

Environmental Assessment WY-020-EA10-010

BENTONITE PERFORMANCE MINERALS

**Modification to BPMs “A-5” Plan of Operations and
Amendment/Update to WDEQ Permit 246C**

(WYW-165830)

Bureau of Land Management

Cody Field Office

Cody, Wyoming

September 2010

DOI-BLM-WY-020-EA10-010



MISSION STATEMENT

The BLM's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

TABLE OF CONTENTS

<u>1.0 INTRODUCTION</u>	4
1.1 Background	4
1.2 Purpose and Need for the Proposed Action	4
1.3 Relationship to Statutes, Regulations, Plans or Other Environmental Analyses	5
1.4 Scoping, Public Involvement and Issues	6
<u>2.0 PROPOSED ACTION AND ALTERNATIVES</u>	7
2.1 Alternative I – Proposed Action	7
2.2 Alternative II – No Action Alternative	15
2.3 Other Action Alternatives	15
2.4 Alternatives Considered but not Analyzed in Detail	15
<u>3.0 AFFECTED ENVIRONMENT</u>	15
3.1 Introduction and Project Location	16
3.2 Air Quality	16
3.3 Cultural Resources	16
3.4 Invasive and Non-native Species and Noxious Weeds	18
3.5 Livestock Grazing	19
3.6 Paleontological Resources	19
3.7 Recreation	19
3.8 Soils and Hydrology	20
3.9 Special Status Species	21
3.10 Threatened and Endangered Species	22
3.11 Vegetation	22
3.12 Visual Resource Management	22
3.13 Wildlife	22
3.14 Socioeconomics	22
3.15 Public Health and Safety	23
3.16 Water, Riparian and Wetland Areas, Aquatic Habitat and Fisheries	23
<u>4.0 ENVIRONMENTAL EFFECTS</u>	23
4.1 Direct and Indirect Effects	24
4.1.1 Air Quality	24
4.1.2 Cultural Resources	24

4.1.3	Invasive and Non-native Species and Noxious Weeds	24
4.1.4	Livestock Grazing	26
4.1.5	Paleontological Resources	26
4.1.6	Recreation	27
4.1.7	Soils and Hydrology	27
4.1.8	Special Status Species	27
4.1.9	Threatened and Endangered Species	28
4.1.10	Vegetation	28
4.1.11	Visual Resource Management	29
4.1.12	Wildlife	29
4.1.13	Socioeconomics	29
4.1.14	Public Health and Safety	30
4.1.15	Water, Riparian and Wetland Areas, Aquatic Habitat and Fisheries	30
4.2	Cumulative Effects	31
4.3	Stipulations and Mitigation Measures	33
4.4	Residual Effects	37
<u>5.0</u>	<u>TRIBES, INDIVIDUALS OR AGENCIES CONSULTED</u>	38
<u>6.0</u>	<u>LIST OF PREPARERS</u>	38
6.1	List of Reviewers	38
<u>7.0</u>	<u>REFERENCES</u>	39

ENVIRONMENTAL ASSESSMENT **DOE-BLM-WY-020-010-EA**

Bentonite Performance Minerals

Plan of Operations – Modification of Amendment 5 (“A-5”) - WYW-165830

Update to WDEQ Permit 246C

1.0 INTRODUCTION

BLM has received a new Plan of Operations modification submitted by Bentonite Performance Minerals (BPM); serialized under WYW-165830, which proposes to upgrade a portion (approximately 1.25 miles) of BLM System Road No. 1126 – the Dry Bear Road where situated on BLM-administered lands, to a **bentonite haul road** from its current condition of bladed road, and another portion of the same road (~1.5 miles) for **commercial use by pickup traffic** (not haul road scale). No new mining on public lands is proposed, but new mining is proposed on patented lands held by BPM. The modification of the “A-5” Plan amendment/area is located approximately 18 miles southeast of Lovell, in Big Horn County, Wyoming. This plan modification proposes to add a total of 150.2 acres of disturbance within the existing State mine permit boundary (Permit 246C-Amendment A-5), including a total of approximately 21.0 acres of road upgrade disturbance on BLM-administered land, and 118.0 acres of mining disturbance on patented and State land (in the “School Section”, Black Hill and Lower Seven areas). ***This Environmental Assessment (EA) analyzes the proposed disturbance on the public lands relative to the Proposed Action (21 acres of road upgrade), and analyzes a portion of the proposed mining disturbance (81.4 acres of Lower Seven claims mining) as part of the cumulative effects analysis.***

1.1 Background

BPM was first issued Permit 246C by the State of Wyoming – Wyoming Department of Environmental Quality Land Quality Division (WDEQ-LQD) on May 13, 1974. Amendment #1 to this permit was approved on August 14, 1997; Amendment #2 was approved on Feb. 8, 1999; Amendment #3 was approved Dec. 26, 2000; Amendment #4 was approved Oct. 22, 2004, and #4a was approved August 8, 2006. The fifth amendment, A-5, was approved by BLM on November 1, 2007, and by WDEQ-LQD shortly thereafter. This modification is the 6th application submitted to WDEQ-LQD and BLM and is referred to by WDEQ as the “2008 Update”. NEPA analyses were conducted wherever public lands were proposed for new mining.

1.2 Purpose and Need for the Proposed Action

Purpose and Need: The Federal Land Policy and Management Act of 1976 (43 USC 1732) requires the Secretary to prevent unnecessary or undue degradation of the public lands from operations conducted under the Mining Laws (1872) as amended. BLM regulations at 43 CFR 3809 were developed to prevent unnecessary or undue degradation, and require that operators mining on BLM lands submit a Plan of Operations, obtain approval prior to conducting operations, and adhere to the performance standards described in 43 CFR 3809.420.

The plan modification that involves the road upgrade on public lands that under review in this EA was requested by the Cody Field Manager after it was discovered that the same road had been bladed without authorization by the contractor working for BPM on the A-5 mining area. Therefore, the Dry Bear road upgrade was started without any BLM authorization.

This modification was submitted to provide actual road design plans and specifications, and allow for additional environmental review and scoping by BLM and the public.

Decision to be Made: Bentonite Performance Minerals has submitted a plan modification (herein referred to as “A-5 2008 Update”) to their Mine Plan under WDEQ Permit No. 246C, seeking approval to upgrade portions of an existing dirt road on public lands (Dry Bear Road 1126) so it can be used as a mine haul road, and other portions of the existing road so it can be used by commercial pickup traffic for workers accessing the main A-5 mine area, as well as to allow new mining on patented claims in the general area. In accordance with the rights of entry and use under the Mining Laws, and requirements in the regulations at 43 CFR 3809, the BLM must review the Plan of Operations to determine whether it is adequate to prevent unnecessary or undue degradation on the public lands. BLM may either:

- (1) Approve the Plan of Operations as submitted with necessary stipulations, mitigation and monitoring measures;
- (2) Approve the Plan of Operations subject to significant changes, or as necessary to meet the performance standards of 43 CFR 3809.420 and prevent unnecessary or undue degradation, or;
- (3) Disapprove/withhold approval of the Plan of Operations because it would result in unnecessary or undue degradation.

Approval of a modification of a Plan of Operations is a federal action that requires BLM to comply with the National Environmental Policy Act (NEPA). BLM generally prepares an Environmental Assessment (EA) of the impacts from the Proposed Action (the Plan of Operations) and possible alternatives(s), including a “No Action” alternative, in accordance with Council on Environmental Quality (CEQ) regulations implementing the provisions of NEPA (40 CFR 1500-1508). The results of this environmental analysis assist in determining whether the Plan of Operations is adequate to prevent unnecessary or undue degradation, determine any stipulations and mitigation/monitoring measures needed, and assess whether impacts resulting from the proposed Plan of Operations would be significant under NEPA. If so and such impacts could not be mitigated, preparation of an Environmental Impact Statement (EIS) relative to the proposed Plan of Operations may be required.

The Authorized Officer (AO), in this case the BLM-Cody Field Office Manager, must determine whether or not the Proposed Action could result in significant impact to the human environment. If not, this determination would be documented in a “Finding of No Significant Impact” (FONSI) as a result of the EA. If impacts are determined to be significant, preparation of an acceptable Environmental Impact Statement would be necessary, prior to Plan approval.

1.3 Relationship to Statutes, Regulations, Plans or Other Environmental Analyses

The BLM is required under the mining laws and regulations at 43 CFR 3809 to review mining notices and plans of operation for compliance with the regulations, and to ensure the plan will not cause unnecessary and undue degradation. (*Mining laws* means the Lode Law of July 26, 1866, as amended (14 Stat. 251); the Placer Law of July 9, 1870, as amended (16 Stat. 217); and the Mining Law of May 10, 1872, as amended (17 Stat. 91); as well as all laws supplementing and amending those laws, including the Building Stone Act of August 4, 1892, as amended (27 Stat. 348); the Saline Placer Act of January 31, 1901 (31 Stat. 745); the Surface Resources Act of 1955 (30 U.S.C. 611–614); and the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq.*)).

This Plan of Operations modification has been reviewed to determine if the Proposed Action conforms with the approved Cody Resource Management Plan Final Environmental Impact Statement and Record of Decision (9ROD) signed November 8, 1990, as required by 43 CFR 1610.5. The Cody RMP provides that, except for specific areas identified as closed, the planning area is open to staking of mining claims and operation of the mining laws for locatable minerals (pg. 21, ROD/RMP). Alternatives 1 and 2 described in this document would be in conformance with Cody RMP decisions and objectives. Alternative 3 (No Action) would not be in conformance, and would require amendment of the Cody RMP. The area proposed for a road upgrade under this Plan modification has not been withdrawn from mineral entry, and is therefore open to mining claim location, and subsequent mineral development, after proper review and approval.

BPM was first issued Permit 246C by the WDEQ-LQD on May 13, 1974. Amendment #1 to this permit was approved on August 14, 1997; Amendment #2 was approved on Feb. 8, 1999; Amendment #3 was approved Dec. 26, 2000; Amendment #4 was approved Oct. 22, 2004, and #4a was approved August 8, 2006. A-5 was the fifth amendment to Permit 246C submitted to WDEQ-LQD and BLM. NEPA analyses were conducted wherever public lands were proposed for new mining. The analysis presented in this EA is related to the Environmental Assessment done for the “**A-5 Plan of Operations**”, conducted by the BLM Cody Field Office under **WY-020-EA07-054**, which was approved on November 1, 2007. That EA analyzed new mining disturbance on approximately 428.7 acres of public land in a detailed analysis.

1.4 Scoping, Public Involvement and Issues

The BPM plan modification that involves the road upgrades on public lands under review in this EA was requested by the Cody Field Manager in Spring 2009, after it was discovered by BLM range staff that the Dry Bear Road had been bladed without authorization by the contractor (Weeden Construction of Lewiston, MT) working for BPM on the A-5 mining area. Therefore, much of the road upgrade was initiated without BLM authorization. This modification was submitted to provide actual road design plans and specifications, and allow for additional environmental review and scoping by BLM and the public.

Internal scoping with BLM specialists was conducted beginning in July 2009, and concluded in August 2010. The primary concerns relative to this proposed plan modification/haul road upgrade involved the need for the upgrades, and ensuring that any road upgrades would be designed properly relative to public safety and grazing management, and allow for long-term stability and proper drainage across or along the road. Scoping comments also included upgrading the minimal amount of road needed for mining operations.

Range: BLM range staff expressed concerns about the need for all or portions of this road to be upgraded as a haul road. Staff also requested a cattleguard be installed between Sections 16 and 21 if the road is to be used as a haul road in this area. Range staff also expressed concerns about any haul road upgrades causing an increase in noxious and invasive weed species, including cheat grass and halogeton. Use of a Pesticide Use Plan (PUP) needs to be included and approved by BLM prior to use of pesticides on the public lands, and this would be made a part of any plan modification approvals.

Grazing Permittee: The holder of the grazing allotment in the area, Mr. Tom Gifford, expressed concern that the road upgrade be done properly during a conversation held with him in November 2009, while a different access road was being inspected.

Wildlife: The BLM wildlife biologist, as well as the Wyoming Game and Fish Department, questioned the necessity of this road as well, and stated that, to protect a golden eagle nest in the area, mitigation measures

should be applied to any approvals, such as seasonal use restrictions. Mitigation measures may also need to be applied to protect prairie dog towns and mountain plover habitat where possible. Migratory bird surveys may be needed between April 15 – July 15, and nests avoided, if found. No Threatened & Endangered species issues, or other unusual environmental issues, were identified relative to the proposed Plan.

Cultural and Paleontological Resources: Stipulations related to protection of cultural and paleontological resources, as well as mitigation and monitoring measures, in conformance and compliance with 43 CFR 3809 regulations (such as appropriate and timely reclamation), would be included in any approval of this Plan.

Vegetation: Vegetation presently occupying areas adjacent to the existing BLM dirt road would be removed as a result of implementing the proposed plan modification. This vegetation and the vegetation that has already been removed as a result of unauthorized widening would not be restored until the proposed haul road is no longer needed and it has been restored to its pre-widened condition. Restoration of vegetation similar to the pre-disturbance condition would take a considerable length of time following haul road abandonment and reclamation.

Soil, Water, and Aquatic Resources: Increasing the amount of surface disturbance due to road upgrades decreases the protection and water processing functions that vegetation provides and increases the amount and velocity of runoff, the rate of erosion, and the amount of sediment transported. Modifying hydrologic features also affects watershed function and processes. These changes can impact downstream/down slope water, riparian-wetland areas, aquatic habitat, and the life-forms that use these resources. Soil particles, including nutrients and organic matter, that are transported by water as a result of surface disturbance degrades water quality and also represents a decrease in soil productivity at the site of origin.

Air Quality: Increasing the amount of surface disturbance decreases the soil protection provided by vegetation and exposes the soil to the erosive force of the wind. Soil particles dislodged by air movement and transported by the air as a result of surface disturbance degrade air quality as long as they remain airborne and also represent a decrease in soil productivity at the site of origin.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative I – Proposed Action

The Proposed Action under this analysis is to achieve proper design and implementation of upgrades on approximately 4 miles of BLM System Road 1126, also known as the “Dry Bear Road”, located north of Greybull, WY. **The sections of the road proposed for upgrade to haul road sizes are situated in Sections 2, 3, and 10, T. 54 N., R. 93 W., 6th P.M. This portion of the road proposed to be upgraded to haul road status begins approximately at the northeast corner of the S½SW¼NW¼ Section 10, and follows the existing road northeast into Sections 2 and 3, until it meets the new 2008 haul road previously constructed by BPM in Section 2, T. 54 N., R. 93 W. Sections of the road proposed for upgrade for use by commercial access pickup truck traffic are situated in Sections 10 and 21, T. 54 N., R. 93 W., 6th P.M. for a total proposed road disturbance of up to ~21 acres on public land.** The appropriate stipulations, mitigation and monitoring measures would be applied (See Section 3.1, below for legal description of the public lands involved). This Plan modification involves BPM-proposed road upgrades under an amended WDEQ Permit #246C. The Proposed Action is more thoroughly described below.

Standard stipulations regarding cultural/paleontological resources, and any T&E species (compatible with current 43 CFR 3809 regulations), as well as monitoring/mitigation measures relative to Migratory

birds/raptors, sensitive species, noxious/invasive weeds, and possibly other resources as necessary, would be included in any BLM approval.

A BLM approved seed mix, including shrub, grass and forb components, would be required to be planted on all reclaimed public lands after the haul road and commercial use upgrades are no longer needed. Reclamation of patented lands is regulated entirely by the Wyoming Department of Environmental Quality, Land Quality Division (LQD). The company must post a sufficient reclamation bond prior to beginning mining operations in the A-5 area.

(1) Operator Information (as per 43 CR 3809.401(b)(1)): The operator for this proposed Plan of Operations is Bentonite Performance Minerals, of P.O. Box 547, Lovell, WY, 82431.

(2) Description of operations (as per 43 CFR 3809.401(b)(2)):

PROPOSED ROAD UPGRADE – BLM SYSTEM ROAD 1126 – “DRY BEAR ROAD”: The proposed modification of the A-5 Plan of operations (“2008 Update” Dry Bear Road haul road upgrade) on public lands consists of the following legal descriptions (see areas labeled as ownership = BLM):

Proposed Dry Bear Haul Road
T54N R93W

Curently Disturbed					Proposed Disturbance				
	Length	Width	Area	Ownership		Length	Width	Area	Ownership
Sec. 21	ft	ft	Acre		Sec. 21	ft	ft	Acre	
NE¼SW¼	855.70	30.0	0.59	BLM	NE¼SW¼	855.70	60.0	1.18	BLM
SE¼NW¼	2585.30	30.0	1.78	BLM	SE¼NW¼	2585.30	60.0	3.56	BLM
SW¼NW¼	459.40	30.0	0.32	BLM	SW¼NW¼	459.40	60.0	0.63	BLM
SW¼NE¼	73.20	30.0	0.05	BLM	SW¼NE¼	73.20	60.0	0.10	BLM
NW¼NE¼	1533.90	30.0	1.06	BLM	NW¼NE¼	1533.90	60.0	2.11	BLM
Sec. 16					Sec. 16				
SW¼SE¼	1476.90	30.0	1.02	State	SW¼SE¼	1476.90	60.0	2.03	State
NW¼SE¼	363.80	30.0	0.25	State	NW¼SE¼	363.80	60.0	0.50	State
NE¼SE¼	1016.20	30.0	0.70	State	NE¼SE¼	1016.20	60.0	1.40	State
SE¼NE¼	1384.20	30.0	0.95	State	SE¼NE¼	1384.20	60.0	1.91	State
NE¼NE¼	1384.70	30.0	0.95	State	NE¼NE¼	1384.70	60.0	1.91	State
Sec. 9					Sec. 9				
SE¼SE¼	773.80	30.0	0.53	BLM	SE¼SE¼	773.80	60.0	1.07	BLM
Sec. 10					Sec. 10				
SW¼SW¼	633.40	30.0	0.44	BLM	SW¼SW¼	633.40	60.0	0.87	BLM
NW¼SW¼	1493.60	30.0	1.03	BLM	NW¼SW¼	1493.60	60.0	2.06	BLM
SW¼NW¼	836.00	30.0	0.58	BLM	SW¼NW¼	836.00	60.0	1.15	BLM
SE¼NW¼	811.70	30.0	0.56	BLM	SE¼NW¼	811.70	60.0	1.12	BLM
NE¼NW¼	1172.50	30.0	0.81	BLM	NE¼NW¼	1172.50	60.0	1.62	BLM
NW¼NE¼	1424.90	30.0	0.98	BLM	NW¼NE¼	1424.90	60.0	1.96	BLM
Sec. 3					Sec. 3				
SE¼SE¼	1401.30	30.0	0.97	BLM	SE¼SE¼	1401.30	60.0	1.93	BLM
Sec. 2					Sec. 2				
SW¼SW¼	1587.10	30.0	1.09	MI	SW¼SW¼	1587.10	60.0	2.19	MI
SE¼SW¼	167.80	30.0	0.12	BLM	SE¼SW¼	167.80	60.0	0.23	BLM
NE¼SW¼	841.50	30.0	0.58	BLM	NE¼SW¼	841.50	60.0	1.16	BLM
NE¼SW¼	963.10	30.0	0.66	MI	NE¼SW¼	963.10	60.0	1.33	MI
SW¼NE¼	154.20	30.0	0.11	BPM	SW¼NE¼	154.20	60.0	0.21	BPM
Total	23394.2		16.11		Total	23394.2		32.22	

BPM is proposing to upgrade BLM System Road 1126 to a BPM Haul Road along a portion of its length (FIGURES 1 and 2). Please note that the proposed haul road disturbance in Sections 2, 3, and 10, T. 54 N., R. 93 W., is for right-of-way width of up to 60 feet, with a 35-foot running surface. The proposed disturbance/upgrades in Sections 10 and 21, T. 54 N., R. 93 W. above, are for widths of approximately 30 feet right-of-way with a 15-20 foot wide running surface suitable for use by commercial pickup traffic only, (not for haul truck traffic), as per BLM Manual 9113. The 32.22 acres listed above includes disturbance on State and MI land, not just BLM land, so the actual BLM surface disturbance as proposed would only be for 20.95 acres – as the figure of 32.22 acres includes some State of Wyoming and M-I Swaco disturbance acres.

BPM and its contractors propose to generally use rubber-tired scrapers to salvage topsoil and subsoil from the existing Dry Bear Haul Road corridor. Topsoil and subsoil would be separately and selectively salvaged. The material would be stockpiled separately adjacent to the area where the topsoil and subsoil would be used during reclamation of roads. This material would be blended into the surrounding native lands with the intent of disturbing as little of the un-mined land as possible.

Topsoil and subsoil stockpiles will be marked with signs reading TOPSOIL or SUBSOIL prior to beginning the stockpiles. The sign lettering would be at least six (6) inches tall. Once the topsoil and subsoil are salvaged from the road corridor, BPM would haul in crushed road base for construction of the upgraded road. General haul road cross-section design drawings were provided in Addendum B of the Mine Plan. Generally all side slopes associated with construction of the proposed Dry Bear Haul Road would be 3H: 1V to promote revegetation and reduce accelerated erosion. The exception would be the installation of six culverts – at culvert crossings embankment slopes would be built with 2H: 1V slopes. This would allow for less disturbance of the natural channel bottom.

For informational purposes only, the following table lists State (School Section area), and BPM-patented lands, (D Claims and Lower Seven areas) proposed to be mined under the 2008 Update. ***Please note that none of these lands or minerals thereunder are administered by the BLM, and therefore, will not be approved by the BLM under this plan modification.***

TABULATION OF LANDS			
School Section			
Claim	Acres	Ownership	Legal Description
SS1	16.74	State	N1/2 NE1/4 NE1/4, Lot 37, Sec 36, T56N, R94W
SS2	16.74	State	N1/2 NW1/4 NE1/4, Lot 37, Sec 36, T56N, R94W
SS3	16.74	State	N1/2 NE1/4 NW1/4, Lot 37, Sec 36, T56N, R94W
SS4	16.74	State	N1/2 NW1/4 NW1/4, Lot 37, Sec 36, T56N, R94W
SS5	23.26	State	S1/2 NW1/4 NW1/4, Lot 37, Sec 36, T56N, R94W
SS19	20.00	State	N1/2 NE1/4 SW1/4, Lot 37, Sec 36, T56N, R94W
D Claims			
Claim	Acres	Ownership	Legal Description
D56C	20.00	BPM	Lot 6, Sec. 5, T55N, R93W
D56F	20.00	BPM	N1/2 SW1/4 NE1/4, Sec. 5, T55N, R93W
Lower Seven			
Claim	Acres	Ownership	Legal Description
D95G	20.00	BPM	S1/2 SW1/4 SW1/4, Sec.3, T54N, R93W
S14B	20.00	BPM	N1/2 NW1/4 NW1/4, Sec. 10, T54N, R93W
S14C	20.00	BPM	S1/2 NW1/4 NW1/4, Sec. 10, T54N, R93W
S14F	20.00	BPM	N1/2 SW 1/4 NW1/4, Sec. 10, T54N, R93W
S34C	20.00	BPM	N1/2 SE1/4 NE1/4, Sec. 9, T54N, R93W
S34D	20.00	BPM	S1/2 SE1/4 NE1/4, Sec. 9, T54N, R93W
S34E	20.00	BPM	N1/2 NE1/4 SE1/4, Sec. 9, T54N, R93W

Access and Haul Roads

All haul roads and access roads constructed under this permit and update would be built and maintained in accordance to the performance standards of W.S.s 35-11-406(b)(xv), LQD Noncoal Rules and Regulations Chapter 3, Section 2(i). BPM would also conform to the standards in the BLM Manual 9113, Wyoming BLM Manual 9113 Supplement, BLM Manual Handbook H-9113-1, and BLM Manual 9112. Culvert locations are shown on Figures 1 and 2, and on in the binder, on Map MP-4; with culvert designs provided in Addendum C.

Haul Road Design

The side slopes of the haul roads within the mining areas of the 2008 Update would generally be 3:1 or flatter to facilitate re-vegetation. If BPM would like a steeper side slope than 3:1 in any specific area within the mining areas, DEQ/LQD's prior approval would be required. The exception to this is at culvert locations. Bentonite Performance Minerals will build the embankment slopes for culvert crossings at a 2:1 slope.

Bentonite Performance Minerals would construct ditches that run adjacent and parallel with the roadway shoulder. The ditches will collect the runoff from the roadway and from adjacent upstream areas and direct it into surrounding drainages for downstream movement. Turnouts would be made where long sight distances exist from straight alignment and level road conditions occur. Bentonite Performance Minerals utilizes three primary roadway erosion control structures including installation of culverts, a road base predominately of gravel to resist water erosion and lower dust from passing vehicles, and ditch turnouts wherever possible off the road into adjacent drainages.

The Dry Bear Haul Road portion (see FIGURE 1) would have a 60-foot right away with a running surface of about 35 feet. Most watersheds that encompass this road are small in size and have a relatively low gradient. Small swales and drainages occur often, allowing water to flow from the roadway and ditches quickly. Given these conditions, culverts will be installed in various locations while the rest of the road will be handled with ditches and turnouts. Culvert locations can be found on Map MP-4.

Ditch turnouts would be built often to promote adequate drainage. During monitoring special attention would be paid to the small drainages that cross the roadway. Indications of accelerated erosion or head-cutting will necessitate installation of rip rap to slow water flows and reduce the sediment loading down stream.

Culvert Design

Culverts were designed to accommodate the BLM Manual for Road design (Manual 9113). Road crossings are designed to pass flow from a 10 year/24 hour storm. The watersheds serviced by the culverts in this application are small in size therefore the total volume of water is small. To maintain an acceptable running surface width, 18" culverts must be utilized on all crossings. They will handle the 10 year/24 hour peak event with some headwater developed, but plenty of free board will be designed. Culverts would be placed on the stream grade and rock armoring will be placed around the culvert outlet and inlet to prevent excessive erosion. Embankment slopes from the roadway will be built at a 2H:1V slope. Water backed up above each road crossing will not enter any mined area, topsoil stockpile area, or overburden placement area.

Six culverts were designed for the 2008 Update area Using Hydraflow Express Extension for AutoCAD® Civil 3D® 2009. Their locations are found on Figures 1 and 2 below, and also on **2008 Update Mine Plan Map, MP-4**. Corrugated Metal Pipe (CMP) would be utilized for each culvert. Hydraflow models how a given amount of water will pass through a culvert. Hydraflow's methods are those generally described in HDS-5 (Hydraulic Design of Highway Culverts). The culvert control (inlet or outlet) is determined using Bernoulli's energy equation. Losses in energy through the culvert are calculated using Manning's equation. Manning's n for CMP is 0.023. Water depths at each end of the culvert are determined by developing the hydraulic grade line (HGL) through the step method which is an iterative process. (Please refer to Plan of operations for calculations used during culvert design).

The culverts were designed with arbitrary invert elevations but with the appropriate slope. The embankments will have varying top widths depending upon the fill height. Fill height over the culvert was calculated based on site specific topography. A minimum of at least half of the culvert span was utilized to maintain structural

integrity when a load is applied over the culvert. Culvert design drawings and performance reports can be found in Addendum C along with the watershed parameters used to size the culverts. If a taller embankment height is built a longer culvert section will need to be ordered.

Hydraulic diversions and retention systems, temporary and permanent

Bentonite Performance Minerals would construct temporary water impoundments, as defined in Chapter 1, Section 2(af), for use as storm water collection and sedimentation control during the mining operation. The temporary impoundments include using the pits for sedimentation control. Any small sumps that need to be constructed will have a capacity of less than one-half to one acre in size. Water collected in these temporary impoundments may also be used for dust suppression on access and haul roads. There will be no permanent post-mining impoundments constructed as part of this Update.

Temporary Diversion of Un-channelized and Ephemeral Stream Flows

Bentonite Performance Minerals shall divert un-channelized surface water flows and/or ephemeral streams around active mining and open pits during the course of mining within the 2008 Update area for any of the following reasons:

- Assistance in controlling pollution of the waters of the State.
- Prevent or control unnecessary erosion
- Protection of on-going mining & reclamation processes.
- Protection of downstream water rights.

BPM would generally divert surface flows around the open pit sequences with channels designed to have sufficient capacity to pass the peak flow from the 2-year, 6-hour event as required by the performance standards in the 1993 Noncoal Rules and Regulations, Chapter 3, Section 2 (e)(ii)(F). Given the size and location of the watersheds within the 2008 Update areas, the peak flows resulting from the 2-year, 6-hour events should be small. Therefore, diversion ditches will generally be constructed in a triangular shape no less than 1.5 feet deep with 2(h):1(v) side slopes.

(3) Reclamation Plan (as per 43 CFR 3809.401(b)(3)):

Haul road reclamation plan

Haul roads would be restored to pre-mine topography and vegetation conditions. This includes removal of fills, restoration and backfill of cuts, removal of culverts, and the reconstruction and restoration of channels. If a road was present before mining operations, and upgraded for mining purposes, the road would be replaced back to its original state. In the case of the BLM System Road 1126, BPM will consult and work with the BLM on how this road will be reclaimed once the mining in the area is complete.

The haul road upgrade modification of the A-5 Plan amendment is anticipated to have a 5-year mine life over all the mine areas described above. It is situated approximately 18 miles southeast of Lovell, WY, and 8 miles southeast of BPM’s Lovell area bentonite processing plant.

Table RP -1 Preferred Seed Mixes as Proposed by BPM

Seed Mix 1. Slopes and Mesa Soil Mix	PLS LBS/ACRE
---	---------------------

Grasses	Indian Ricegrass	2.0
	Western Wheatgrass	2.0
	Alkali Sacaton	0.5
	Bozoisky Russian Wildrye	3.0
Forbs	Scarlet Globe Mallow	0.3
	Yellow Sweet clover (inoculated seed)	0.5
Sub-Shrubs	Winterfat	0.3
	Gardner Saltbush	3.0
Shrubs	Wyoming Big Sagebrush	1.0
	Four-Wing Saltbush	0.5
	Shadscale	1.0
	Rubber Rabbitbrush	1.0
TOTAL		15.0 lbs PLS/acre
Seed Mix 2. Drainage and Saline Upland Mix		PLS LBS/ACRE
Grasses	Bottlebrush Squirreltail	1.0
	Alkali Sacaton	1.0
	Western Wheatgrass	2.0
Sub-Shrubs	Winterfat	0.5
	Gardener Saltbush	6.0
Shrubs	Wyoming Big Sagebrush	0.5
	Rubber Rabbitbrush	1.0

TOTAL		12.0 lbs PLS/acre
-------	--	-------------------

Methods of seeding

Bentonite Performance Minerals will prepare the seedbed with either a pitter or a spring-tooth chisel plow. The seed box is mounted on the chisel plow or pitter and set to release seed behind one of the implements. These techniques prepare the soil for seed, create a micro-topography advantageous to trapping soil and nutrients and improve the probability of seed germination and establishment. All seeding will be on the topographic contour unless safety considerations take precedence or perpendicular to the prevailing wind direction on very flat lands.

Time of seeding

All permanent seeding will occur from October to November of each year or as long as the topsoil remains unfrozen. Generally fall seeding allows maximum moisture retention and utilization of winter and spring precipitation.

(4) Monitoring Plan(as per 43 CFR 3809.401(b)(4)):

Monitoring of many different activities of mining, and of potential impacts from mining will occur throughout the 2008 Update area. BPM will continuously visit and document mining activities throughout the life of the mine. Monitoring will assess the impacts of mining on surface water runoff, mine area drainage and berm stability, haul road stability, high wall stability, to establish the extent of any spills that may occur and any other undue or unnecessary degradation. Monitoring will be done during times of non-operation or down time, when due to weather, mining or market conditions pit areas will not be actively mine but remain open. Occupation of the high wall by raptors, incidence of vandalism, failure of roads, berms or other mining features and the general stability of the pit area and mine site will be noted. Photos may be taken on these visits as well.

Additional discussion of hydrology monitoring activity is discussed in the Mine Plan, Section C and Appendix D6, Hydrology. A wildlife monitoring plan has also been implemented and is discussed in Appendix D-9, Wildlife. Instances of wildlife mortality if any would be noted during normal operations and reported to the Wyoming Game and Fish when appropriate. Noise levels of field operations are monitored during regular inspections by the Wyoming State Mine Inspector and Federal Mine Inspectors. BMP will operate in compliance with MSHA noise standards.

Air quality and revegetation monitoring are conducted on an on-going basis by company personnel during normal field operations. These conditions are also reviewed during annual and biennial field inspections by WY-LQD and U.S.BLM personnel and reported in BPM’s annual report.

For quality assurance purposes road construction and maintenance will be monitored by BPM, their contractors, and during annual and biennial field inspections by WY-LQD and U.S.BLM personnel. All will assure that haul roads have been built using acceptable crushed aggregate road base and BLM and WY-LQD road construction standards have been met along with any design standards found in this mine plan. Through road maintenance, BPM and their contractors will maintain culverts and ditch turnouts to assure that proper road drainage occurs.

(5) 43 CFR 3809.401(d) Reclamation Cost Estimates

Assumptions for the reclamation cost estimate are described below. All cost estimates are based on all anticipated mining and haul road activities conducted within the remainder of the calendar year upon permit approval. The assumption is the 2008 Update will be approved in the fall of 2009. Post approval, activities will be described and bonded in the 2009 annual report submitted to the DEQ in February 2010. Due to the late start in 2009 and the winter weather, any road improvements and construction on the BLM System Road 1126 will not occur until 2010. For mining activities in claim D34E in Section 9 T54N R93W, there is one pit planned which will be stripped resulting in a bond amount of \$90,000.

Initial disturbance calculations are below:

Claim	Proposed # of Pits	Proposed Disturbance (Pit, Road, Out-of-Pit Spoil Pile) (acres)	Spoil Volume (BCY)	Spoil Replacement Cost@\$.86/BCY (\$)	Soil Replacement (BCY)	Soil Replacement Cost@\$.86/BCY (\$)	Seeding Cost @ \$400/ac (\$)	Total Cost (\$)
D34E	1	10	83,900	\$72,154	16,100	\$13,846	\$4,000	\$90,000
							TOTAL	\$90,000

2.2 Alternative II – No Action Alternative

Under this Alternative, BLM would not review or approve the modification of the A-5 Plan for upgrades to BLM System Road 1126 as proposed by BPM. However, this alternative is not in conformance with the Cody RMP. BLM must review all proposed Plans and modifications of Plans of operation submitted under the mining laws, and under the Federal Land Policy and Management Act of 1976, to ensure that the plan would not result in unnecessary or undue degradation of the public lands.

2.3 Other Action Alternatives

Under this Alternative, BLM/LQD would request substantive revision(s) to the Plan of operations for the access road including the pertinent portion of the Reclamation Plan as submitted. The revisions could involve major changes to the proposed road upgrade designs that vary from what was proposed. Standard stipulations and mitigation measures would also be included under this alternative.

2.4 Alternatives Considered but not Analyzed in Detail

An alternative requiring restoration of the road to the condition it was in before the unauthorized widening took place was considered but not analyzed in detail. This was the case, because it was determined by BLM that after the unauthorized blading took place, the road still needed to be improved to correct problems associated with the unauthorized blading, especially relative to improving drainage over and under the road (via culverts etc.). Therefore this potential alternative was dropped from further analysis.

3.0 AFFECTED ENVIRONMENT

The following areas are not present and will not be further analyzed:

Areas of Critical Environmental Concern (ACEC)

Environmental Justice

Prime or Unique Farmlands

Hazardous or Solid Wastes

Native American Religious Concerns

Traditional Cultural Properties

Wild and Scenic Rivers

Wilderness Values

Those areas that will be analyzed are:

Air Quality

Cultural Resources

Invasive and Non-native Weed Species

Livestock Grazing

Paleontological Resources

Recreation

Special Status Species

Threatened and Endangered Species

Vegetation

Visual Resource Management

Socioeconomics

Public Health and Safety

Water, Riparian Vegetation and Floodplains

3.1 Introduction and Project Location

The modification of the "A-5" Plan amendment/area is located approximately 18 miles southeast of Lovell, in Big Horn County, Wyoming. The location of the Proposed Action is illustrated on Figures 1 and 2 below:

3.2 Air Quality

No site-specific air quality data are available from the proposed A-5 area; however, air quality in the area is considered to be generally good, and is in compliance with state and national ambient air quality standards. The air-shed within the A-5 area is classified as Class II, which generally allows concentrations of some air pollutants to increase to accommodate regional economic development. The primary air-borne pollutant within the proposed A-5 area is particulate matter in the form of fugitive dust (uncontrolled wind-carried particulates) generated from natural and human sources. Total suspended particulate matter (TSP) is the only contaminant for which long-term data are available (BLM, 1988) - the long-term mean for TSP at Lovell is 32 micrograms per cubic meter.

The 24-hour Wyoming Ambient Air Quality Standard (WAAQS) for particulate matter <10 microns in diameter (PM₁₀) is 150 (g/m³)³, and the 24-hour WAAQS standard for particulate matter <2.5 microns in diameter (PM_{2.5}) is 65 (g/m³)³. Other contaminants that may be found in trace to small amounts in this area include hydrogen sulfide (H₂S), sulfur dioxide, nitrogen oxide, carbon dioxide, vaporous hydrocarbons and volatile organic carbons. Visibility in the region is typically very good (>70 miles) and fine particulates are generally considered to be the main source of visibility degradation.

3.3 Cultural Resources

Cultural files searches and Class III Cultural Resource inventories were conducted in 2008, on the public lands involved in the proposed A-5 Plan modification area (BLM project numbers 020-2008-153 (“2008 Update and Haul Roads, Bighorn County, WY”). The surveys were conducted by High Country Archeology of Powell, WY. Three cultural resource sites were found in the Dry Bear Creek area inventory, of which none were determined to be “Eligible” for the National Register of Historic Places, and a determination of No Effect was made in accordance with the Wyoming State Protocol between the Wyoming State Historic Preservation Office and the BLM. The National Register of Historic Preservation, Section 106 compliance document was dated 8-Feb-10. No other significant cultural resources or sites eligible for nomination to the National Register of Historic Places were located during these surveys.

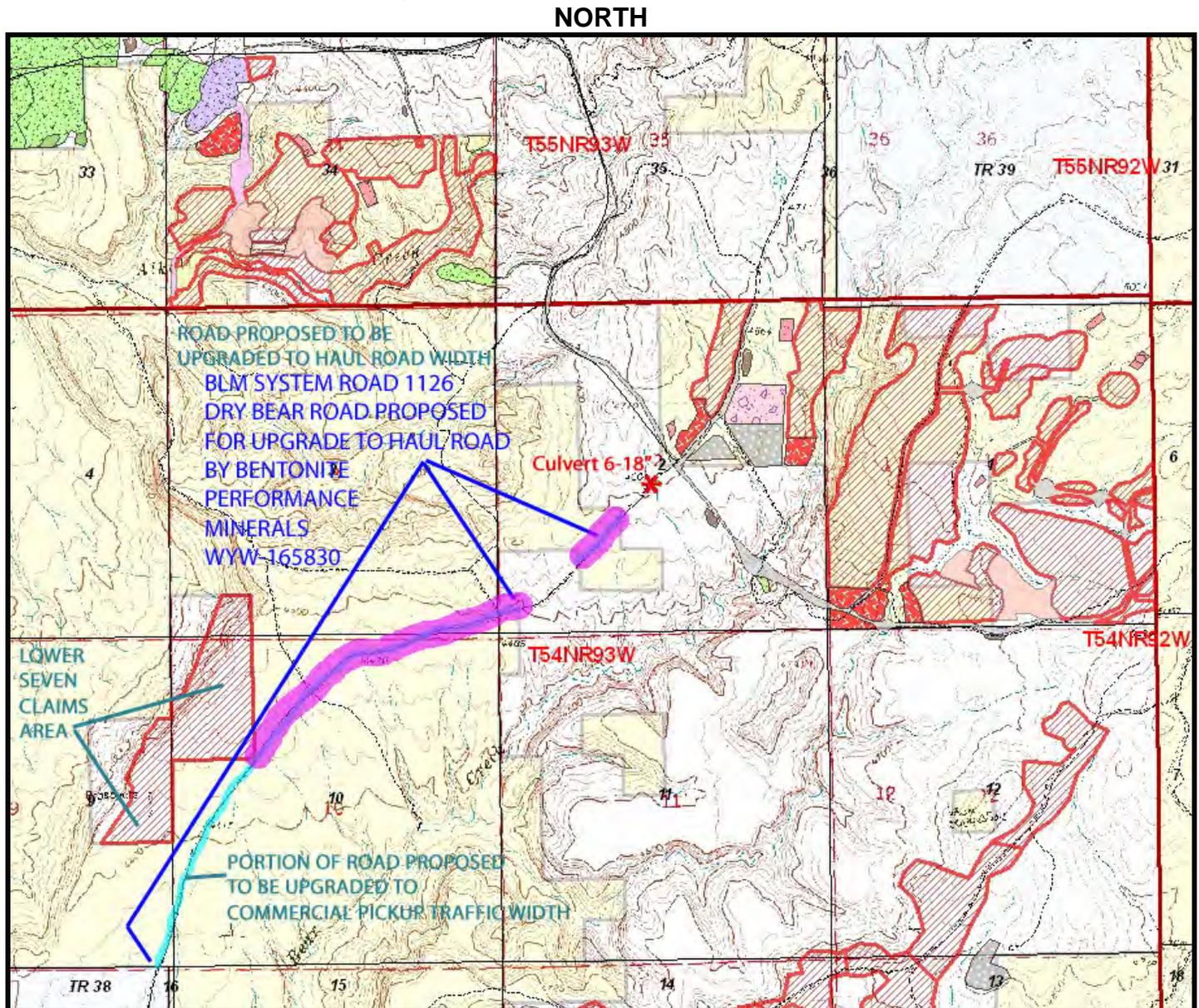


Figure 1. Location of Dry Bear Road (BLM System Road 1126) proposed haul road upgrades in Bentonite Performance Mineral’s “2008 update” Plan of operations modification- Sections 2, 3, and 9, T. 54 N., R. 93 W.; Red hatched area in Sections 3, 9 and 10 represent the proposed Lower Seven claims mine area.

The area highlighted in purple is proposed to be widened to a 35-foot running surface within a 60-foot right-of-way corridor under this Plan of Operations modification.

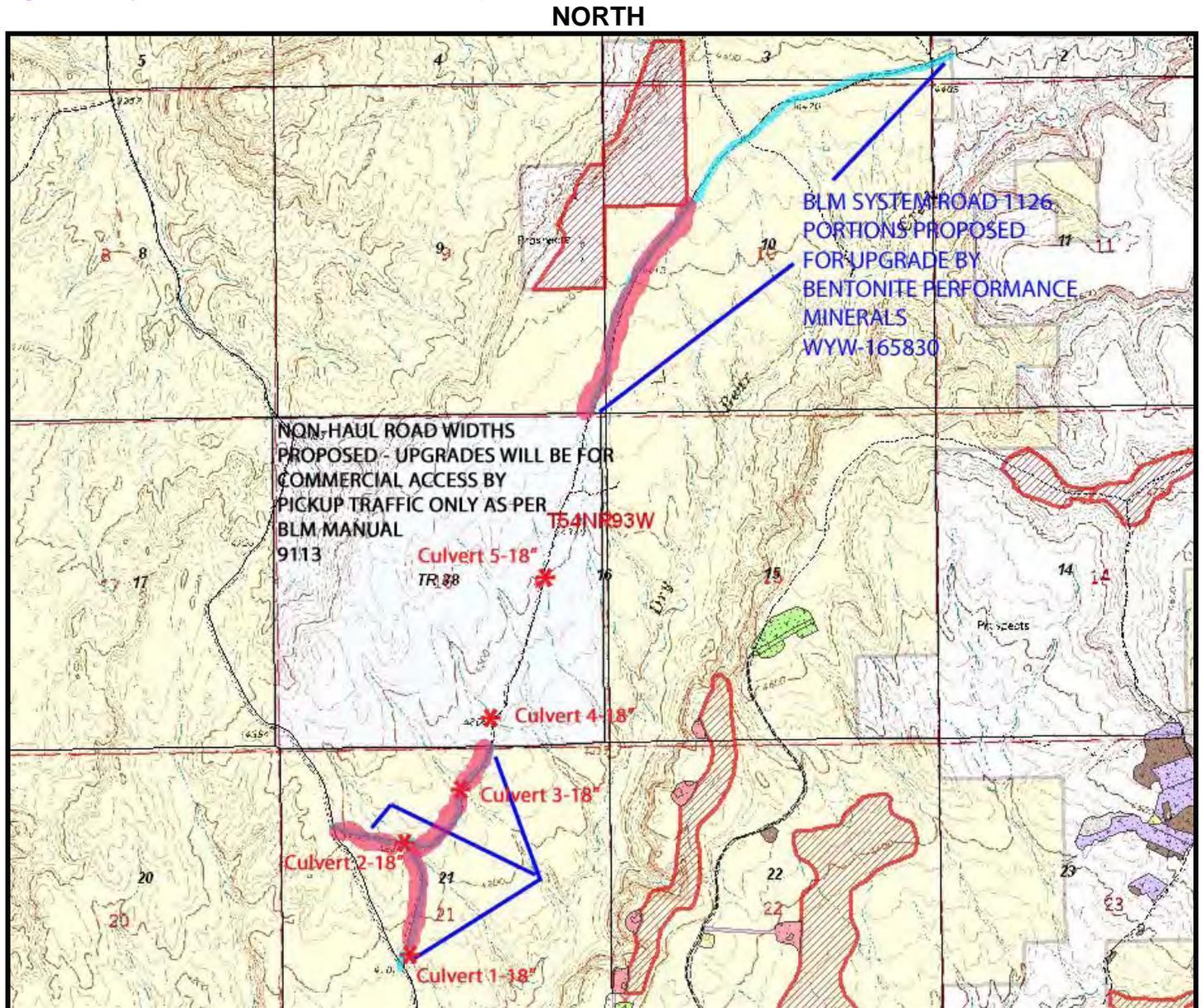


Figure 2. Location of Dry Bear Road (BLM System Road 1126) proposed upgrades for commercial pick-up truck traffic/access to the A-5 and “2008 update” areas – Plan of operations modification- Sections 9, 10, and 21, T. 54 N., R. 93 W.; Proposed Lower Seven claims area on patented land is again illustrated in Sections 3, 9 and 10 above (red hatched area).

NOTE: The area highlighted in pink is proposed to be widened to a 15-foot running surface within a 35-foot right-of-way corridor under this Plan of Operations modification. The northern portion shown in turquoise is part of the proposed Haul Road upgrade – see Figure 1.

3.4 Invasive, Non-Native Species and Noxious Weeds

No known invasive or non-native noxious weed species were documented or discussed in the application for the proposed A-5 mining area. Invasive, non-native plant species known to be present in the proposed road upgrade area include: cheatgrass, halogeton, Russian thistle, kochia, goosefoot, and other annual weeds.

Noxious weeds known to be present in the area include: salt cedar and white top (may be others including Russian olive).

3.5 Livestock Grazing

The proposed A-5 Plan modification (haul road upgrade) is located in two BLM Grazing Allotments. These allotments include (1) the Crystal Creek allotment (#01023), and (2) the Sheep Mountain allotment (#01014). The allotment boundaries are shown on Figure 3 below.

Both allotments are authorized for cattle grazing, and operating under allotment management plans with three treatment rest rotational grazing strategies. These grazing strategies allow (1) year of spring use, (1) year of fall use, and (1) year of total rest from livestock grazing in each (3) year grazing cycle. This type of grazing strategy allows full plant recovery time (2) years in each (3) year grazing cycle.

Both allotments have vegetative trend studies established which are indicating improvement in ecological condition since the signing of the allotment plans and implementation of the grazing strategies in the mid-90s. In the Crystal Creek Allotment up to 300 AUMs of livestock forage may be authorized annually. This allotment contains 12,857 acres of public land and has a current livestock stocking rate of over 42 acres per AUM. In the Sheep Mountain Allotment up to 350 AUMs of livestock forage may be authorized annually. This allotment contains 13,668 acres of public land and has a current livestock stocking rate of over 39 acres per AUM. The actual livestock use in these allotments often varies from year to year due to fluctuating precipitation and associated forage production. The area where the haul road upgrades are planned is mainly a sagebrush bunchgrass range site, supporting significant amounts of desirable forage for livestock, wildlife and for watershed protection.

3.6 Paleontological Resources

The areas where haul road upgrades are planned are generally located on topsoil and subsoils overlying mixed surface debris and Quaternary-age colluvium and alluvium. These deposits have a low potential for vertebrate or scientifically significant paleontological resources, therefore PFYC in the area has been determined to be 2, which means a low potential for the occurrence of vertebrate or scientifically significant fossil resources.

3.7 Recreation

The Dry Bear area and general 2008 update area is relatively remote. Recreation in the amendment area includes hunting, hiking, rock-hounding, wildlife-scenery viewing/photography, and off-road vehicle (ORV) use. Recreational fishing occurs downstream in the Bighorn River. Travel is restricted to established roads and trails as per the Cody RMP (pg. 24).

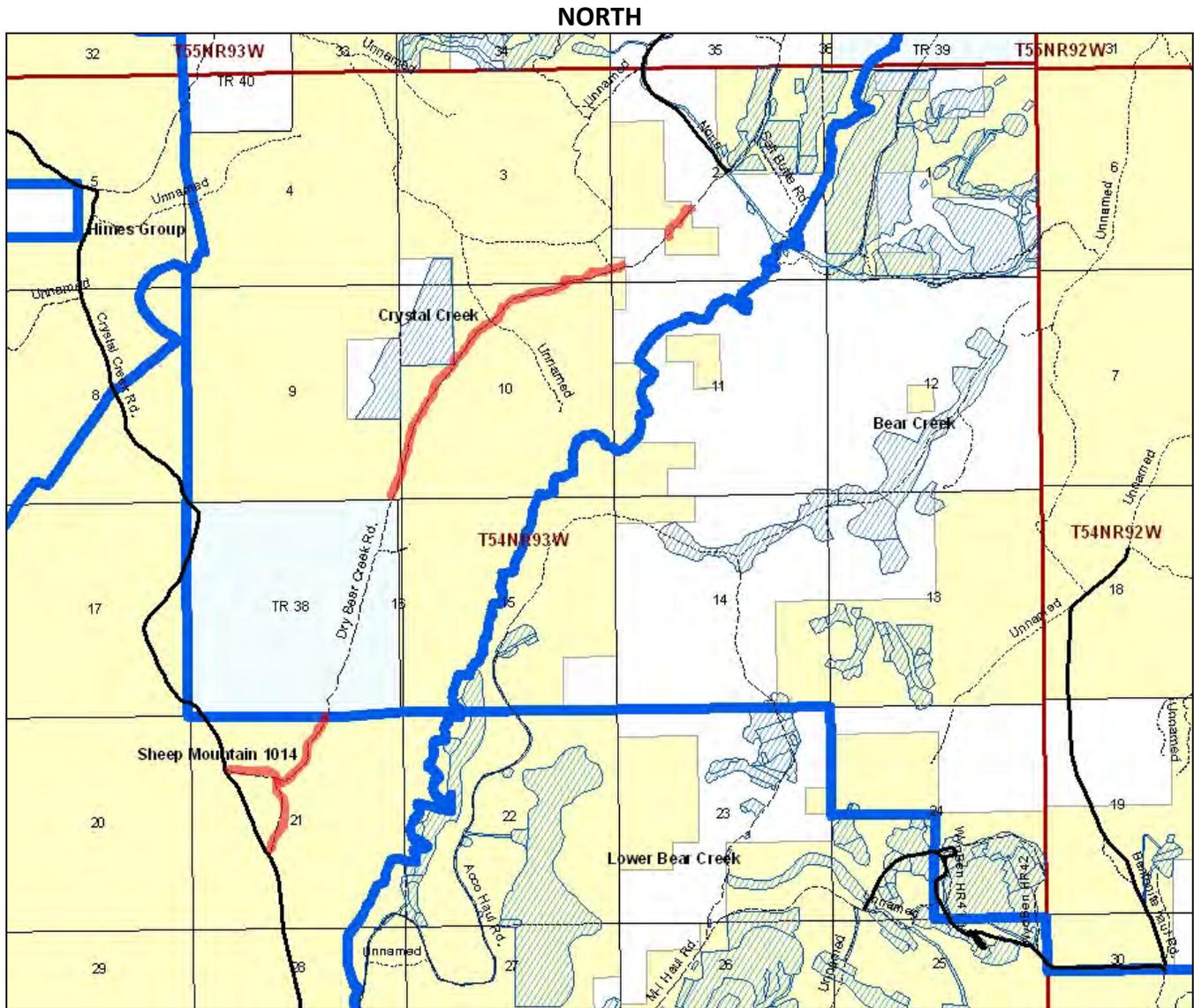


Figure 3. Location of Dry Bear Road (BLM System Road 1126 – highlighted in red) within the two allotment boundaries of the Sheep Mountain and Crystal Creek allotments, outlined in blue. Blue hatched areas represent actual or proposed mining disturbances. Most of the road is located within the Crystal Creek allotment.

3.8 Soils and Hydrology

SOILS: Soils along the Dry Bear Road upgrade area were inventoried in 2008 for Bentonite Performance Minerals (BPM) as part of the application. Soil mapping and classification was conducted in accordance with the standards of the National Cooperative Soil Survey. Soil samples were taken from various locations, and were then analyzed by Inter-Mountain Labs in Sheridan, WY. These samples were analyzed for pH, Electrical Conductivity (EC), calcium, magnesium and sodium, Sodium Absorption Ratio (SAR), saturation percent, texture, and organic matter.

The Dry Bear road upgrade area and general A-5 area are located within a “mesic” soil temperature regime (mean annual soil temperatures are 48-52 °F), and a “typic-aridic” soil moisture regime (mean annual precipitation of 5-9 inches). The average frost-free period is about 110-140 days.

Soils in the A-5 area are very shallow to deep. A total of 13 different Soil Map Units are described in Appendix D-7. The following four soil types were mapped along the Dry Bear road corridor where haul road upgrades are proposed:

Saddle gravelly loam, 2-18% slopes; moderate permeability, fine-loamy mixed mesic Typic Haplargid, calcareous with 5-20% rock fragments; suitable for topsoil salvage up to 22” (soil is 20-40” deep across A-5 area); supports mixed grasses, big sagebrush and some Gardner’s saltbush;

Apron Variant very gravelly sandy clay loam, 2-30% slopes; 20-40” deep, moderate to slow permeability, a Typic Torriorthent, non-saline and non-sodic, it is suitable for topsoil and subsoil salvage to a depth of 40” depending on presence of coarse rock fragments, supports mixed grasses, big sagebrush, saltbush and rabbitbrush.

Larim Variant very gravelly loam, 2-30% slopes; moderately deep to deep well drained soil developing in mixed alluvium generated during the late Pleistocene Epoch. Possibly glacial outwash or slope wash alluvium from foothills of the Bighorn Mountains, supports mixed grasses, big sagebrush and saltbush; a mixed, mesic Typic Calcicargid, suitable for salvage down to 24’ deep, below that, it is too sodic. Upper 10” is suitable for topsoil.

Chipeta gravelly clay, 2-30% slopes; slow permeability; a mixed mesic Typic Torriorthent, suitable for topsoil and subsoil salvage up to 17”; (upper 5” for TS and underlying 7” for subsoil; some areas soil is saline and sodic).

HYDROLOGY: The area under analysis lies within the 8-10 inch precipitation zone and the 23-25 inch evapotranspiration zone. Twenty-one watersheds were mapped within the 2008 Update area. Most of these are small sub-200 acre watersheds that were mapped out for upgrading the Dry Bear Haul Road. The watersheds range in size from 41.7 acres up to 754.1 acres, with the highest watershed elevation being 4,760 feet. Average slope of these watersheds is 5.4% and all drain into Dry Bear Creek. All of these watersheds have ephemeral flow regimes with the primary drainage, Dry Bear Creek, discharging into the Bighorn River about 7 miles downstream.

3.9 Special Status Species

The following Wyoming BLM Sensitive Species are known to occur in the area of the proposed haul road upgrade and are mentioned in the plan modification submitted: (1) Bald Eagle (*Haliaeetus leucocephalus*) formerly listed as “Threatened”, (2) Mountain Plover (*Charadrius montanus*) (proposed to be listed as “Threatened” as of the date of this Environmental Assessment); (3) Greater Sage Grouse (*Centrocercus urophasianus*) now a candidate species. Northern leopard frogs (*Rana pipiens*) and persistent sepal yellow cress (*Rorippa calycina*) may be present in and around reservoirs and other water features in the area, including the Bighorn River.

In addition, the following Level I Migratory Birds of High Federal Interest (MBHFI) are known to occur in the area but were not documented during field surveys: sage sparrow, Brewer’s sparrow, ferruginous hawk, Swainson’s hawk, bald eagle, and burrowing owl.

The following Level II MBHFI have been observed in the area: lark bunting, loggerhead shrike, lark sparrow, and merlin. Raptors documented in the study area include the golden eagle, red-tail hawk, and American kestrel. One large raptor nest was found in the SW¼SW¼ Sec. 34, T. 55 N., R. 93 W., in 2005, and two large raptor nests were found in the NW¼NE¼ Sec. 3, T. 54 N., R. 93 W. in 2005. Two sage grouse leks are located

near the modification area. The Black Butte Lek is located about 1.1 miles south of the permit boundary and the Dry Bear Creek #1 lek is located about 2.5 miles north of the permit boundary.

3.10 Threatened and Endangered Species

According to information provided by the US Fish and Wildlife Service to BPM in a letter dated Nov. 6, 2009, two federally-listed wildlife species may occur in the vicinity of the permit update area. These include the black-footed ferret (*Mustela nigripes* – endangered) and the Ute ladies'-tresses (*Spiranthes diluvialis*). Grizzly bear, grey wolf and Canada lynx are on the species list from the U.S. Fish and Wildlife Service (USFWS). These species are not known to occur in the area of the proposed plan modification.

3.11 Vegetation

The Dry Bear road upgrade area is dominated by the Mixed Desert Shrub vegetation type. This vegetation type occurs on generally level topography in the area. Mean measured slope gradient is 10.2%. Within this community, about 13.3% of the land is exposed rock, and about 8.9% of the land is bare ground. The community is dominated by three species of goose foot, (a chenopodic annual forb), which account for >49% of the total vegetative cover. Goose foot is an introduced, annual invasive weed which was probably introduced as a result of domestic sheep grazing in the area, along with heavy vehicle traffic on nearby roads and trails. Gardner saltbush accounts for 22.8% of the cover, and big sagebrush accounts for 12.2% of the cover. The most abundant grass is Sandberg bluegrass, bluebunch wheatgrass, Indian ricegrass, needle and thread grass, and sand drop seed. Perennial forbs include wild onion, field parsley, and prickly pear cactus and account for ~10% of the relative vegetative cover.

3.12 Visual Resource Management

The proposed Dry Bear road upgrades in the A-5 modification area are located in BLM Visual Resource Management (VRM) Class IV area, as per the Cody RMP. The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3.13 Wildlife

Ground wildlife and bird surveys were conducted by Shell Valley Consulting between October 2002 and March 2009 according to established practices. A variety of wildlife and bird species were observed within and surrounding the permit update area. Big game animals that frequent the area where the haul road is proposed to be upgraded include mule deer, antelope, and elk. Pronghorn and mule deer were most frequently observed in the area in late winter, early spring and summer. Elk use the area most frequently between December and April. Other wildlife observed or noted from sign in the study area include bobcat, badger, coyote, fox, cottontail rabbit, and jack rabbit. Several mountain plover nesting locations are situated near the road corridor. One white tail prairie dog was observed in the SW¼ Sec. 21, T. 55 N., R. 93 W. Many prairie dog holes have been observed along the Dry Bear Access Road corridor where the planned upgrades would take place. Reptiles known to occur in the area include sagebrush lizards, short horned lizards and prairie rattlesnakes. Non-sensitive amphibians that are present in the area include Plains spade foot toads, boreal chorus frogs, woodhouse toads, and tiger salamanders. The Bighorn River supports several game and non-game fish species, western soft shell and painted turtles and the same suite of amphibians and reptiles.

3.14 Socioeconomic

The Proposed Action is located in Big Horn County, Wyoming. The closest town is Lovell with a population of 2,281. In 2004, the estimated population of the county was 11,416 people. Communities in Big Horn County include Basin (the county seat), Burlington, Byron, Cowley, Deaver, Emblem, Frannie, Greybull, Hyattville, Kane, Lovell, Manderson, and Otto.

Big Horn County covers 3,137 square miles and has a population density of 3.6 people per square mile. In the last three decades of the 1900s, its population grew by 12.3 percent. The area has a strong agricultural economy, to include farming (corn, sugar beets, alfalfa, barley, beans, hay) and ranching (cattle, sheep, horses).

Mining, and services related to mining, are important sector of the local and regional economy. Data from the State of Wyoming Economic Analysis Division indicate that mining accounts for 6% of the jobs, and 15% of the personal income in Big Horn County. This statistic indicates that employment in the mining sector is higher-paying than the county average. Mining had an average wage per job of \$44,439.00. Per capita income grew by 27.4 percent between 1993 and 2003 (adjusted for inflation).

In 1999 in Big Horn County, approximately 391 people were employed directly by the mining industry. Bentonite Performance Minerals (BPM) has numerous employees in Big Horn County, the majority of which live in Lovell or Greybull, Wyoming. BPM contracts with at least two Big Horn County service companies to conduct mining activities within their permitted areas. These service companies provide heavy equipment and labor to strip and salvage soil and overburden, expose, mine and haul the clay, and conduct reclamation and seeding.

3.15 Public Health and Safety

No hazardous materials such as solvents, cyanide or other leaching agents would be used in the proposed haul road upgrade under the A-5 Plan modification. No explosives would be used during road upgrade operations, although such materials are proposed to be used in the areas where new mining would take place such as in the Lower Seven claims area. The road upgrades as needed for bentonite hauling would result in a widening of the road, addition of water bars to improve off-drainage, crowning and ditching of the road, and installation of culverts in key drainages.

3.16 Water, Riparian-Wetland Areas, Aquatic Habitat, and Fisheries

Portions of the Bighorn River and Dry Bear Creek (Salt Creek) including some of its tributaries are within the area of potential affects. Limited amounts of riparian-wetland vegetation is present within the area of potential effects on the Bighorn River and Dry Bear Creek floodplains, in and around reservoirs/stock ponds, and in a few other places where water availability is enhanced as a result of soil texture, stream channel morphology, geologic features, and/or increased runoff from areas having low permeability. Ephemeral/intermittent aquatic habitats within the area of potential affects are used by amphibians such as Plains spadefoot toads and boreal chorus frogs for breeding and rearing young. Other aquatic/terrestrial wildlife species also use these features when water is present. Riparian-wetland and aquatic habitat associated with the Bighorn River provides habitat for a wide variety of aquatic and terrestrial species including potential habitat for several Wyoming BLM Sensitive Species such as northern leopard frogs, bald eagles, several neo-tropical migrant bird species, etc. The cottonwood riparian habitat along the Bighorn River is potential habitat for yellow-billed cuckoos, a Candidate Species. Water from the Dry Bear watershed is used by downstream municipalities, agriculture, industries, recreationists, and supports fish and wildlife.

4.0 ENVIRONMENTAL EFFECTS

This chapter provides an analysis of the potential environmental consequences that could result from the Proposed Action (Alternative 1), from Alternative 2, and from the No Action alternative. This analysis of environmental consequences addresses those potential direct and indirect and residual effects of the Proposed Action, as well as any cumulative impacts that could result from the proposed mining. Direct impacts are discussed in Sections 4.1 through 4.10; cumulative impacts are discussed in Section 4.11, and Indirect and Residual impacts are discussed in Section 4.12.

4.1 Direct and Indirect Effects

4.1.1 Air Quality

Alternative I – Proposed Action Alternative

Construction and maintenance activities associated with upgrading the road, and hauling bentonite on it will result in an increase in the amount of particulate matter, fugitive dust, and fossil fuel combustion-related air pollution entering the air in the local area. Dust suppression measures would be required of BPM, in order to control fugitive dust emissions. These measures would include application of dust suppression water to the mine/work area and haul roads, using water trucks as needed, during mining and hauling activities. There is no mitigation for release of combustion-related byproducts of operating heavy equipment and haul trucks to mine and transport the bentonite.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, air quality would be affected as a result of current baseline conditions (current levels of mining, hauling, and other uses of the road).

4.1.2 Cultural Resources

Alternative I – Proposed Action Alternative

The proposed haul road upgrade would have no effect on cultural resources, according to the Class III cultural resources survey that was conducted for the road corridor/upgrade proposal (Agency Project No. 020-2008-153). The survey of the road corridor found three small isolated finds, none of which were determined to be eligible for the National Historic Register. The State Historic Preservation Office was notified of this project and the results of the Class III survey on Feb. 8, 2010. Standard and mining stipulations to protect cultural resources would be required and attached to any approval of this plan modification. Current potential impacts to cultural resources include unauthorized surface collection and looting. Improvement of the haul road will facilitate access to the project area, potentially increasing public presence, which may have the indirect effect of increased unauthorized surface collection and looting.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, any effects to cultural resources would not take place along the haul road corridor. Current potential impacts to cultural resources include unauthorized surface collection and looting. Potential impacts from unauthorized surface collection and looting would remain at levels similar to the existing situation.

4.1.3 Invasive, Non-Native Species and Noxious Weeds

Alternative I – Proposed Action Alternative

Alternative I could result in the establishment and spread of invasive, non-native weed species and/or noxious weeds along the haul road corridor, as this alternative involves disturbance of the land surface, which often triggers weeds to grow in areas previously occupied by native vegetation. When bulldozers remove topsoil during surface disturbing activities, all vegetation is removed.

In order to decrease the spread of noxious weeds onto public lands, BPM and its contractors would be required to monitor the road corridor for the presence of noxious weeds. If invasive, non-native, or noxious species are found along the road corridor or anywhere in the proposed mine areas, BPM would be responsible for removal of such weeds, with the help of Big Horn County Weed and Pest, and in coordination with the BLM Cody Field Office. These weeds would be controlled/eradicated by use of BLM approved herbicides, and their management would be the sole responsibility of BPM. Should noxious weed infestations be noted on public lands associated with this Plan modification, all vehicle access would be limited to only necessary routes and would be controlled to minimize travel in the infested area until weed removal is accomplished.

Most dust suppression water used on bentonite haul roads is unfiltered, after being pumped from a surface water source. Use of unfiltered surface water for dust control on the haul road could increase potential for the establishment and spread of invasive, non-native plant species and noxious weeds along the road corridor, if seeds of these plants are in such water. Filtered surface water, or water from other than a surface water source, would help reduce undesirable plant species spread via this vector.

Relative to reseeding of areas after disturbance, compliance with the current BLM Seed Policy (which prohibits use of seed that has not been certified to be noxious weed-free on BLM administered lands), would help reduce potential establishment and spread of invasive, non-native plant species and noxious weeds as a result of interim and/or end of project reclamation. The use of other Best Management Practices (BMPs) such as cleaning equipment and materials before transport to public land, avoiding vehicle travel through known infestations, and using seed and materials that do not contain cheatgrass seed would also help reduce the spread of these undesirable plants.

The following is a list of Wyoming State Listed Noxious Weeds that would need to be controlled should they begin to grow on the North Emblem Plan area lands during mining and/or reclamation. Cheatgrass would also need to be controlled on the area disturbed under this Plan, should it begin to grow in mined or reclaimed areas. (Source: <http://www.wyoweed.org/statelist.html>)

- | | |
|---|--|
| 1) Field bindweed (<i>Convolvulus arvensis</i> L.) | 14) Musk thistle (<i>Carduus nutans</i> L.) |
| 2) Canada thistle (<i>Cirsium arvense</i> L.) | 15) Common burdock (<i>Arctium minus</i> (Hill) Bernh.) |
| 3) Leafy spurge (<i>Euphorbia esula</i> L.) | 16) Plumeless thistle (<i>Carduus acanthoides</i> L.) |
| 4) Perennial sowthistle (<i>Sonchus arvensis</i> L.) | 17) Dyers woad (<i>Isatis tinctoria</i> L.) |
| 5) Quackgrass (<i>Agropyron repens</i> (L.) Beauv.) | 18) Houndstongue (<i>Cynoglossum officinale</i> L.) |
| 6) Hoary cress (<i>Cardaria draba</i> & <i>pubescens</i>) | 19) Spotted knapweed (<i>Centaurea maculosa</i> Lam.) |
| 7) Perennial pepperweed (<i>Lepidium latifolium</i> L.) | 20) Diffuse knapweed (<i>Centaurea diffusa</i> Lam.) |
| 8) Ox-eye daisy (<i>Chrysanthemum leucanthemum</i> L.) | 21) Purple loosestrife (<i>Lythrum salicaria</i> L.) |
| 9) Skeletonleaf bursage (<i>Franseria discolor</i> Nutt.) | 22) Saltcedar (<i>Tamarix</i> spp.) |
| 10) Russian knapweed (<i>Centaurea repens</i> L.) | 23) Common St. Johnswort (<i>Hypericum perforatum</i>) |

11) Yellow toadflax (*Linaria vulgaris* L.)

24) Common Tansy (*Tanacetum vulgare*)

12) Dalmation toadflax (*Linaria dalmatica* (L.) Mill.)

25) Russian olive (*Elaeagnus angustifolia* L.)

13) Scotch thistle (*Onopordum acanthium* L.)

Control of any such weed species would be required if such species are noticed growing anywhere on the haul road corridor during the life of the road. BPM would be responsible for managing all noxious and undesirable invading plant species in the haul road corridor including cheat grass during the life of the mine, or until bond has been released. If noxious or invasive weeds are encountered, the BLM and/or the Big Horn County Weed and Pest Department would be consulted by the operator/holder for control and eradication methods. A Pesticide Use Proposal (PUP) and written approval from the Authorized Officer for the use of herbicides must be obtained prior to usage of herbicides.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, there would be no a minimal incremental affect on weed species in the area as some of the disturbance referred to in the Proposed Action has already taken place.

4.1.4 Livestock Grazing

Alternative I – Proposed Action Alternative

The proposed upgrades to the Dry Bear haul road would have minimal effects on the existing or future livestock grazing scenario in the two allotments involved. A total of ~21 acres would be affected by the upgrades, which represents only a very small portion of the total land area within the two allotments. This disturbance would reduce the amount of forage available for livestock by about 1 or 2 AUMs until the vegetation is restored to pre-disturbance condition. The road upgrade if approved would require installation of one cattle guard, turn out and steel gate on the section line between Sections 16 and 21, T. 54 N., R. 93 W., as required by BLM range staff, in order to better manage livestock and truck traffic during mining operations. Other fencing may be required should unforeseen circumstances develop as a result of approval of the Proposed Action. The increased bentonite hauling truck and possible public traffic would increase to risk of vehicle/livestock collisions. The increase in traffic may increase the amount of livestock stress, which could affect livestock production. If undesirable plants increase in the area as a result of the Proposed Action there may be additional reductions in the amount of forage available for livestock.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, there would be no additional affect on livestock grazing in the area.

4.1.5 Paleontological Resources

Alternative I – Proposed Action Alternative

Because no significant vertebrate paleontological resources are known from this area, or anticipated to be found, this resource would not be impacted as a result of the Proposed Action. If vertebrate fossils were discovered during haul road upgrade/construction, these operations including topsoil stripping, would have to stop temporarily at the location, and the BLM Authorized Office would have to be notified immediately by BPM, so the fossil resources could be properly investigated and assessed. Significant scientifically valuable fossil resources would be removed from the area prior to resumption of mining.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, there would be no additional affect on paleontological resources in the area.

4.1.6 Recreation

Alternative I – Proposed Action Alternative

The Proposed Action would have relatively minimal impact on recreational uses or visual resources in the area. Recreational use of the area is moderate despite the remoteness of the area. The general area would not be closed to public use as a result of the Dry Bear haul road upgrades being approved, and may even enhance public/recreational access into the general area. However, conversion of a portion of this road to a bentonite haul road may create a public safety issue relative to an increase in heavy truck traffic that was not previously present. This situation would require mitigation relative to speed limit and signage requirements.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, there would be no additional affect on recreational use or access into the area – the road would remain open to the public in its current condition (bladed without authorization).

4.1.7 Soils and Hydrology

Alternative I – Proposed Action Alternative

If the Proposed Action is approved, there would be approximately 21.0 acres of additional soil/surface disturbance in the area. Hydrologic impacts may be reduced when compared to the No Action Alternative because the Proposed Action if approved, would result in the installation of culverts and other water management BMPs such as ditch turnouts and water bars, which would help convey water under and/or away from the road. Roads intercept overland flow, concentrate it, and discharge it at a few discrete discharge points, i.e., culverts. The increased volume and velocity of the concentrated water that is discharged often causes head-cutting of the drainages the water is discharged into. Artificial linear features on the landscape disrupt the hydrology of the area and the resulting effects cannot be completely mitigated until the natural flow patterns are reestablished and the related surface disturbance/vegetation is reclaimed to at least the pre-disturbance state.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, there would be no additional affects or impacts on soils in the area. Hydrology however, would still be affected, as the current condition of the Dry Bear road (left in place after the unauthorized blading), does not allow for through-drainage or under-drainage of ephemeral water flows to cross the road properly. The Proposed Action would allow for culvert installation, which would convey water underneath the road where needed. Soils outside the existing disturbance would be affected if the affects to hydrology initiates or exacerbates erosion. If erosion increases there would also be indirect affects to downstream water quality and aquatic, riparian, and wetland habitat.

4.1.8 Sensitive Species

Alternative I – Proposed Action Alternative

If the Proposed Action is approved, approximately 21.0 additional acres of surface disturbance would take place along the road corridor, which would result in a direct loss of that much native habitat along the corridor. Some amount of habitat would become unavailable to some sensitive species as a result of the increased vehicle traffic and human activity/presence. Sensitive wildlife species as described above would be somewhat affected by this, but by what amount is very difficult to determine. Sensitive species that use downstream riparian, wetland, and/or aquatic habitat may be impacted by hydrologic modifications and increased sediment loads, however with proper mitigation during and after road construction, this should be able to be mitigated.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, there would be no additional affects or impacts on any sensitive wildlife species in the area. Approximately 21 acres of habitat for species such as Mountain plover would remain unaffected under this alternative.

4.1.9 Threatened and Endangered Species

Alternative I – Proposed Action Alternative

No threatened or endangered species, or their habitat, are known to occur in the area under analysis, therefore, the Proposed Action (haul road upgrades) should have no effect on said species or habitats. Mountain plover is the only species associated with ESA which occurs in the area and is a proposed species. Since there are mountain plovers nesting in the area the stipulations applied would allow for nests to be successful and chicks allowed to fledge in the affected area. Individual mountain plovers do return year after year to the same location or nearby to nest however they also move to new locations to nest as well. The Proposed Action would increase the disturbance of an existing road by 21 acres and would change low quality habitat into lesser quality habitat for nesting. The increase in traffic, mining activity, and habitat fragmentation would decrease the productivity of the area affected. There are other available nesting areas, although the reduction of available habitat and the decrease in habitat quality may incrementally reduce the overall population production as more actions like this gain cumulatively. This project would not jeopardize the continued existence of this population and would have no effect on all other species on the Cody Field Office List of Threatened and Endangered Species.

Raptors and migratory birds are protected by the Migratory Bird Treaty Act and the mitigation measures adopted by the company would comply with the act by requiring surveys and mitigation. These actions if implemented correctly should keep the company from taking migratory birds and conserve these birds in the affected area

Alternative II – No Action Alternative

As above, no threatened or endangered species are known to occur in the area under analysis, therefore, Alternative II should have no affect on T&E species.

4.1.10 Vegetation

Alternative I – Proposed Action Alternative

The Proposed Action would result in the loss of approximately 21.0 acres of vegetation along the upgraded Dry Bear road corridor, if approved. However, after the Lower Seven Claims area mining was completed, the Dry Bear Haul road maybe reclaimed to a condition more representative of its condition prior to the road being bladed without BLM authorization (to be determined at a later date). The 21.0 acres would be ripped and reseeded (reclaimed), and not released from bond until the vegetation was

reestablished to the pre-bladed or better condition. Impacts to the vegetation that occupied the area disturbed by blading would eventually be mitigated, given enough time.

Alternative II – No Action Alternative

Under this alternative, native vegetation would not be impacted in the area described above.

4.1.11 Visual Resource Management (VRM)

Alternative I – Proposed Action Alternative

Visual resources in the Class IV VRM management area would generally not be affected if the Proposed Action is approved, as haul road upgrades as proposed would be consistent with past and current haul road activities in the area, and consistent with management criteria for a Class IV VRM designation. The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, the visual resources of the area would be slightly less affected than if the Proposed Action was approved.

4.1.12 Wildlife

Alternative I – Proposed Action Alternative

The variety of wildlife and bird species that live in the area affected by the haul road upgrade and other road upgrades would be effected by the increase in bentonite haul truck and pickup truck traffic as a result of the Proposed Action, however, This includes big game animals such as mule deer, antelope, and elk, who would be affected primarily in late winter, early spring and summer. Elk use the area most frequently between December and April. Other wildlife observed or noted in the study area, including bobcat, badger, coyote, fox, cottontail rabbit, and jack rabbit, may also experience some level of impact as a result of the increased traffic. Several mountain plover nesting locations are situated near the road corridor. One white tail prairie dog was observed in the SW¼ Sec. 21, T. 55 N., R. 93 W. Many prairie dog holes have been observed along the Dry Bear Access Road corridor where the planned upgrades would take place. Reptiles and non-sensitive amphibians that are present in the area include Plains spade foot toads, boreal chorus frogs, woodhouse toads, and tiger salamanders would only be minimally impacted.

Alternative II- No Action Alternative

If the Proposed Action is not reviewed or approved, the wildlife resources in the area would be slightly less affected than if the Proposed Action was approved.

4.1.13 Socioeconomics

Alternative I – Proposed Action Alternative

The proposed haul road upgrades, with proper design ,speed limits and signage, would allow for a safer and more efficient hauling of clay from the Lower Seven Claims mine area, which in turn would result in a positive effect for the mining industry and also on some sectors of the socioeconomic situation. The

proposed road upgrade on other traditional users, i.e., the livestock permittees, recreationists, outfitters, etc. would be relatively improved as once, approved, road parameters, such as drainage (culverts), speed limits and signage should be considerably improved over current conditions.

Increases in mining activity and the associated disturbance to the landscape and disruption of water and nutrient cycles/energy flows may have a minimal impact on the socioeconomic sector that measures their quality of life and base their lifestyle and cultural values on open, natural, undisturbed environments that provide quiet and solitude, clean air and water, wildlife, scenery, and other societal benefits such as ecological processes that are not easily measured in dollars.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, any socioeconomic effects that may have occurred as a result of upgrading the haul road would not take place.

4.1.14 Public Health and Safety

Alternative I – Proposed Action Alternative

The Proposed Action (for purposes of this EA being the proposed Dry Bear Road upgrades as described above) would improve the safety features of a portion of the Dry Bear road relative to its functionality for use by larger trucks that are necessary to mine and haul bentonite clay from the Lower Seven Claims area on patented land. The upgrade and subsequent increase in truck traffic and speed may constitute a greater risk to public safety when haul trucks are active, but no more than on any other roads in the area where bentonite haul trucks are active. The resulting increase in truck traffic and speed also increases the risk of vehicle collisions with wildlife and livestock, however, with proper speed limits, road design and signage, these impacts should be minimal.

Alternative II – No Action Alternative

If the Proposed Action is not reviewed or approved, the Dry Bear haul road, which has already been bladed without BLM approval or design input, could remain as it is today, with improperly designed drainage crossings, lack of water bars, crowning and ditching, and other important design features. This situation would have a more detrimental effect on public safety as well as road improvements necessary to protect the public, would not be considered or implemented.

4.1.15 Water, Riparian-Wetland Areas, Aquatic Habitat, and Floodplains

Alternative I – Proposed Action Alternative

The Proposed Action would increase the potential for water, riparian-wetland area, aquatic habitat, and floodplain impact primarily as a result of modified hydrology and increased sediment loads. These potential impacts would be reduced when compared to Alternative II, but would be increased when compared to the impacts associated with the pre-widened condition.

Compliance with the construction specifications outlined in BPMs application, BLM Manual Section 9113, the provisions of BPM's current Storm Water Discharge Permit (SWDP) and associated Storm Water Pollution Prevention Plan (SWPPP), and coordination with the Army Corps of Engineers (COE) would help reduce the potential for water, riparian-wetland area, aquatic habitat, floodplain, and associated wildlife species impacts.

Alternative II – No Action Alternative

Alternative II would continue impacting water, riparian-wetland area, aquatic habitat, floodplain, and associated wildlife species primarily as a result of modified hydrology and sediment loads to a greater extent than the potential impacts associated with Alternative I and the pre-widening condition.

4.2 Cumulative Effects

Cumulative impacts are those that would result from the incremental impacts of the Proposed Action or Alternative I, when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These reasonably foreseeable future actions refer to future action projections, or estimates, of what is likely to take place when a given Proposed Action is implemented. They are not part of the Proposed Action, but are projections being made so that future impacts, cumulative and otherwise, can be estimated as required by NEPA.

Cumulative impacts are the total effect on a given resource or ecosystem, of all actions taken or proposed. The document entitled “Considering Cumulative Effects under the National Environmental Quality Act” dated in January 1997, prepared by the Council on Environmental Quality (CEQ), was consulted during preparation of this section. The following discussion was derived from that document as it pertains to this analysis.

“Cumulative effects result from spatial (geographic) and temporal (time) crowding of environmental perturbations (CEQ, 1997 – Chapter 1, page 7). The effects of human activities will accumulate when a second perturbation occurs at a site before the ecosystem can fully rebound from the effect of the first perturbation.”

This Environmental Assessment has attempted to combine the results of internal scoping, describing the Affected Environment, and determining the Environmental Consequences, with incorporation of a Cumulative Effects Analysis (CEA), as per CEQ guidelines. The CEA found in the EA for the original A-5 Amendment provides pertinent information used in this CEA as well.

Cumulative effects from this proposed A-5 modification are herein classified as Type 1 effects (single-action additive) as per CEQ (1997). This type of effect is the result of repeated “additive” effects from a single proposed project(s).

The Cody Field Office conducted a general CEA for the Proposed Action under this EA, using GIS overlays and field inspections. Several maps were generated using ArcMap9 GIS software, to overlay existing and known projected land uses, known wildlife/T&E species habitats and nesting sites, and general vegetation communities, along with past, current and proposed bentonite mining and other land uses, in the general area northeast of Lovell, WY.

Relative to the chosen geographic scope for the analysis, as well as the anticipated 5-year time frame for mining, the affected environment and environmental consequences of the Proposed Action (and Alternative 2); the CEA relative to the Proposed Action indicates that, at this time, cumulative effects of the Proposed Action (and Alternative 2), coupled with other existing and planned land uses, on wildlife habitats/species, vegetation, and soils, can be mitigated over time, using the stipulations, BMPs, mitigation and monitoring measures outlined in the proposed Mine and Reclamation Plans, if approved by WDEQ and BLM, and properly implemented by BPM.

This Environmental Assessment has attempted to combine the results of internal scoping, describing the

Affected Environment, and determining the Environmental Consequences, with incorporation of a Cumulative Effects Analysis (CEA), as per CEQ guidelines.

The incremental disturbance amount of an additional 21.0 acres relative to the proposed road upgrade as described under the Proposed Action, is relatively minimal compared to larger areas proposed under the typical bentonite mining plan, however, the proposed “Lower Seven” claims disturbance on patented land also would add an additional 81.4 acres of land disturbance in the immediate area, for a total of 102.4 additional incremental acres of surface disturbance due to proposed new mining/associated disturbance in this area.

The geographic area analyzed for this CEA includes the general Dry Bear Road area east of the Crystal Creek Road, Bentonite mining in this general area began in the 1960’s. Three bentonite companies mine bentonite within this analysis area including BPM, M-I Swaco and Wyo-Ben, Inc.

A total of ~22,000 acres (approximate) have been disturbed by bentonite mining in the Bighorn Basin. About 10-20% of this total, (2,100-4,200 acres), are projected for additional disturbance in the foreseeable future. This projection results in a total of up to 26,200 acres of land disturbed over time by bentonite mining.

BPM has disturbed a total of 2,099.1 bonded acres in the Bighorn Basin since about 1974 according to their 2009 Annual Report. Of that total, 1,616.5 acres have been seeded (77%). Also, of that total, 171.22 acres have since been released from bond (only 8.1%), indicating vegetation has been satisfactorily reestablished on those acres. Approximately 525 acres are currently considered in “active mining/reclamation” status (25% of the total disturbed area). The proposed 2008 Update (A-5 Plan Modification) would, over 12 years, add another 102.4 acres of mining-related disturbance (of which ~21 acres are situated on public land), to the total area disturbed by BPM, (or 4.6% of the revised total disturbed area). BPM’s total disturbance since 1974 of 2,099 acres comprises roughly 10% of all bentonite-related disturbance in the Bighorn Basin. The A-5 plan proposing an additional 102 acres of disturbance over 12 years, would increase that percentage to ~11% of the total bentonite-related disturbance in the basin, if approved.

Two different bentonite companies, Wyo-Ben, Inc., and M-I Swaco, mine or have proposed to mine, large areas (>500 acres) to the east and south of the proposed A-5 plan modification area. BPM is also planning additional large amendments (A-6 and A-7) east and south of the A-5 area. The exact areas or acreage totals proposed to be mined under A-6 and A-7 are not yet known.

Reasonably foreseeable future actions in this area, in addition to the Proposed Action analyzed under this EA, include potential additional vegetative disturbances, including bentonite mining, and livestock grazing. The actual amount of acres that could be additionally disturbed in the future varies depending on changing market needs and prices for bentonite clay, and/or aggregate. An estimate of an additional 2,000-3,000 acres of bentonite mining disturbance in the general analysis area, over and above the 102 additional acres proposed for mining under this EA, over the next 10-20 years is projected, with an estimated 75% of that disturbance being reclaimed within the same time frame. Success of that reclamation will depend on success of topsoil and subsoil salvage during mining activities, proper application of salvaged soils and seed mixes, and proper moisture levels as a result of precipitation in the area.

Relative to the chosen geographic scope for the analysis, the fact that mining and reclamation occur concurrently, the affected environment and environmental effects of the Proposed Action (and Alternative II); the CEA relative to the Proposed Action indicates that, at this time, cumulative effects of the Proposed Action (and Alternative II), coupled with other existing and planned land uses, on wildlife habitats/species, vegetation, and soils, can be mitigated over time, using the stipulations, BMPs, mitigation and monitoring

measures outlined in the proposed Mine and Reclamation Plans, if approved by WDEQ and BLM, and properly implemented by BPM.

4.3 Stipulations and Mitigation Measures

Cultural Resources Stipulations (compatible with the current 43 CFR 3809 regulations) The operator/holder is responsible for informing all persons associated with this project that they may be subject to prosecution for knowingly disturbing, altering, injuring, excavating, removing or destroying any scientifically important paleontological remains or any historical or archaeological site, structure, building, or object on Federal lands.

The operator/holder shall immediately bring to the attention of the Authorized Officer any cultural and/or paleontological resources that might be altered or destroyed on Federal lands by his/her operations.

If archaeological, historical, Native American or scientifically important paleontological remains are discovered, the operator/holder is to suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Any such discovery shall be left intact until the operator/holder is told to proceed by the Authorized Officer.

The Authorized Officer shall evaluate the discoveries brought to his/her attention, take action to protect or remove the resource, and allow operations to proceed within 10 working days after notification to the Authorized Officer of such discovery. The decision as to the appropriate measures to mitigate adverse effects to cultural or paleontological resources shall be made by the Authorized Officer after consulting with the operator/holder.

Before a Plan of Operations is approved, the operator/holder is responsible for the cost of any investigations necessary, and any mitigation measures required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of the required evaluation and mitigation. After the Plan of Operations is approved, or where a Plan of Operations is not involved, the Federal Government (BLM) shall have the responsibility and bear the cost of investigations and salvage of any cultural and paleontology values discovered by the operator/holder.

Native American Resources The area under consideration contains no known areas or locations of religious or cultural concern to Native Americans. If such areas are subsequently identified or become known through the Native American notification or consultation process they would be considered during the implementation phase. The BLM would take no action that would adversely affect these areas or locations without consultation with the appropriate Native Americans.

Human Remains If human remains are discovered or suspected the operator/holder shall suspend operations immediately, physically guard the area, and notify BLM immediately.

Air Quality: To control and suppress fugitive dust generated by haul trucks, the Dry Bear Road will be kept wet by using a water truck equipped with a spray bar.

Reclamation and Seed Mix: Unless other arrangements are made between BLM and BPM, within 1 year following mining of bentonite from the patented Lower Seven Claims area, the upgraded BLM System Road 1126, would be recontoured to match the surrounding topography and reduce erosion, deep ripped where

necessary, reestablishing all hydrologic drainages, and reseeded using the following or other BLM-approved seed mix that conforms to the current BLM seed policy.

NOTE: BLM would also require addition of bluebunch wheatgrass and needle and thread grass be added to this mix in addition to the below at rates of at least 2 pounds PLS per acre, and that Yellow Sweet Clover* not be added into the mix.

Table RP -1 BLM-Approved Seed Mixes – 2008 Update/A5 Plan of Operations modification

Seed Mix 1. Slopes and Mesa Soil Mix		PLS LBS/ACRE
Grasses	Indian Ricegrass	2.0
	Western Wheatgrass	2.0
	Alkali Sacaton	0.5
	Bozoisky Russian Wildrye	3.0
	Bluebunch wheatgrass	2.0
	Needle and Thread grass	2.0
Forbs	Scarlet Globe Mallow	0.3
	Bee Balm and Sunflower in lieu of Yellow Sweet clover *	0.5 each
Sub-Shrubs	Winterfat	0.3
	Gardner Saltbush	3.0
Shrubs	Wyoming Big Sagebrush	1.0
	Four-Wing Saltbush	0.5
	Shadscale	1.0
	Rubber Rabbitbrush	1.0
TOTAL		19.5 lbs PLS/acre

A second proposed seed mix is provided below for drainage areas and saline uplands:

Seed Mix 2. Drainage and Saline Upland Mix		Pounds PLS/acre
Grasses	Bottlebrush Squirreltail	1.0
	Alkali Sacaton	1.0
	Western Wheatgrass	2.0
	Bluebunch Wheatgrass	2.0
	Needle and Thread Grass	2.0
Sub-Shrubs	Winterfat	0.5
	Gardener Saltbush	6.0
Shrubs	Wyoming Big Sagebrush	0.5
	Rubber Rabbitbrush	1.0
TOTAL		16.0 lbs PLS/acre

Time of seeding All permanent seeding will occur from October to November of each year or as long as the topsoil remains not frozen. Generally fall seeding allows maximum moisture retention and utilization of winter and spring precipitation.

Threatened & Endangered Species, Raptor nesting sites, and other Wildlife Prior to any new surface disturbing activities (road upgrades along the Dry Bear Road BLM System Road 1126) under this A-5 Plan modification, on-the-ground surveys would be required and conducted for any species, proposed species, or candidate species that are Threatened or Endangered. On-the-ground surveys would be conducted prior to any surface disturbing activities to ensure no raptor nests would be disturbed by mining or road building.

BLM shall be notified immediately if raptor nest sites are discovered prior to or during mining activities, and appropriate mitigation would then be determined. Monitoring will also be required and conducted for the life of the road for raptors, Migratory Birds of High Federal Interest (MBHFI) and their nests (between April 15 – July 15), T&E species, and sage grouse. BLM shall be notified by BPM of the results of any wildlife monitoring upon request. Results of surveying or monitoring activities shall be provided annually or on request.

Migratory Bird Mitigation Measure

Surface disturbing activity should not occur during the nesting season (April 15 through July 15) unless an avian nesting survey by a wildlife biologist confirms an absence of nesting birds in the affected area as to not cause take under the Migratory Bird Treaty Act.

Mountain plover stipulation:

No surface disturbing activities would be allowed from April 10 to July 10 in order not disturb or take mountain plovers which have been observed to nest in this area. An exception protocol may be followed if surface disturbing activity must be conducted (see below).

Mountain Plover Breeding/Nesting Season Exception Protocol: If a surface disturbing activity is requested to take place in mountain plover (MP) habitat (i.e.; areas with low, sparse vegetation, bare ground, prairie dog colonies, etc.) during the MP breeding/nesting season (April 10 - July 10), presence/absence surveys would be required. These surveys would take place within a ¼ mile buffer around the activity and must not occur during poor weather conditions (i.e., high winds, precipitation, etc.). The initial survey would begin on or after April 20, followed by a second survey 14 days later (earliest date for 2nd survey - May 4th). If cold, wet weather pushes the nesting period later into the spring, then the initial survey would also need to be pushed back accordingly. These two surveys will capture the vast majority of nesting MPs, with the intent of reducing the risk of concluding the site is not nesting habitat by an absence of nesting birds during a single survey. No surface disturbing activity is allowed to occur until both surveys have been completed and one of the following two findings have taken place:

If no MPs are found during either survey, then the disturbing activity must begin within 72 hours. If the disturbing activity doesn't commence within 72 hours, an additional survey will be required to check for late nesting MPs, which will start the clock again giving another 72 hour time period.

If MPs are found during the first or second survey, then either:

1. The activity can be postponed until July 10th with no additional surveys required;

- or -

2. Additional surveys could be done to locate active nests. Because of the colonial nature of MPs, the entire ¼ mile buffer area would need to be thoroughly surveyed. When nests are located the activity could commence after 37 days to allow the young MPs to hatch and be mobile, or the nest could be monitored and activity could commence after seven days post-hatching. If a brood of flightless chicks is observed, activities could commence after at least seven days.

Noxious or Invasive Weeds The operator (Bentonite Performance Minerals) would be responsible for controlling all noxious and undesirable invading plant species (as per the terms of a BLM-approved Pesticide Use Plan or PUP) in the Dry Bear road corridor/areas until revegetation activities have been determined to be successful, and the bond has been released. If noxious or invasive weeds are encountered, the Big Horn County Weed and Pest shall be contacted by the operator/holder for control and eradication. Written approval from the BLM Authorized Officer for the use of herbicides must be obtained prior to their use on public land.

Roads All upgrades to the existing Dry Bear road must be constructed according to BPMs specifications as outlined in their application, as well as according to BLM Manual Section 9113. Culverts will be properly sized to allow through-flow of storm or runoff water based on WDEQ/LQD recommendations and as specified under BLM 9113. BPM will be responsible during the life of the Lower Seven Claims mine area for maintaining the entire Cry Bear Road (BLM System Road 1126) including maintaining the road base, surface, all culverts,

ditches, ditch turnouts, and any other associated feature. Speed limits and signage will be imposed as necessary where the road is proposed to be upgraded to haul road status.

Unnecessary and Undue Degradation Unnecessary and undue degradation of native soils and vegetation outside of the upgraded road corridor will not be allowed to occur as a result of the haul road upgrade under this plan modification.

4.4 Residual Effects

The following residual impacts, or lack thereof, would be in effect relative to approval of the Proposed Action as applied with the Stipulations and Mitigation measures listed above.

1) There would be some temporary deterioration of air quality in the vicinity of the proposed 2008 Update areas and haul road upgrade under this plan modification due to stripping of topsoil for the road upgrade, and additional mining and hauling activities during the life of the various mine areas, as well as after reclamation of vegetation has been deemed complete. This residual impact would be in the form of a localized increase in particulate matter (dust) and fossil fuel combustion-related constituents available for transport by wind due to the proposed activities, and due to an initial lack of vegetative cover after reclamation is completed.

2) The Proposed Action or Alternative 2 would not result in any unavoidable residual impacts to cultural resources, unless such resources were located during mining or spur road construction and *not* reported to the BLM authorized officer. The cultural resource stipulations listed in Chapter 5.0 should mitigate this residual impact.

3) Removal of the bentonite resource under the Proposed Action or Alternative 2 would constitute an unavoidable long term; post-mining, adverse (residual) impact on the bentonite resource, however, in this case, the bentonite resource is not located on federal land and therefore, not considered a residual effect on federal land.

4) There would be a minor, temporary, unavoidable decrease in recreational opportunities within the new mining areas described in the Proposed Action, if approved, however these are not located on public land so this affect would only apply on patented land near the proposed haul road upgrade.

5) Minimal residual impacts are expected to occur to the local economy/socioeconomics as a result of implementation of the Proposed Action.

6) Implementation of the Proposed Action (or Alternative 2) would result in some increased and unavoidable soil loss through wind and water erosion during and after road construction. This increased soil loss may degrade downstream water, riparian-wetland and/or aquatic resources but this residual effect should be minimal.

Productivity of some disturbed soils would be reduced due to removal of vegetation, mixing of soil horizons during road construction, stockpiling, and erosion. Topsoil and subsoil removed from haul road and mine areas would lose most of its organic matter, and thus, its value for use in reclamation would be reduced.

7) The Proposed Action or Alternative 2 would result in the initial disturbance of approximately 22 acres of native vegetation on the road corridor on public lands. The haul road corridor as disturbed and modified under this Proposed Action could take 5 - 10 years or more after reclamation is initiated to achieve vegetative

production and species diversity comparable to pre-upgrade conditions. Some plant species may never be able to occupy the site again due to climactic conditions, loss of soil productivity, soil changes, and other factors. Some areas that were vegetated pre-disturbance, may convert to barren areas post-disturbance. Some sagebrush habitat (approximately 50% or more of the original sagebrush) may be lost for the next 20-60+ years post-disturbance despite proactive efforts to reestablish sagebrush by BPM. This sagebrush habitat could be replaced by saltbush or other desert shrub habitat over time.

8) Implementation of the Proposed Action or Alternative 2 would result in impacts to the existing landscape and watershed that are unavoidable. Reclamation efforts might never fully restore the haul road area to its pre-disturbance condition. Road activities could introduce permanent changes in color and line due to the exposure of underlying bedrock, removal of overburden, and disruption of natural contours.

9) Under either the Proposed Action or Alternative 2, there would be an unavoidable increase in surface disturbance within the affected watershed(s) on the proposed mine area. Water that would normally flow to Dry Bear Creek may be diverted or retained and some may be lost through evaporation and/or evapotranspiration. This would result in the loss of some water to these drainages until all hydrologic modifications were removed and the area was completely reclaimed. The reduction in the amount of water due to diversion/retention would be minor in volume and it may provide temporary watering sites or habitat for area wildlife.

10) The Proposed Action or Alternative 2 would result in the temporary loss over the life of the plan modification, of approximately 21 acres of wildlife habitat on public lands. It would take 10 years or more for this habitat to be reestablished to pre-disturbance conditions, and significantly longer for the sagebrush component of the habitat to reestablish. ***Once bentonite mining is completed in the adjacent Lower Seven Claims area, residual impacts should be minimal if reclamation practices are successful. Mitigation measures would reduce the negative visual effects by requiring the disturbed areas to be reclaimed and revegetated, to blend into the surrounding topography.***

5.0 TRIBES, INDIVIDUALS, ORGANIZATIONS, or AGENCIES CONSULTED

Wyoming Department of Environmental Quality – Land Quality Division

Wyoming Game and Fish Department (WGFD)

U.S. Fish and Wildlife Service (USFWS)

Wyoming State Historic Preservation Office (SHPO)

6.0 LIST OF PREPARERS

Gretchen Hurley, Geologist, CYFO

6.1 List of Reviewers

Destin Harrell, Wildlife Biologist, CYFO

Jerry Jech, Range Conservationist, CYFO

Shirley Bye-Jech, Recreation, CYFO

Kierson Crume, Archaeologist, CYFO

Mike Wengert, Invasive and Non-Native Weed Species, CYFO

Monica Goepferd, Engineering, WRBBD

Fred McDonald, AFM, L&M, CYFO

Ann Perkins, NEPA Coordinator, CYFO

Jack Mononi, Range Conservationist, CYFO

7.0 REFERENCES

Council on Environmental Quality, 1997, Considering Cumulative Effects under the National Environmental Policy Act, CEQ Executive Office of the President, Washington, DC.

Gray, S. T., Fastie, C. L., Jackson, S. T., and J. L. Betancourt, 2004. "Tree-ring-based reconstruction of precipitation in the Bighorn Basin, Wyoming, since 1260 A.D." *Journal of Climate* 17(19): 3855-3865.

IPCC, 2007, Intergovernmental Panel on Climate Change report, <http://ipcc-wg1.ucar.edu/wg1/wg1-report.html>

NOAA, 2007, <http://www.noaanews.noaa.gov/stories2007/images/drought-outlook-03-15-2007b.jpg>

http://bna.birds.cornell.edu/BNA/BPMount/Bald_Eagle/HABITAT.html

http://www.wyoweed.org/docs/designated_weeds_pests.html

National Climatic Data Center (NCDC), online data for Lovell, WY.

Wyoming Dept. of Environmental Quality, Air Quality Division, 2003 online information.