directly disturbed, an additional 762.5 acres within the Amendment 10 plan of operations would become less suitable because of the disturbance related to the mining and associated human activities.

Similar habitat is available in immediately adjacent areas, and will be used by those animals mobile enough to leave when mining operations begin. Some redistribution of pronghorn, mule deer, upland game birds, such as sage grouse, non-game birds, and some small mammals will occur during mining as they are displaced to adjacent lands. Some additional competition will occur between displaced wildlife and species already inhabiting non-project habitats, but that level is difficult to measure.

About half of the wildlife habitat that is included in the Amendment #10 proposal would not be directly impacted. However, indirect affects of the mining activity would include changes to traditional use and movement patterns, disruption to normal foraging and reproductive habits, and increased energy expenditure by most wildlife species in the project area. The species most impacted by habitat fragmentation include those with larger home ranges, such as big game, upland birds and raptors. Passerine and other neotropical migrant birds are impacted by interruptions to preferred nesting habitat, improved habitat for undesirable competitors such as brown-headed cowbirds and increased potential for predation. The pre-mine sagebrush/grassland habitat has a low density and diversity of non-game bird species. The amount of displacement by mining will be minimal. Mining will be outside the juniper-pine-oak woodlands, riparian habitats, or wetlands where higher bird densities are found.

Ferruginous hawks nest in the area and one nest, active in 2004, is within a mile of the proposed area of disturbance for the Amendment 10 proposal. Mining activities are likely to shift nesting to suitable habitat and nesting areas less affected by mining. Mining should not have an appreciable affect on ferruginous hawk because of the relatively small number of ferruginous hawks observed in the area over the past years, and the numerous nests, and nesting opportunities in the area.

Impacts to prairie dogs and species associated with prairie dog towns (i.e., mountain plover, burrowing owl) would be minimal, because no prairie dog towns are within the project area.

As with any disturbance, some wildlife species and individuals, including big game, can and would acclimate to sustained and regular human contact providing that contact is not perceived as threatening. Many of the small mammal species are disturbance tolerant, and quickly re-establish their populations on reclaimed land.

Aquatic life

There are no known threatened or endangered aquatic life species (or their habitats) that will be affected by ACC's operations.

Minimal effects may occur to the fish species and other aquatic life located downstream in Thompson Creek primarily attributed to increased suspended sediment and dissolved solids. However, appropriate erosion control measures will lessen this effect.

Minimal effects may occur to aquatic invertebrates and amphibians within the project area. This is due to the displaced habitat caused by removing the one stock pond and mining in ephemeral drainages. These species will most likely migrate to other suitable habitats. All of the habitat within the project area will be reclaimed

after the mining is completed.

4.7.1.1 Proposed Action, Cumulative Impacts

Cumulative impacts would include wildlife injuries and mortalities, and the loss of additional habitat. Habitat loss would increase from mining activities. Habitat loss, direct and indirect, over the life of the project could approach or exceed the 1,487 acres included in the proposed expansion of ACC's plan of operations. Reclamation would not always recreate predisturbed conditions or values. Some wildlife populations, especially those dependent on sagebrush, would not recover to pre-disturbance levels (i.e., sage grouse, mule deer, and some passerines dependent on sagebrush). However, pre-disturbance surveys and monitoring over the past 20 years have indicated that these species exist in relatively low numbers in the area, and primarily occupy habitats outside proposed project areas. Therefore, the cumulative impacts to wildlife would likely be minimal.

Indirect cumulative impacts would include disturbance to, or displacement of, certain wildlife species from human activities, habitat loss, and potential changes in animal behavior and movement patterns. Again, the surveys and monitoring efforts indicate that most species use habitats outside the proposed mining areas, so the impacts would likely be minimal.

4.7.2 Alternative A (No Action), Direct and Indirect Impacts

There would be no impacts to wildlife in addition to those analyzed for previous ACC expansions and plans of operation. If no action, meaning no additional areas will be mined, then no direct or indirect impacts, beyond those already permitted, will occur.

4.7.2.1 Alternative A (No Action), Cumulative Impacts

No additional cumulative impacts would

occur, beyond those identified and permitted for previous mine plan amendments, if the no action alternative is adopted.

4.7.3 Mitigation

Appropriate erosion control measures, such as sediment erosion control structures (silt fences, straw bales, etc.) will be installed prior, during and after mining is completed. These erosion control structures should be left for at least one year after mining is completed and erosional stability is achieved.

4.8 Cultural Resources

4.8.1 Proposed Action, Direct and Indirect Impacts

No cultural resources were located during the 2002 and 2003 surveys conducted on Amendment #10 lands; therefore, ACC's mining activities should have no impact on cultural resources.

Based on the results of the conducted surveys, it is determined that the project area and the project's Area of Potential Effect has been adequately surveyed for cultural resources and that no cultural resources were identified within the project's Area of Potential Effect. The proposed undertaking will occur in an area where no sites exist. Consequently, no cultural resources considered eligible for the National Register of Historic Places would be impacted or affected by the proposed undertaking.

4.8.1.1 Proposed Action, Cumulative Impacts

There have been little to no cumulative impacts to cultural resources, to date, as a result of past, current and proposed actions. Few sites have been located and recorded in the project area and none have been impacted. The Company has avoided impacting all cultural resource values from their past and current actions. Had cultural sites had been located, they would have been

brought to the attention of the proper local, state, and federal officials through normal reporting procedures. Had significant sites been found, a variety of mitigation measures would have been utilized to mitigate the impacts to the sites, ranging from data collection (excavation) to on-site protection to avoidance.

The area is generally considered to be poorly suited for aboriginal occupation. Due to the compact clay hard pan soils throughout the area the potential for locating significant cultural remains is considered low. The only cultural sites to have been located near ACC's mine sites in the Alzada area are located in Section 36, T. 9 S., R. 58 E., where six sites were found by Anthro Research in 1984; ACC has avoided these sites by marking their boundaries with steel posts.

Consequently, there is little likelihood of there being significant impacts to cultural resource values as a result of cumulative affects of these actions.

4.8.2 Alternative A (No Action), Direct and Indirect Impacts

There would also be no impacts to cultural resources as a result of the selection and implementation of the No Action alternative. Unanticipated discoveries during mining and road construction would be dealt with through implementation of the mitigation described above.

4.8.2.1 Alternative A (No Action), Cumulative Impacts

There would be no cumulative impacts as no additional mining would take place.

4.8.3 Mitigation

In the event that buried cultural resource values are located during earth disturbing activities, the individual/ operator/contractor shall immediately bring to the attention of the BLM Field Manager any and all

antiquities or other items of cultural or scientific interest, including but not limited to historic or prehistoric ruins, fossils, artifacts or burials, discovered as a result of his operations. The Miles City Field Office must be notified and operations must cease if any archaeological or paleontological resources are discovered as a result of operations, and shall leave such discoveries intact until told to proceed by the BLM Field Manager. Operations may resume only after receipt of BLM approval. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Operator shall suspend all operations in the immediate areas of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The operator will be responsible for the cost of evaluation and any decision as to proper mitigation measures to be made by the authorized officer after consulting with the operator.

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in

situ preservation is not necessary); and,

- a timeframe for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume operations.

4.9 Soils

4.9.1 Proposed Action, Direct and Indirect Impacts

Disturbance of the existing soil horizons occurs during removal and replacement of the topsoil and subsoil. This activity results in alteration of the in situ soil fabric. Bulk density of soil horizons is reduced, increasing the available water capacity. This reduction in density lessens with time, and does not appear to have any negative effects. The temporary increase in available water capacity assists the revegetation process.

The proposed action requires all usable topsoil to either be salvaged and stockpiled or applied directly to contoured areas. Best management practices are utilized to insure minimum erosion from the stockpiled soils and overburden. Topsoil piles and direct-applied areas will be seeded to protect them from erosion. However, some soil will be lost to wind and water erosion until vegetation is re-established. This loss

should be minimal depending on the intensity, frequency and duration of erosion-producing events.

Rock, bentonite and shale outcrops support little or no vegetation and will not be salvaged as topsoil. Vegetation is often spotty due to soil chemical and physical characteristics in these areas.

4.9.1.1 Proposed Action, Cumulative Impacts

The post-mining soils will be replaced at a more uniform depth than the pre-mine soils were found. The average soil replacement depth in the areas proposed for mining will be 6 inches for topsoil and 6 inches for subsoil, based on pre-mine soil studies. This will have a beneficial impact on areas that had little or no topsoil prior to mining.

Pre-mine clay hard pan soils allow little water penetration and will be benefited by being broken up by dirt-moving equipment; it will be possible to establish vegetation on areas that were sparsely vegetated before mining.

The reclaimed lands will have gentler slopes than pre-mine, which will reduce surface run-off rates and increase infiltration rates.

Replaced soils should support a stable and productive vegetative cover capable of sustaining post-mining land uses, which include livestock grazing and wildlife habitat. Therefore, potential impacts to the soil resources on Amendment #10 will not be adverse.

4.9.2 Alternative A (No Action), Direct and Indirect Impacts

The no action alternative would not disturb soils of the area beyond existing permit levels and would have no direct or indirect impacts.

4.9.2.1 Alternative A (No Action), Cumulative Impacts

There would be no cumulative impacts to soils of the area as these soils would not be disturbed beyond existing permit levels.

4.9.3 Mitigation

Top soil will be salvaged and direct hauled to previously mined areas. This will promote quicker vegetative establishment, reducing potential soil erosion by wind and water. Material not suitable for vegetative growth will be placed beneath the root zone, improving vegetative growth and productivity. No mitigation will be needed with the no action alternative.

4.10 Vegetation

4.10.1 Proposed Action, Direct and Indirect Impacts

During the stripping operations, there will be a loss of wildlife and livestock habitat and potential for increased erosion until vegetation is re-established. 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.

Each year approximately the same amount of acreage is reclaimed through seeding as was affected by mining that year.

Most of the reclaimed land will be seeded with a grass/legume mixture that is 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 10 lbs. PLS/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 planted species

become established.

The difference in vegetation species would impact various wildlife species until shrubs and forbs, which are located on adjacent native land can become established on the reclaimed land. Reintroduction of these species may be quicker on areas where topsoil is direct-hauled (“livespread”). In an experimental project on Amendment #9 reclamation, ACC will attempt to establish big sagebrush in four areas in the N½, Section 6, T. 9 S., R. 58 E. Three elevated plateaus will be created where topsoil containing big sagebrush plants and seed will be livespread. In addition, a flat ground sagebrush restoration area will be livespread with topsoil containing big sagebrush, and big sagebrush seed will be hand broadcast over half the site.

Seeded grasslands can provide valuable wildlife habitat because, as discussed in the wildlife section, big game animals will concentrate on grassland species during the spring and summer months, and small mammals are suited to a variety of habitats.

The following describes the species in ACC’s seed mix:

- Western wheatgrass is a long-lived, sod-forming, drought resistant perennial native grass. It is one of the first grasses to grow on the range in the spring, and it cures well on the stem and retains its protein content, which provides for good winter grazing.
- Slender wheatgrass is a perennial native bunchgrass with a fibrous root system. Seedlings are strong and easily established. It is drought tolerant, moderately salt tolerant, and very cold tolerant.
- Streambank wheatgrass is a sod-forming perennial native grass. It is drought tolerant and moderately tolerant to saline or alkaline soils. It has strong rhizomes and spreads rapidly to form a good ground

cover. It has special uses in soil and water conservation work and offers excellent protection against soil erosion.

- Green needlegrass is a long-lived perennial native grass. It has short awns, which are not harmful to animals, and it is valuable component of the range. It grows to a height of 1.5 to 3 feet and provides good cover for duck nesting and small mammals. It produces a good yield of forage that is palatable and nutritious early in the season.
- Cicer milkvetch is a long-lived perennial legume that may be slow to establish, but produces an abundance of palatable forage. It is a nitrogen fixer that is best adapted to medium to clayey soil textures. It will withstand drought. The legumes are readily consumed by big game species.

There are no known threatened or endangered plant species within the study area; therefore, there should be no impacts to these species. Bentonite Corporation has reported a BLM “watch” species (Blue toadflax) south of the Ridge Road and east of their Vol Ash 6 claims. ACC has not encountered this species on their Amendment lands.

Evidence of mining and reclamation will remain for the long term until vegetation and erosion return the area to equilibrium with the surrounding environment.

4.10.1.1 Proposed Action, Cumulative Impacts

The cumulative impacts on vegetation would include past present and future disturbances to the landscape, in particular the vegetation. That would mean that at Alzada north about 2,070 acres of vegetation have been disturbed to date, and an additional 686 acres would be disturbed under the proposed action for a total of 2,756 acres of disturbance. The RFD would

include about another 1,500 acres for a total potential long term disturbance at Alzada North of 4,256 acres (inclusive of the RFD scenario).

All the lands would be contemporaneously reclaimed as mining takes place and seeded with native species. Therefore, only a small portion of the total mine area would be unvegetated at any one time. Many different stages of vegetative establishment will occur on the mine area over time ranging from fully revegetated to newly seeded areas. The mined lands will eventually reach a pre-mine level of vegetation.

4.10.2 Alternative A (No Action), Direct and Indirect Impacts

No additional impacts beyond those already permitted would occur to the vegetation.

4.10.2.1 Alternative A (No Action), Cumulative Impacts

There would be no cumulative impacts beyond those that will occur from lands, which are already permitted for mining.

4.10.3 Mitigation

Erosion control, seeding plans and grazing modifications described in this document are sufficient mitigation to help offset impacts to vegetation.

4.11 Grazing Resources

4.11.1 Proposed Action, Direct and Indirect Impacts

During the mining and the reclamation process, BLM lands within the proposed action will be unavailable for livestock uses and livestock grazing will be excluded through the construction of a fence placed around reclaimed areas that conforms to BLM criteria. The BLM will modify the grazing activities through the grazing decision process specified within the Title

43 CFR 4160 to suspend the AUMs within the proposed action.

This will result in the suspension of 86 AUMs within the S&L Sheep Ranch Permit, 6 AUMs within the Cochran Grazing Association Permit, and 41 AUMs of suspension within the Pilster Ranch Corporation. In addition, the Willow Creek AMP and Thompson Creek AMP (Cochran Grazing Association) grazing schedules will be adjusted to reflect the reduction of lands (both private and federal) that will be available to livestock grazing.

After two growing seasons, the BLM will utilize an interdisciplinary team process to determine the applicability of permitting livestock grazing on the reclaimed BLM lands. If the interdisciplinary team determines that livestock grazing will not impair rangeland health standards, then the BLM will coordinate with the permittee to activate the suspended use. Once an application has been completed, the BLM will issue grazing decision(s) as described above to place the suspended use into active use that is available for livestock grazing.

On private lands not tied to the Federal AMP, ACC reaches a grazing agreement with the landowner, or the reclaimed land is fenced to protect the site from livestock grazing for 2-3 years until the perennial grasses are established.

The reclamation plan is designed so that the affected lands will support both livestock grazing and wildlife after mining.

4.11.1.1 Proposed Action, Cumulative Impacts

BLM lands that are removed from grazing will continue to accrue as new areas are mined and reclaimed until such time as BLM determines that the reclaimed lands can be returned to grazing use. It is anticipated that the AUM's affected will be continually adjusted over the years as mining and reclamation progress. Ultimately

mining will cease and the grazing practices will return to normal.

4.11.2 Alternative A (No Action), Direct and Indirect Impacts

Existing impacts to grazing will continue up to currently permitted mining levels.

4.11.2.1 Alternative A (No Action), Cumulative impacts

Cumulative impacts under this alternative will accrue only up to the presently permitted mining levels as no new mining would occur.

4.11.3 Mitigation

No new mitigation would be required beyond those currently employed.

4.12 Lands and Realty

4.12.1 Land Use Authorizations and Ownership, Proposed Action, Direct and Indirect Impacts

The proposed action will not have any direct or indirect impacts to the land use authorizations or land ownership.

4.12.1.1 Land Use Authorizations and Ownership, Proposed Action, Cumulative Impacts

The proposed action will not have any cumulative impacts to the land use authorizations or land ownership.

4.12.2 Land Use Authorizations and Ownership, Alternative A (No Action), Direct and Indirect Impacts

Alternative A, the no action alternative, will not have any direct or indirect impacts to the land use authorizations or land ownership.

4.12.2.1 Land Use Authorization Ownership, Alternative A (No Action), Cumulative Impacts

Alternative A, the no action alternative, will not have any cumulative impacts to the land use authorizations or land ownership.

4.12.3 Mitigation

No mitigation is needed for the land use authorizations or land ownership.

4.13 Recreation

4.13.1 Proposed Action, Direct and Indirect Impacts

The area is not a high-use recreation use. Recreation use consists primarily of big game hunting and bird hunting although hunting is restricted on the adjoining private lands. Mining operations temporarily remove small acreages, which have a minor impact on big game distribution. Existing ponds are not affected by mining operations. As new areas are mined, other areas are being reclaimed with some land reaching full grassland restoration each year. This provides additional habitat for displaced big game and opportunity for hunting.

Stockponds, which are created on some mine sites have added areas for hunting ducks and geese.

4.13.1.2 Proposed Action, Cumulative Impacts

The impacts would essentially be the same as those described above except more land will be opened up to vehicular access. This would probably improve the chances of success for hunters who obtain permission to hunt as the access is mostly controlled by private landowners.

While the vehicular access would be opened up to cover more land as the road network expands, the recreational hunting experience could be diminished for some hunters due to

the altered nature of the landscape and mining activity. The topography will be permanently altered but would eventually become less noticeable as the areas become revegetated.

These impacts would diminish with time when mining ceases and the land is fully reclaimed.

4.13.2 Alternative A (No Action), Direct and Indirect Impacts

The impacts would be as described above up to the limits of previously approved mining.

4.13.2.1 Alternative A (No Action), Cumulative Impacts

The cumulative impacts would be as described above up to the limits of previously approved mining.

4.13.3 Mitigation

Mitigation is not required for recreational resources.

4.14 Visual Resources

4.14.1 Proposed Action, Direct and Indirect Impacts

Visual impacts from ACC's mining operations will be visible to ranchers in the immediate area, occasional hunters or visitors and motorists on Highway 212. Highway 212 is located on the eastern edge of the Eastern Mine area and also runs about three miles north of the Western Mine Area.

A portion of the Eastern area will be visible to motorists because mining will be in close proximity to the highway. At times, haul trucks from the mine will also be entering and leaving the highway at that location further drawing attention to the mining activity. However, on the West mine area, motorists will probably not notice ACC's operation because of the terrain and distance from the highway.

The proposed mining activity will continue to modify the landscape by creating changes in line, form, color, and texture. In the short term, new temporary landforms will be created, which include stockpiles, pits and haul roads. Permanent changes to landforms will also occur. After reclamation is complete, the topography will generally be more subdued with gentler, vegetated rolling hills replacing sharper, partially vegetated ridges or bare knobs.

4.14.1.1 Proposed Action, Cumulative Impacts

As described above, permanent changes to the landscape will occur. The cumulative impacts on the visual landscape would include past present and future disturbances. That would mean that at Alzada north about 2,070 acres have been disturbed to date, and an additional 686 acres would be disturbed under the proposed action for a total of 2,756 acres of disturbance. The RFD would include about another 1,500 acres for a total potential long term disturbance at Alzada North of 4,256 acres (inclusive of the RFD scenario).

4.14.2 Alternative A (No Action), Direct and Indirect Impacts

The impacts to the landscape, as described above, would continue to occur up to the limits of the presently permitted operations.

4.14.2.1 Alternative A (No Action) Cumulative Impacts

The cumulative impacts to the landscape, as described above, would continue to occur up to the limits of the presently permitted operations.

4.14.3 Mitigation

Current reclamation practices are sufficient to mitigate visual impacts to the landscape.

4.15 Noise

4.15.1 Proposed Action, Direct and Indirect Impacts

Noise, which results from the mining operation is within acceptable ranges for workers. Noise level measurements are taken periodically by MSHA (Mine Safety & Health Administration) and no citations have been issued to ACC for exceeding noise limits. The noise impact would be minimal for the nearest residents, which are approximately two miles from proposed mining.

4.15.1.1 Proposed Action, Cumulative Impacts

There will be no cumulative impacts related to noise as no new additional mining equipment is proposed to be used and the proposal does not represent an increase in production rates.

4.15.2 Alternative A (No Action), Direct and Indirect Impacts

Under the no action alternative, current levels of noise will continue at the usual and customary times that they occur until existing permitted mine lands are mined out.

4.15.2.1 Alternative A (No Action) Cumulative Impacts

There would be no cumulative noise impacts from this alternative.

4.15.3 Mitigation

Additional mitigation is not required.

4.16 Transportation Facilities

4.16.1 Proposed Action, Direct and Indirect Impacts

Since access to the West Area mines site will be via ACC's main haul road that intersects the Ridge Road approximately 5

½ miles west of Highway 212, it simply represents the status quo as the ore will be hauled over existing roads and small additions of in-pit haul roads.

Access to the East Area mine sites will be approximately 6 miles northwest of Alzada at Highway 212 or across previously permitted land to the west. The new access to Highway 212 would represent a shift in the location of heavy truck traffic entering the highway from the Ridge road (county road), to the new East Mine several miles to the east.

The bentonite is hauled by contract haul trucks. Hauling shuts down during inclement weather and during some months, but when active there may be 75 or more loads per day hauled from ACC's Montana mine sites. This represents a fairly large increase of additional heavy truck traffic on Highway 212 from mining. However, this also represents the status quo and additional haul truck traffic from the proposed action is not anticipated.

4.16.1.1 Proposed Action, Cumulative Impacts

It is possible that the road surface of Highway 212 could suffer a higher level of wear and tear due to the accumulated heavy truck traffic resulting from mining, however, it is not possible to document or quantify this supposition.

4.16.2 Alternative A (No Action), Direct and Indirect Impacts

Under this alternative, there would be no shift in access points to Highway 212 and current transportation impacts would continue until permitted reserves are exhausted.

4.16.2.1 Alternative A (No Action) Cumulative Impacts

It is possible that the road surface of Highway 212 could suffer a higher level of

wear and tear due to the accumulated high truck traffic resulting from mining until currently permitted reserves are exhausted, however, it is not possible to document or quantify this supposition.

4.16.3 Mitigation

Proper traffic control and safety signs should be installed on Highway 212, at or near the new access point. This should include signs advising motorists of trucks entering the highway as well as a stop sign for the haul trucks at the highway entry point.

4.17 Social and Economic Conditions

4.17.1 Proposed Action, Direct and Indirect Impacts

ACC's proposed action will result in the continued production of bentonite at current levels in the near term. Employment levels, wages, expenditures and taxes paid in the Tri-state area would continue.

During the course of this analysis, no alternative considered resulted in any identifiable effects or issues specific to any minority or low income population or community. The agency has considered all input from persons or groups regardless of age, race, income status, or other social or economic characteristics.

4.17.1.1 Proposed Action, Cumulative Impacts

Expansion of the mine into the unexplored areas east and west of the existing operation would extend the economic impacts described above into the foreseeable future.

4.17.2 Alternative A (No Action), Direct and Indirect Impacts

Denial of the Mine Permit Amendment application would result in an 80% reduction in ACC's Montana production within two years (Lyndon Bucher, personal conversation, 5-21-04). The direct impact

would be a corresponding number of layoffs and reduction in hours worked at both the mine and the plants. The indirect impacts include a reduction in wages, Montana income taxes, Wyoming and South Dakota sales taxes, and property taxes. Carter County would be impacted the most due to the reduction in taxable value for property taxes. Based on 2002 data this could amount to nearly one third of the total taxable value.

4.17.2.1 Alternative A (No Action) Cumulative Impacts

The direct and indirect impacts would be lessened in the foreseeable future by the additional production. Employment, income, taxes, etc., would depend on the demand for the quality of the reserves in the expansion areas.

4.17.3 Mitigation

Mitigation is not required.

4.18 Mineral Resources and Geology

4.18.1 Proposed Action, Direct and Indirect Impacts

The bentonite reserves, which lie within 50 feet of the surface, will be removed by ACC's activities on Amendment #10 lands. Certain grades of bentonite, which are not considered mineable at this time or bentonite that is deeper than 50 feet may be mined in the future, if economically feasible. No other mineral resource would be affected.

4.18.1.1 Proposed Action, Cumulative Impacts

Mining of the bentonite, past, present, and future represents an irretrievable commitment of the resource. Once it is mined, processed and shipped, that bentonite is lost to future users. Once these reserves are used up, the company would have to discover more, re-mine bypassed ore or close the mine.

4.18.2 Alternative A (No Action), Direct and Indirect Impacts

Under this alternative, the bentonite reserves underlying Amendment #10 would not be developed. It would therefore, be available for future users. The mining of currently permitted lands would continue until reserves are depleted. That bentonite would be lost to future users.

4.18.2.1 Alternative A (No Action) Cumulative Impacts

The cumulative impacts would be those restricted to development of currently permitted reserves.

4.18.3 Mitigation

Additional mitigation is not needed.