ENVIRONMENTAL ASSESSMENT

Bentonite Mine Plan of Operation Update to Wyoming Mining Permit 321C WYW-165212

DOI-BLM-WY-010-EA11-24

BLM

Worland Field Office, Wind River/Bighorn Basin District, Wyoming

June 2011

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.

DOI-BLM-WY-010-EA11-24

Project Title
WY-010-EA11-24

BENTONITE MINE PLAN OF OPERATION.....ERROR! BOOKMARK NOT DEFINED.

UPDATE TO WYOMING MINING PERMIT 321C.....ERROR! BOOKMARK NOT DEFINED.

1.0 INTRODUCTION; PURPOSE & NEED 1

1.1 INTRODUCTION 1
1.2 PURPOSE AND NEED OF THE PROPOSED ACTION 1
1.3 CONFORMANCE WITH LAND USE PLANS 2
1.4 ISSUES IDENTIFICATION 2
1.5 SUMMARY 2
2.1 INTRODUCTION 3

TABLE 1. PIT LOCATIONS AND TOTAL PROPOSED DISTURBANCE 3

FIGURE 1. GENERAL LOCATION OF THE PROPOSED BENTONITE MINE AREAS. 4

2.3 ALTERNATIVE 2 – NO ACTION 5
2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY 5

3.0 AFFECTED ENVIRONMENT 5

3.1 LOCATION, LAND USE, AND LAND OWNERSHIP 5
3.2 GEOLOGY 5
3. 3 HYDROLOGY 6

TABLE 3. WYO-BEN TABLE D-6.1; PIT LUCERNE WEST; PIT 101T(F3) HYDROLOGIC SUMMARIES 6

TABLE 4.1 CLASSIFICATION OF THE SOILS 6

3.3.1 SURFACE WATER / SURFACE WATER QUALITY / RIPARIAN. 7
3.3.2 GROUND WATER / GROUND WATER QUALITY / RIPARIAN. 7
3. 4 AIR QUALITY 7

CONCENTRATIONS OF CRITERIA AIR POLLUTANTS AND BACKGROUND AIR QUALITY FOR THE BIGHORN BASIN PLANNING AREA (BLM, 2009). 7

3. 5 SOILS 8
3.6 VEGETATION/INVASIVE PLANT SPECIES 8
3.6.1 VEGETATION 8

TABLE 9. WYO-BEN TABLE D-8-2; SPECIES LIST FOR PIT 101T EXTENSION 10

3.8 WILDLIFE 13
3.9 RECREATION AND VISUAL RESOURCES 13
3.9.1 RECREATION 13
3.9.2 VISUAL RESOURCES 13
3.10 PALEONTOLOGY 14
3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE 14
3.12 HAZARDOUS MATERIALS/PUBLIC HEALTH AND SAFETY 14

4.0 ENVIRONMENTAL IMPACTS 15

4.1 LAND USE 15
4.1.1 ALTERNATIVE 1 – PROPOSED ACTION 15
4.1.2 ALTERNATIVE 2- NO ACTION 15
4.2 GEOLOGY 15

4.2.1 ALTERNATIVE 1 – PROPOSED ACTION 15
4.2.2 ALTERNATIVE 2- NO ACTION 15
4.3 HYDROLOGY 15
4.3.1 ALTERNATIVE 1 – PROPOSED ACTION 15
4.3.1.1 Surface Waters/Water Quality (surface) Riparian 15
4.3.1.2 Ground Water/Water Quality/Ground 16
4.4 AIR QUALITY 16
4.4.1 ALTERNATIVE 1- PROPOSED ACTION 16
4.4.2 ALTERNATIVE 2- NO ACTION 16
4.5 SOILS 17
4.5.1 ALTERNATIVE 1- PROPOSED ACTION 17
4.5.2 ALTERNATIVE 2- NO ACTION 17
4.6 VEGETATION 17
4.6.1 ALTERNATIVE 1- PROPOSED ACTION 17
4.6.2 ALTERNATIVE 2- NO ACTION 18
4.7 LIVESTOCK GRAZING 18
4.7.1 ALTERNATIVE 1- PROPOSED ACTION 18
4.7.2 ALTERNATIVE 2- NO ACTION 18
4.8 WILDLIFE 18
4.8.1 ALTERNATIVE 1- PROPOSED ACTION 18
4.8.2 ALTERNATIVE 2- NO ACTION 19
4.9 RECREATION AND VISUAL RESOURCES 19
4.9.1 ALTERNATIVE 1 – PROPOSED ACTION 19

5.0 CONSULTATION AND COORDINATION 23

5.2 PERSONS, GROUPS, AND AGENCIES CONSULTED: 23
5.3 SUMMARY OF PUBLIC PARTICIPATION 23
5.3.1 COMMENT ANALYSIS 23
5.3.2 List of Commenters 23
5.3.3 Response to Public Comment: 23
5.4 LIST OF PREPARERS 23

WYOMING STATE OFFICE, BUREAU OF LAND MANAGEMENT 24

6.0 REFERENCES, GLOSSARY AND ACRONYMS 24

6.1 REFERENCES CITED 24

Project Title
WY-010-EA11-24

1.0 INTRODUCTION; PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the 101T EXTENSION UPDATE TO WYOMING MINING PERMIT 321C as proposed by Wyo-Ben, Inc. The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action.

This plan of operation would allow the operator the ability to mine and remove the minerals the operator has claimed pursuant to Subpart 3809 -Surface Management to Title 43 of the CFR; which requires the submission of a plan of operation when mining of locatable minerals is proposed. The operator has submitted a proposal to mine in accordance with §43 CFR 3809.401.

The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record (DR), including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects) beyond those already addressed in the Grass Creek Resource Management Plan, September, 1988.

1.2 Purpose and Need of the Proposed Action

BLM is considering approval of private exploration and production from federal minerals because the activity is an integral part of BLM's minerals program under authority of the Mining Law of 1872, as amended. These regulations are issued under the authority of sections 302 and 603 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1732, 1733, and 1782). Additionally, mineral exploration and development is recognized as an appropriate use of public lands in the Grass Creek Resource Manage Plan that provides management direction for the leased area. As per §43 CFR 3809.1 the purposes of this subpart are to (a) Prevent unnecessary or undue degradation of public lands by operations authorized by the mining laws. Anyone intending to develop mineral resources on the public lands must prevent unnecessary or undue degradation of the land and reclaim disturbed areas. This subpart establishes procedures and standards to ensure that operators and mining claimants meet this responsibility; and (b) Provide for maximum possible coordination with appropriate State agencies to avoid duplication and to ensure that operators prevent unnecessary or undue degradation of public lands.

Federal public domain lands included in this proposal are managed by the Bureau of Land Management (BLM). These lands are covered by placer mining claims which, under federal law of the General Mining Act of 1872 (as amended), give the applicant, Wyo-Ben, Inc., the right of access to extract the minerals claimed and to use the surface of the claim area in as careful and prudent manner as may be necessary to facilitate this extraction. The approval of this Plan of Operations (POO) through the signing of a Finding of No Significant Impact/Decision Record by the BLM, under the terms of §43 CFR 3809, and the Cooperative Agreement between the Bureau and the State of Wyoming, Department of Environmental Quality - Land Quality Division (DEQ-LQD), and the issuance of the Plan Approval letter from BLM, will constitute surface owner consent on those lands.

1.3 Conformance with Land Use Plans

The proposed action conforms to the Record of Decision and Approved Resource Management Plan for the Grass Creek area dated 1998, which is under revision and consolidation into the Bighorn Basin Resource Management Plan (expected completion in 2012.) The decisions in the Grass Creek Resource Management Plan provide general management direction and allocation of uses and resources on the public lands in the area. The proposed action falls within alternatives analyzed in the Draft Bighorn Basin RMP revision. The Grass Creek RMP provides that plans of operations are required for locatable minerals development consistent with regulations (§43 CFR 3809), on lands open to the staking of mining claims and operation of the mining laws for locatable minerals.

Relationship to Statutes, Regulations, or Other Plans

This environmental assessment was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) and other statutes relevant to the proposal. Authority for the proposed action and alternatives is contained in the Federal Land Policy and Management Act of 1976, as amended (FLPMA) and the regulations in 43 CFR 2200.

§43 CFR 3809. 2 applies to all operations authorized by the mining laws on public lands where the mineral interest is reserved to the United States, including Stock Raising Homestead lands as provided in §43 CFR 3809.31(d) and (e). When public lands are sold or exchanged under 43 U.S.C. 682(b) (Small Tracts Act), 43 U.S.C. 869 (Recreation and Public Purposes Act), 43 U.S.C. 1713 (sales) or 43 U.S.C. 1716 (exchanges), minerals reserved to the United States continue to be removed from the operation of the mining laws unless a subsequent land-use planning decision expressly restores the land to mineral entry, and BLM publishes a notice to inform the public. This subpart does not apply to private land except as provided in paragraphs (a) and (c) of this section.

1.4 Issues Identification

A plan of operation was received by the Worland Field Office on January 12, 2011. In accordance with §43 CFR 3809.411 the plan was reviewed and was deemed complete. It was determined that the EA in the matter of the plan would be made available for a comment period for at least 30 days in accordance with §43 CFR 3809.411(c).

The following Worland Field Office personnel reviewed or have been contacted with regard to this EA and Record of Decision.

Name	Title
Mike Bies	Archaeologist
Marit Bovee	Archaeologist
Marilyn Wegweiser	Geologist
Tim Stephens	Wildlife Biologist
John Elliot	Range Management Specialist
Karen Hepp	T&E Plant/Range Management Specialist
Monica Goepferd	Civil Engineer
Carol Sheaff	Realty Specialist
Steve Kiracofe	Soil Scientist / Hazmat Specialist
Paul Rau	Outdoor Recreation Planner/VRM
CJ Grimes	Noxious Weeds

1.5 Summary

This chapter has presented the purpose and need of the proposed project, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has considered and/or developed a range of action alternatives. These alternatives are presented in Chapter 2. The potential environmental

impacts or consequences resulting from the implementation of each alternative considered in detail are analyzed in Chapter 4 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

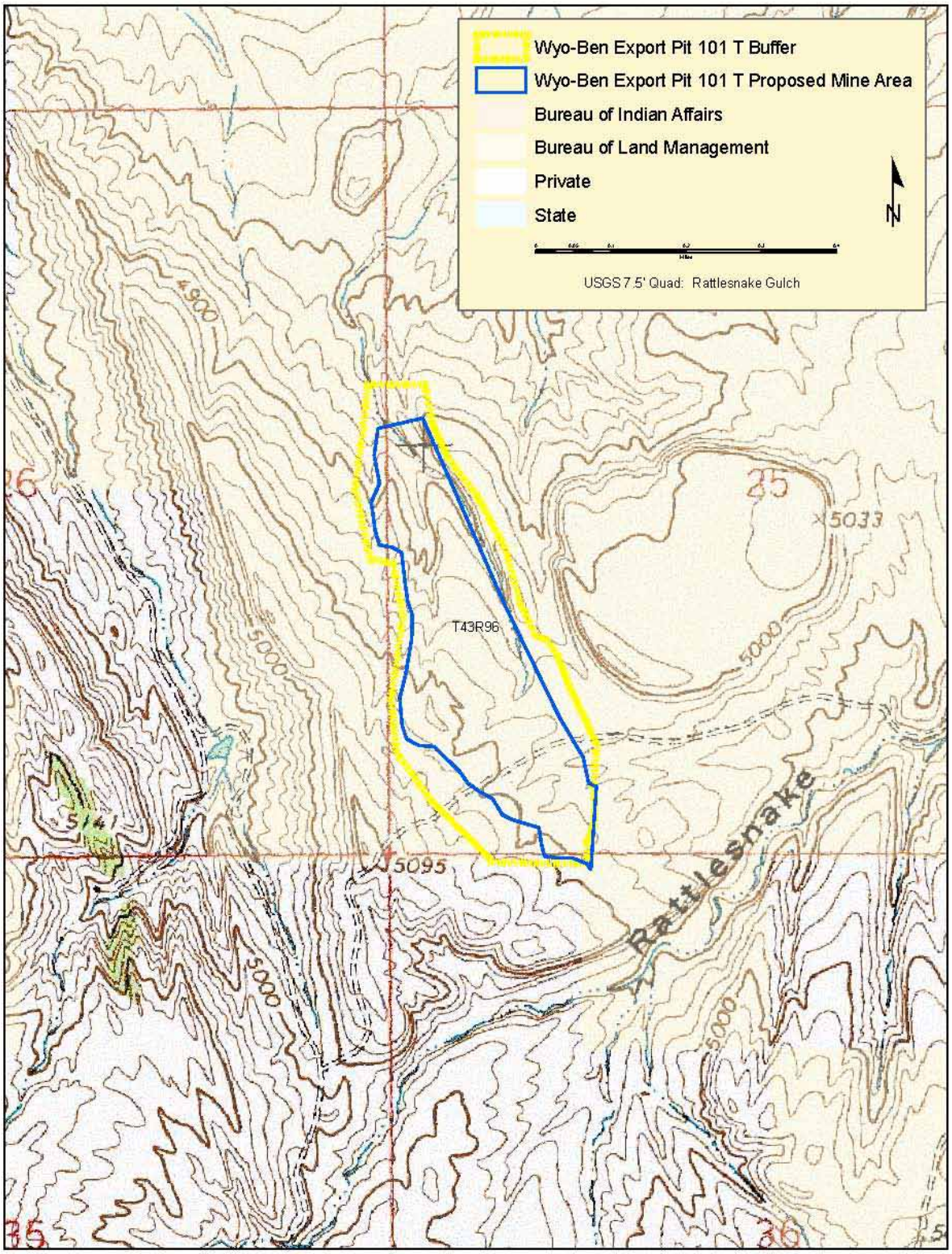
2.1 Introduction

The proposed action involves the mining of bentonite in proposed surface mining pit location where Wyo-Ben Inc., the operator, had located placer claim locations within Hot Springs County (see Figure 1) within the 6th Principle Meridian. Table 1 presents information about the proposed pit area. There are existing dirt roads that the operator would maintain to BLM standards, or in some cases upgrade, that would be used as transportation routes for the mined product that would be hauled to a processing plant at Lucerne. The cast-back method of mining proposed is intended to promote the practice of concurrent reclamation and would minimize the size of disturbances at any particular time. This plan of operation has been assigned serial number WYW165212 which is on file with the Worland Field Office

Table 1. Pit locations and total proposed disturbance

PROPOSED PITS	TWP. RGE.	SEC.	Proposed Disturbance Area	Claim
101T Extension F3 Bed	**T43N R96W**	**25, 26**	**50.1**	**Hat 68, 72 Owl 1 - 6**
TOP/SUB Stockpiles	**T43N R96W**	**25,26**	**4.7**	**Owl 1 – 2, 4 - 6**
Highwall Reduction	**T43N R96W**	**25**	**2.1**	**Owl 2, Hat 68**
Potential Disturbance Area			**15.9**	**Hat 68, 72 Owl 1 -6**
Grand Total Potential Disturbance			**72.8**	

Figure 1. General location of the proposed bentonite mine areas.



2.2 Alternative 1 (Proposed Action)

Pit 101T Extension would be an open pit bentonite mine of no more than 72.8 acres excavated in multiple phases using standard castback mining techniques and procedures. A pit sequence can take between five to ten years to complete. Mitigation measures are detailed in the attached Plan of Operation (Appendix 1). A pit sequence can take between five to ten years to complete.

In addition to the raptor nest and sage-grouse lek monitoring discussed in the mine plan BLM recommends the following additional inventories also be added: sage-grouse winter concentration areas inventory to be conducted from 11/15 - 3/15, and sage-grouse lek (breeding) inventory to be conducted from 3/15 - 4/15, all within .6 mile of mine unit boundary.

2.3 Alternative 2 – No Action

No action implies that on-going development and other land use activities would be allowed to continue in the area, but the proposed action would be disapproved. Additional plans of operation would be considered by the BLM on a case-by-case basis.

2.4 Alternatives Considered but Eliminated from Detailed Study

The surface location of the proposed action could be situated at different locations. Different surface locations may result in a deviation of effects from the proposed alternative, and may result in a net positive or net negative change in potential effects. Relocation may remove the operation from lands where the quality and/or quantity of bentonite is known through exploration and would not meet the operator needs, may be outside of placer claims located by the Wyo-Ben Inc., or beyond the outcropping of the bentonite clay layer itself. The proposed locations appear to be the best feasible to minimize potential direct effects upon protected resources. This left no unresolved resource conflicts and no identified needs to consider additional alternatives.

3.0 AFFECTED ENVIRONMENT

Resources and features not present, and not discussed in this EA, include: riparian areas, Class I visual management areas, Class I Airsheds, prime or unique farmlands, Wild and Scenic Rivers, wetlands, wilderness. Other than livestock grazing and wildlife use, there are no known land uses, or proposals for use, that occur in the area such as special recreation areas that would be affected by, or have the potential for cumulative impacts with this proposed action.

3.1 Location, Land Use, and Land Ownership

The proposed bentonite pits and related roads are located in Hot Springs County Wyoming, and 6th principal meridian. Legal descriptions down to the section are found in Table 1 of this document. The pits would be located on public lands managed by the federal government (BLM). Historically, these lands have been used for livestock grazing (sheep and cattle), wildlife habitat, recreational hunting, and bentonite mining. Present land uses remain the same.

3.2 Geology

The Big Horn Basin is an area bounded by Laramide mountain building to the northwest, north, and east, along with Absoraka volcanics to the west. The center of the basin is filled with flat-lying Eocene sedimentary rocks, with progressively more complex folding and faulting in Mesozoic and Paleozoic strata as the flanks of the mountains are approached. Economically-important bentonite is limited to middle-lower Cretaceous, identified as the Frontier, Mowry, and Thermopolis Formations. The mining activity proposed with this application will eventually affect one

bentonite bed in two of the Major bentonite bearing Formations of the Southern Big Horn Basin, all of which have been successfully mined by Wyo-Ben, Inc. in the past.

3. 3 Hydrology

No perennial or intermittent streams will be affected by the proposed disturbances. Through drainage will be reestablished during final reclamation. Table 3 (Table D-6.1) summarizes characteristics of pre-mine drainage basins.

Significant ephemeral channels (drainage basins of greater than 5 acres) will be temporarily directed around open pits during active mining stages. Channel design for both temporary and permanent diversions will match pre-mine channel gradients and cross-sectional shapes. Temporary diversions will comply with Noncoal rules, chapter 3, section 2(e)(ii)(F) to allow passage of peak runoff from a 2 year, 6 hour precipitation event in a non-erosive manner.

Permanent diversions (including reconstructed channels and adjacent topography) will comply with Noncoal rules, chapter 3, section 2(e)(iv), to be erosionally stable during the passage of the peak runoff from a 100 year, 6 hour precipitation event. If necessary, sediment control fabric fences, or certified weed-free straw bale check dams will be installed at discharge points into natural channels. These structures will be moved periodically to accommodate active mining areas.

All hydrologic calculations were developed by Greg Sweetser using Carlson Software's SurvCADD 2006, Hydrology Module; updated annually; Carlson Software, 102 West Second Street, Maysville, KY.

Rainfall is based on SCS Type 11 Distribution at Latitude 43-39-30 Longitude 108-20-05. Precipitation is reported in tenths of an inch.

2 Year 6 Hour = 0.93 Event used for temporary diversions.
5 Year 6 Hour = 1.32
10 Year 6 Hour =1.65 Event used for corrugated metal pipe (CMP) Road Crossings.
25 Year 6 Hour = 1.88
50 Year 6 Hour = 2.31
100 Year 6 Hour = 2.44 Event used for stability of permanent diversions.

Table 3. Wyo-Ben TABLE D-6.1; Pit Lucerne West; Pit 101T(F3) Hydrologic Summaries

SCS CN Number----- 86; Hydrologic Soils Group—C; **Typical Hydrology Information Point**

Basin	Area (acres)	Relief ft.	Watercourse Length	2 Year, 6 Hour Vol (ac-ft)	Q(cfs)	10 Year, 6 Hour Vol (ac-ft)	Q (cfs)	100 Year, 6 Hour Vol (ac-ft)	Q (cfs)
#1	26.8	240.0	3,169.0	0.50	0.98	1.82	4.14	3.66	8.80
#2	78.5	310.0	4,146.0	1.07	1.81	3.88	7.53	7.82	15.94
#3	39.8	235.0	3,606.0	0.54	0.95	1.97	3.95	3.96	4.74
#4	44.6	140.0	2,367.0	0.61	1.31	2.20	5.62	4.44	11.93

Drainage Cross Sections and Channel Designs

Since the proposed Pit 101T Extension will disturb more than 200 feet of a length of drainage in basin 1 and 2, drainage cross sections and channel designs will be submitted with this proposal. Channel design for both temporary

and permanent diversions will match pre-mine channel gradients and cross-sectional shapes. A typical velocity is used for these drainages for hydrologic calculations.

3.3.1 Surface Water / Surface Water Quality / Riparian.

There exist 2.35 miles of intermittent public stream segments within the cumulative affects area. The area is also dissected by 2.75 miles of inventoried ephemeral drainages within the area. These tributaries flow north into Kirby Creek which is a primary tributary to the Bighorn River. The drainage patterns would be temporarily re-routed around the proposed pits.

The riparian area impacts include possible additional erosion and deposition from the increased activity around the pits and from new roads in the area. The riparian areas if they receive excessive amounts of sediment can become unstable, more erosive and degrade in their functioning capability. Currently there is 0.82 miles of stream segment along Rock Springs Draw that is rated as functioning at risk with a downward trend, due to head cutting of soil, blocked culverts and blown out roads near the stream.

There are also 52 stock reservoirs that are found within these sub-watersheds, these are located within the cumulative affects area. These reservoirs capture surface flow, trap sediment and provide water sources for livestock and wildlife.

The reservoirs within the area that may receive potential indirect effects is the Shumway Stock reservoir, located 0.35 miles below Pit #108T in the SESW Sec.24 T 43N R96W, also a reservoir in SW Sec.7 T 43N R93W, both have the potential to receive increased sedimentation during a large storm event.

3.3.2 Ground Water / Ground Water Quality / Riparian.

Using all available USGS ground water data and the Wyoming State Engineer online database, the Rock Springs Well was located. This well lies within pit #75T located in SENE Sec 13 T 43N R 94W (USGS#434144108043601). The ground elevation of the well is 4750 feet above sea level with the completed depth of 559 feet below land surface. This well is completed in the lower Cretaceous Cloverly Formation aquifer. The static water level in 1970 was at 35 below surface elevation (4715 ft above sea level). The Cloverly Formation is located below the Frontier and Mowry Formations to be mined according to this plan. According to the well log there is no evidence of any water bearing formations above 500 feet in depth that are expected to be encountered.

Significant springs located nearby the proposed pits are the following in T 43 N R 93 W: Red Springs, NWSW Sec 17, and Rock Spring SESW Sec 7, these springs are found in the Cretaceous Mowry Shale and the Frontier Formations. There are also various other smaller springs that have been developed within the cumulative affects area.

3. 4 Air Quality

Concentrations of Criteria Air Pollutants and Background Air Quality for the Bighorn Basin Planning Area (BLM, 2009).

The primary air-borne pollutant within the plan of Operation area is Particulate Matter (PM) in the form of fugitive dust (uncontrolled wind-carried particulates) generated from natural and human sources. Particulate matter includes dust, soot and other tiny bits of solid materials that are released into and move around in the air. Particulates are produced by many sources, including burning of diesel fuels by trucks and buses, incineration of garbage, mixing and application of fertilizers and pesticides, road construction, mining operations, agricultural and forest burning, and operation of fireplaces and woodstoves. There is no air quality monitoring station presently located in Hot Springs County, so there is no local background air quality information available. The closest stations providing data are ones located in Cody, Sheridan, Lander and Casper (Wyoming DEQ, 2008). No monitoring of past and current open pit bentonite mines has been conducted, so quantitative information about pollutant emissions as listed in Table

3 are not available. An air quality permit from the Wyoming Department of Environmental Quality is not required for the operation of bentonite mines within the Bighorn Basin.

3. 5 Soils

The soils of the study area have formed in residuum, colluvium, and slope wash of shale and sandstone, and from alluvium in drainages. They are generally well to moderately well drained. Most of the soils contain a suite of neutral salts, such as the sulfates, carbonates, and chlorides of sodium and calcium. In addition, some have a considerable amount of exchangeable sodium, and with the salts they are classified as saline-sodic soils.

Alluvial soils are generally deep (greater than 40 inches) and have coarse to fine-loamy textures. Soils derived from shaley sedimentary rocks tend to have a clay texture. The soils in each map unit classified are referenced in Appendix II, along with descriptions of the soil map units.

3.6 Vegetation/Invasive Plant Species

The list of Prohibited and Noxious Weeds, located in the DEQ/LQD Guideline2, Appendix I, was reviewed, and it was determined that there are no noxious weeds present in the Pit 101T Extension Update Area. Yearly monitoring of the proposed disturbance area for noxious weeds will occur. If any are found, Wyo-Ben will contract Hot Springs County Weed and Pest (or a licensed herbicide applicator contractor) for treatment of those noxious species after obtaining proper permits from BLM.

3.6.1 Vegetation

Three vegetation map units were identified and described in the study area, and species lists for each unit were developed (Table D-8.2).

Numerical cover data were estimated using the line transect sample method applied as outlined in WDEQ/LQD Guideline 2, Vegetation. Each map unit was sampled using an extended reference area concept as described in Guideline 2. Line transect starting locations were randomly selected by overlaying the rectified aerial photographs with a numbered grid system and utilizing a random number generator (www.random.org/nform.html). The aerial was then used in the field to locate actual transect starting points. Transect directions were randomly determined by spinning a ballpoint pen. Each transect was conducted by stretching a 50 meter tape in a straight line, then walking down the left side of the tape and dropping a sharpened rod at one meter intervals (50 observations per transect). Only the first hit of the rod was recorded. However, if the transect path encountered large barren outcrops, the path of a previously measured transect, the disturbance boundary, or another map unit, a new random direction was determined by spinning the pen. Separate cover values were calculated for vegetation, rock, litter, and bare ground for each transect using the following equation:

$$\% \text{ cover} = \frac{\text{total \# of parameters hit per transect}}{\text{50 (total possible hits per transect)}} * 100$$

Sample adequacy (or a maximum number of transects as described in Guideline 2) was achieved in each map unit of the proposed extended reference area as defined by the formula recommended in Guideline 2. Average vegetation cover values were calculated for each map unit. These data summaries and the vegetation field data sheets are presented in the following paragraphs.

Shrub density belt transects were also conducted by counting each shrub and subshrub rooted within one (1) meter of the right side of the 50 meter long tape on each transect.

SITE DESCRIPTION

The area included with this application consists of a proposed pit area located approximately 5 miles northwest of Thermopolis, Wyoming. The proposed pit is located in the 8 to 13 inch precipitation zone (USDA-SCS, January,

1982); and the average annual air temperature is 47 to 55 degrees Fahrenheit. The growing season for cool season species is approximately April 15 to June 30.

The proposed pit is the outcropping F3 bentonite bed located in the Frontier geologic formation. The topography varies across the study area ranging from gentle to slightly dipping outcrops to incised steep-sided drainages. Soils are mostly residual in origin, shallow to moderately deep, fine to coarse textured, and salt affected; those along drainages are deeper and coarser textured.

The proposed disturbance areas will affect vegetation map units variously dominated and/or codominated by gardner saltbush (*Atriplex gardneri*), big sagebrush (*Artemisia tridentata*), rubber rabbit brush (*Chrysothamnus nauseous*), greasewood (*Sarcobatus vermiculatus*), black seepweed (*Suaeda niger*), bottlebrush squirreltail (*Sitanion hystrix*) and Indian rice grass (*Oryzopsis hymenoides*). Sparse Mixed Shrub Communities (MSC) also occur throughout the proposed disturbance area.

Based on a list of Primary Selenium Indicator Plant Species found in DEQ/LQD Guideline 2, Appendix III, only two selenium indicator species was identified during the vegetation mapping of the Pit #101T Extension Update. Woody Aster, (*Xylorhiza galbriuscula*) and Gray's Milkvetch (*Astragalus grayi*), were identified during mapping and in line transects conducted in the project area.

Proposed affected acreages for each vegetation map unit are summarized below:

MAP UNIT

MAP UNIT	101T EXTENSION	POTENTIAL DISTURBANCE AREA	TOTAL POTENTIAL DISTURBANCE
Mixed Shrub Complex (MSC)	16.4	16.3	32.7
Mixed Shrub Complex / Grassland	21.4	6.3	27.7
Grassland	11.1	1.3	12.4
Totals	48.9	23.9	72.8

DESCRIPTIONS

Mixed Shrub Complex MSC (MU1)

This map unit is a Sagebrush Steppe that is dominated by Wyoming Big Sagebrush, while Rubber Rabbitbrush and Shadscale are present, but occur much less frequently. Vegetation density decreases as the bentonite outcrops are approached. The dominate understory vegetation in this map unit is woody aster and American vetch. The primary grasses that were noted include Bluebunch Wheatgrass, Idaho Fescue, and Sandberg Bluegrass. Approximately 5% of this map unit is occupied with Cheatgrass.

Some areas of the MSC map unit do not have as much vegetation and are described as a sparse MSC. This more sparse MSC area occurs as narrow strips between bentonite bed outcrops. The vegetation in these strips are quite distinct with Wyoming Big Sagebrush being the dominate shrub and Rubber Rabbit Brush and Shadscale occurring less frequently. The understory consists primarily of the forbs *Platyschkuhria* and *Phlox*. The dominate grass of this map unit is Bluebunch Wheatgrass with Idaho Fescue being more common in the drainage areas.

MSC/Grassland/Outcrop Complex (MU2)

As described in the map unit description, this complex is a mixture of MSC Shrub, Grasslands, and Bare Outcrop areas. The Mixed Shrub Complex (MSC) portion is described above, the Grassland portion is described below, while the Bare Outcrop part of this unit can be described as being bare with little vegetation. This occurs on the

steep hill sides below well vegetated MSC areas above. This results in soils moving into those bare areas and drainage areas. Therefore, resulting in some vegetation growth in the delineated bare areas. It is estimated that the delineated bare areas contain 10% vegetation, primarily in the drainages that bisect the unit.

Grassland (MU3)

Map unit 3 is a grassland that has approximately 60% coverage of the annual invasive species Cheat Grass. In those areas that are not infested with cheat grass, vegetation dominance includes bluebunch wheatgrass, needle and thread grass, and bud sagebrush. Wyoming Big Sagebrush and Rubber Rabbitbrush makeup a minor component of this map unit.

Table 9. Wyo-Ben TABLE D-8-2; Species List for Pit 101T Extension

Genus	species	Four Letter Designation	Common Name	1	2	3
FORB	**ANNUAL**					
Arabis	*holboellii*	Arho	Holboell Rockcress	X		X
Descurania	*richardsonii*	Deri	Tansy Mustard	X		
Lappula	*redowskii*	Lare	Western Stickweed			X
Lepidium	*densiflorum*	Lede	Prairie Pepperweed	X	X	X
Machaeranthera	*canescens*	Maca	Hoary Tansyaster	X		
Malacothrix	*torreyi*	Mato	Desert Dandelion	X		
Plantago	*patagonica*	Plpa	Woody Plantain	X	X	X
Sisymbrium	*altissimum*	Sial	Tumblemustard			X
FORB	**PERENNIAL**					
Astragalus	*grayi*	Asgr	Gray's Milkvetch	X		X
Chaenactis	*douglasii*	Chdo	Douglas dusty maiden	X		
Commandra	*umbellata*	Coum	Bastard Toad-Flax	X	X	X
Cryptantha	*celosiodes*	Crce	Miner's candle	X		
Lygodesmia	*juncea*	Lyju	Skeleton weed	X		
Musineon	*divaricatum*	Mudi	Leafy Wildparsely	X		
Penstemon	*nititus*	Peni	Waxleaf Penstemon	X		
Phlox	*hoodii*	Phho	Phlox	X	X	X
Platyschkuhria	*integrifolia*	Plin	Platyschkuhria	X	X	
Sphaeralcea	*coccinea*	Spco	Scarlet Globemallow	X		X
Tragapogon	*dubius*	Trdu	Salsify	X		X
Vicia	*americana*	Viam	American Vetch	X	X	X
Xylorhiza	*glabriuscula*	Xygl	Woodyaster	X		
Castilleja	*chromosa*	Cach	Indian paintbrush	X		
Asclepias L.	*arenaria*	Asar	Sand Milkweed	X		
Astragalus L.		Astra	Astragalus ssp	X		
GRASS	**ANNUAL**					
Agropyron	*triticeum*	Agtr	Annual Wheatgrass	X		
Bromus	*tectorum*	Brte	Cheat Grass	X	X	X

GRASS	PERENNIAL					
Agropyron	***spp.***	**Ag spp.**				
Agropyron	***smithies***	**Ages**	**Western Wheatgrass**	**X**	**X**	**X**
Agropyron	***spicatum***	**Agsp**	**Bluebunch Wheatgrass**	**X**	**X**	**X**
Bouteloua	***gracilis***	**Bogr**	**Gramma Grass**	**X**	**X**	**X**
Carex	***stenophylla***	**Cast**	**Sedge**	**X**		
Festuca	***idahoensis***	**Feid**	**Idaho Fescue**	**X**	**X**	
Oryzopsis	***hymenoides***	**Orhy**	**Indian Rice Grass**	**X**	**X**	**X**
Poa	***sandbergii***	**Posa**	**Sandberg Bluegrass**	**X**	**X**	**X**
Sporobolus	***airoides***	**Spai**	**Alkali Sakatoon**	**X**		
Stipa	***comata***	**Stco**	**Needle and Thread Grass**	**X**	**X**	**X**

SHRUB	PERENNIAL					
Artemisia	***pedatifida***	**Arpe**	**Birdsfoot Sagebrush**	**X**		
Artemisia	***spinescens***	**Arsp**	**Bud Sagebrush**			**X**
Artemisia	***tridentata***	**Artr**	**Wyoming Big Sage**	**X**	**X**	**X**
Atriplex	***confertifolia***	**Atco**	**Shadscale**	**X**		
Ceratoides	***lanata***	**Cela**	**Winterfat**			**X**
Chrysothamnus	***nauseosus***	**Chna**	**Rubber Rabbitbrush**	**X**	**X**	**X**
Chrysothamnus	***viscidiflorus***	**Chvi**	**Green Rabbitbrush**	**X**		
Eriogonum	***brevicaule***	**Erbr**	**Wild buckwheat**		**X**	
Gutierrezia	***sarothrae***	**Gusa**	**Snakeweed**	**X**	**X**	**X**
Rhus	***trilobata***	**Rhtr**	**Skunkbush sumac**	**X**		

SUBSHRUBS	PERENNIAL					
Artemisia	***frigida***	**Arfr**	**Prairie Sagewort**	**X**	**X**	
Hymenopappus	***filigolius***	**Hyfi**	**Fineleaf Hymenopappus**	**X**		

TREE	PERENNIAL					
Juniperus	***horizontalis***	**Juho**	**Juniper**	**X**		

SUCCULENT	PERENNIAL					
Opuntia	***polycantha***	**Oppo**	**Prickly Pear Cactus**	**X**	**X**	**X**

Key to vegetation map unit codes; Mixed Shrub Complex (MSC); MSC/Grassland/Outcrop Complex Grassland

VEGETATION SUMMARY TABLES
PIT 101T Extension
Line Transect Data- Mixed Shrub Complex (MSC) Map Unit

STUDY AREA	% Veg Coverμ	% Litter Cover	% Rock Cover	% Bare Ground	%Total Cover	Number of Samples (N)	Sample Adequacy (N-min) VegCover	Standard Deviation Veg Cover
POTENTIAL DISTURBANCE AREA	54.9	15.7	7.7	21.7	78.3	20	6.5	7.7

Belt Transect Data- Mixed Shrub Complex (MSC) Map Unit

Species	**Shrub Density for Disturbance Area (# individuals/m2)**
Rubber Rabbit Brush - Chna	0.07
Wyoming Big Sagebrush - Artr	0.666
Shadscale - Atco	0.009
Birdsfoot Sagebrush - Arpe	0.056
Greasewood - Save	0.001
Prairie Sagewort - Arfr	0.047

Line Transect Data- MSC/Grassland/Outcrop Complex Map Unit

STUDY AREA	% Veg Coverμ	% Litter Cover	% Rock Cover	% Bare Ground	%Total Cover	Number of Samples (N)	Sample Adequacy (N-min) VegCover	Standard Deviation Veg Cover
POTENTIAL DISTURBANCE AREA	43.1	11.7	19.4	25.4	74.2	22	22.0	11.2

Belt Transect Data- MSC/Grassland/Outcrop Complex Map Unit

Species	Shrub Density for Disturbance Area (# individuals/m2)
Wyoming Big Sagebrush - Artr	0.496
Prairie Sagewort - Arfr	0.019
Rubber Rabbit Brush - Chna	0.163

Line Transect Data- Grassland Map Unit

STUDY AREA	% Veg Coverμ	% Litter Cover	% Rock Cover	% Bare Ground	%Total Cover	Number of Samples (N)	Sample Adequacy (N-min) VegCover	Standard Deviation Veg Cover
POTENTIAL DISTURBANCE AREA	56.8	15.7	0.3	27.2	72.8	20	2.9	5.3

Belt Transect Data- Grassland Map Unit

Species	Shrub Density for Disturbance Area (# individuals/m2)
Wyoming Big Sagebrush - Artr	0.041
Prairie Sagewort - Arfr	0.001
Rubber Rabbit Brush - Chna	0.014
Winterfat - Cela	0.001

μ All percentages are mean values

3.7 Livestock Grazing

The area of disturbance (Pit101T) is within the North Pasture of the Plummer Allotment No. 00635. The allotment is permitted for use to one permittee. Grazing can occur April 15 to December 1 and it is utilized by cattle. The North Pasture is comprised of approximately 700 public land acres and 425 private land acres. The range sites within the pasture vary from shallow sandy, shallow loamy, sandy, saline uplands, clayey, loamy, and rock outcrops. The permitted AUMs for the Plummer Allotment are 268 which equates to a stocking rate of 5.1 acres per animal unit month (1359 public acres/5.1 Acres per AUM).

Pasture therefore the pit extension impacts/displaces 9% of the public land AUMs for the life of the mining and reclamation project.

3.8 Wildlife

Portions of the proposed project areas are designated as big game crucial wintering habitat. These areas play an important role in the winter survival of elk, mule deer, and antelope. Antelope are known to utilize these habitat areas on a year-long basis. Mule deer should be using the area but presently are not noted. Wildlife habitat exists in the proposed project areas for numerous additional species such as sage-grouse, mountain plover, black-footed ferret numerous small mammals and predators, passerines, and raptors. Many sagebrush obligate migratory bird species use this area including the following: sage sparrows, sage thrashers, horned larks, vesper sparrows, Brewer's sparrows, and loggerhead shrikes. These songbirds mate, nest, and over-summer in the areas proposed to be mined.

No power lines or fences will be constructed as part of this proposed activity. Post-mine topography will be designed to maximize topographic diversity, enhancing both vegetation diversity and wildlife habitat. If previously unidentified significant habitat or significant wildlife usage are observed during the course of conducting this proposed activity, Wyo-Ben, Inc. will implement mitigation and notify the appropriate agency

3.9 Recreation and Visual Resources

3.9.1 Recreation

The project area is located on lands managed as an Extensive Recreation Management Area (ERMA). Recreation management objectives are custodial management, which includes addressing use and user conflicts, public health and safety, and resource protection. Recreation resources are not the priority resource managed for, but are a recognized land use. Hunting, dispersed hiking, horseback riding, sightseeing, rock collecting, camping, and driving for pleasure (including ATV, 4-wheel drive, and motorcycle activities) are observed activities in this area. The project area is located in accessible BLM-administered public lands within close proximity to Thermopolis, which provides community-based recreational opportunities. Recreational settings are assessed as middle to front country. Such criteria includes on or near 4-wheel drive roads on a naturally-appearing landscape (except for obvious primitive roads), to on or near improved county roads on a landscape partially modified by roads, utility lines, none overpowering the natural landscape. Travel management limits all motorized use to existing roads and trails.

3.9.2 Visual Resources

Visual inventories rate public lands surrounding the 101T mine location with a high scenic and sensitive rating; prescribed as a class II. The dominant and adjacent landforms, natural degree of contrasts exhibited through the varying colors and contrasting elements of line and form, and the visibility of the landscape from key transportation routes (WY Highway 120) has influenced the high scenic and sensitivity ratings.

Monitoring of the 108T mine operations have shown low contrasts that are subordinate to the surrounding landscape. .

Class II objectives are to retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture of the predominant natural features of the landscape.

3.10 Paleontology

The project area is located in geological formations with moderate sensitivity for paleontological resources. A paleontological inventory is not required in advance.

3.11 Socioeconomics and Environmental Justice

The proposed plan is within Hot Springs County which had an estimated population of 4,553 in 2005, a 6.7 percent decrease from April 2000 (US Census Bureau, 2009). As shown on Figure 1 the proposed pits are east and northwest of Thermopolis and East Thermopolis which had populations of 3,172 and 274 respectively in 2000 (latest town specific information available). In 2005 the per capita income was $31,763 in Hot Springs County. Mining at 30% and government at 25% were the largest contributors to earnings by place of work within the County, with health care and social assistance at 10%. For a complete listing see Table 2-50 in the Analysis of the Management Situation for the Bighorn Basin Resource Management Plan Revision Project, BLM 2009. The mining sector includes jobs in oil and gas sector. There was no shipment of manufactured products from the County in 2007.

The population of Hot Springs County consisted of 4.3% who are classified as minority (non-White) and 11% that are low income; i.e., live below the poverty level. Bureau of Land Management Instruction Memorandum no. 2002-164 implements Executive Order 12898 of Feb. 11, 1994 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” Such populations would be able to review information about this mine plan during a 30 day review period this is a requirement of 43 CFR 3809.411(c).

3.12 Hazardous materials/Public Health and Safety

The operator would utilize mechanized earthmoving equipment as part of mine and reclamation activities and there would be some on-site fueling and repairing of equipment. There may be accidental spills of fuels, lubricants, antifreeze, and battery acids. The operator submitted a spill management plan with their plan, under section 2.2.1.4 above which outlines how spills would be handled.

There is no anticipated public travel to the area around Pit 101T extension, as haul roads will be built from the existing Pit 101T in to the new pit. The public and public land users who travel any existing improved dirt roads that the operator would use to access the pits would notice an increase in traffic when equipment is being mobilized or demobilized from the pits or hauling of bentonite is taking place. Existing dirt roads were constructed to resource functional classification as per BLM manual section 9113. Wyoming allows a speed limit of 55 mph when roads are not posted. Wyo-Ben personnel and its contractors will observe a haul road maximum speed limit of 45 mph, unless situations dictate a slower rate of speed. The operator has committed to dust control measures as needed when bentonite is actively being hauled along the dirt portions of their existing designated haul roads and to upgrade and maintain such segments to the standards in the BLM’s road standards manual section 9113.

4.0 ENVIRONMENTAL IMPACTS

4.1 Land Use

4.1.1 Alternative 1 – Proposed Action

The dominant land use for the proposed mine areas is domestic grazing. Additional uses include oil and gas development, wildlife habitat, hunting, and exploration for and mining of bentonite.

Disturbances over the life of the mine would amount to about 73 acres potentially over a period up to 20 years in length (See Table 1).

The operator proposes a castback mining method that would minimize the acreage disturbed at each pit at any particular time and promotes concurrent reclamation. The Wyoming DEQ-LQD would hold a reclamation bond that is only releasable when the reclamation is found to be to the satisfaction of both the BLM and the DEQ. The bond amount held by the DEQ is re-evaluated annually. Impacts would not be significant.

4.1.2 Alternative 2- No Action

Under the No Action Alternative, the development of the Proposed Action would not occur. No effects on additional land resources would be expected to occur beyond the current land uses of the project area.

4.2 Geology

4.2.1 Alternative 1 – Proposed Action

The mining of bentonite would cause an irretrievable loss of that locatable mineral. There is no established threshold of significance regarding removal of minerals although the resource management planning decisions permit such activities. Surface mining of bentonite is practiced in many other parts of the Bighorn Basin where beds of bentonite are exposed at the surface. Impacts would not be significant.

4.2.2 Alternative 2- No Action

Under the No Action Alternative, the development of the Proposed Action would not occur. No effects on additional land resources would be expected to occur beyond the current land uses of the project area.

4.3 Hydrology

4.3.1 Alternative 1 – Proposed Action

The hydrology of the drainages would be altered temporarily by the re-routing of water around the pits. The proposed submitted mine plan states that all drainages would be returned to pre-mine gradients and cross sectional shapes. This would change the nature of the flow patterns surrounding the pits and downstream of the pits. Possible new sediment would be introduced into the watershed if the area received a precipitation even greater than 2 year, 6 or the 100 year 6 hour maximum precipitation events as defined in the Non-coal rules, chapter 3, section 2 (e) (iv) to be erosionally stable. Impacts would not be significant.

4.3.1.1 Surface Waters/Water Quality (surface) Riparian

<u>Surface Water</u>

Surface water quality could be affected by the Proposed Action. During the proposed mining process, natural drainage patterns would temporarily be disrupted, altering drainages and increasing overland flow mainly following precipitation events. Due to the lack of vegetation, biological crusts, and desert pavement, run-off from the proposed mining areas may transport excess sediment and water with higher level of sediment load into the watershed than was previously present in the system. Significant ephemeral channels (drainage basins of greater than 5 acres) would

be temporarily directed around open pits during active mining stages and straw bale sediment barriers would be utilized as sedimentation control measures.

Through drainage would be required to be reestablished during final reclamation. Channel design for both temporary and permanent diversions would match pre-mine channel gradients and cross-sectional shapes and dimensions. After reclamation, drainage would temporarily be affected until vegetation has recovered to pre-mine conditions. Mitigation is listed and incorporated as part of the Hot Springs County Wyo-Ben Inc Plan of Operation. Impacts would not be significant.

Water Quality

The drainages will flow into Mudd Creek and then Owl Creek as it flows to the Northeast. Increased runoff and sedimentation from the proposed action would have an indirect affect on water quality by increasing water temperature and stimulate bacterial growth such as e-coli.

The surface water quality runoffs from geologically similar areas within the basin tend to have elevated amounts of suspended sediment, total dissolved solids and pH levels above 8.5. Impacts would not be significant.

Riparian

The 2.35 miles of intermittent riparian area impacts include possible additional erosion and deposition from the increased activity around the pits and from new roads in the area. The riparian areas if they receive excessive amounts of sediment can become unstable, more erosive, and degrade in their functioning capability. Below proposed pit #75T there is 0.82 miles of stream segment along Rock Springs Draw (BLM ID # I0392X & I0393X) that have been evaluated 4 times since 1994, most recently it was rated as functioning at risk with a downward trend, due to head cutting of soil, blocked culverts and blown out roads near the segment. A continued downward trend is possible due to increased activity in the area. Impacts would not be significant.

4.3.1.2 Ground Water/Water Quality/Ground

Ground water quality may be affected by the proposed mining. It could be effected either by water infiltration in the proposed mining area or by sedimentation or run-off leaving the site that may eventually make its way into the ground water. It is not likely that ground water would be directly affected through infiltration in the pits. Not only is there a few hundred feet of material above the water table to filter out any additives from the bentonite, but the water would have to penetrate through the remaining bentonite in the ground, which swells and has almost zero permeability once it is wet; it is more likely to evaporate than to infiltrate. If water escapes Wyo-Ben, Inc.'s berms and runs off site, it may make it to an area where it would eventually make it into the groundwater. Sediment escape from the site caused by wind, water, or mining related activities (bentonite on haul truck tires falling off out of the mine area) could introduce trace amounts of bentonite into water that may eventually make it into the ground water. Impacts would not be significant.

4.4 Air Quality

4.4.1 Alternative 1- Proposed Action

The operator committed practices of watering haul roads and cast back mining should reduce the release of fine earthen particulate materials into the air. The tail pipe emissions from the operation of internal combustion engines as part of mining, hauling and reclamation activities should quickly dissipate and would not cause the ambient air quality standards cited in Table 3 to be exceeded. No mitigating measures are recommended. Impacts would not be significant.

4.4.2 Alternative 2- No Action

Under the No Action Alternative, the development of the Proposed Action would not occur. Background air quality would continue as cited in Table 3. This would mean the air quality in the area would not exceed the National or Wyoming Ambient Air Quality Standards.

4.5 Soils

4.5.1 Alternative 1- Proposed Action

Surface disturbance increases runoff and erosion. Following surface disturbance, WEPP predicts that runoff rates would increase five times above natural conditions. Without operator committed controls erosion rates are predicted to average 6.1 tons per acre per year; however based on a 50-year return interval, erosion rates could approach 35 tons per acre per year. Post reclamation erosion rates for the 1 to 10 year period until adequate cover is obtained, are predicted by WEPP to average 1.1 tons per acre per year; again erosion rates based on a 50-year return interval could approach 13 tons per acre per year during this time.

Though reclamation activities would be conducted as an integral part of post-mining operations, overall soil health would be impacted through the alteration of the soil physical properties. There would be less organic matter in the surface layers and soil structure and soil depths would be altered; however, the operator's proposed action could lead to a more rapid recovery of soil health with respect to soil physical properties.

The operator committed practices cited in Appendix I could have some impact at reducing the runoff and erosion rates discussed under the Proposed Action. WEPP is not sensitive enough to realistically model these differences. However, standard runoff controls could significantly reduce water runoff and associated erosion on disturbed areas and during post reclamation. The practice of timely concurrent reclamation as cited in 2.2.1.3 has the potential to reduce runoff and erosion by half that predicted by WEPP by simply reducing the amount of time that the soil is bare and could also reduce off-site impacts from runoff and erosion.

There are no established thresholds of significance regarding soils and no mitigating measures regarding soils are recommended. Impacts would not be significant.

4.5.2 Alternative 2- No Action

Under the No Action Alternative, the development of the Proposed Action would not occur. No effects on additional land resources would be expected to occur beyond the current land uses of the project area.

4.6 Vegetation

4.6.1 Alternative 1- Proposed Action

Clearing many acres of land at a time leaves areas open to invasive weed species that establish quickly and flourish in disturbed areas. Speedy revegetation with native plants would be necessary to prevent a non-native weed invasion. Due to extremely dry regional conditions and the saline soils of bentonite areas, re-vegetation is often a slow process taking anywhere from two to twenty years. Any islands of native vegetation left in the mined area would aid in the spread of native plants throughout the disturbance. Also, when topsoil is replaced quickly, viable native seeds can sometimes still be present to reestablish themselves in the reclaimed areas. If reclamation would not be done correctly, a potentially different plant community could replace the native one. Often, even successful reclamation would result in a change from the existing native plant community for decades. Impacts would not be significant.

4.6.1.2 Invasive Species

The operator has provided a comprehensive weed management plan as part of their mine and reclamation plan, listed in this EA that provides for the monitoring for and control of noxious weeds; and includes the assurance that seed, hay or straw used would be weed free. No mitigation is needed if the operator abides by their weed management plan. Impacts would not be significant.

4.6.2 Alternative 2- No Action

Under the No Action Alternative, the development of the Proposed Action would not occur. No effects on additional land resources would be expected to occur beyond the current land uses of the project area.

4.7 Livestock Grazing

4.7.1 Alternative 1- Proposed Action

The Proposed Action would temporarily affect rangelands in the proposed mining areas. From aerial photography there is approximately 95 acres of active disturbance. Therefore the 73 acres mentioned above in addition to the 95 acres of active disturbance would displace 33 AUMs ((73+95)/5.1) or 81 total AUMs (private and public). This pit extension impacts/displaces 24% of the North Pasture public AUMs or 8% of the total public permitted AUMs of the Plummer Allotment for the life of the mining and reclamation project.

Reclamation could be successful if proper topsoil handling and drought do not make it exceptionally difficult for seedlings to germinate and grow. Once the reseeding is successful, the vegetation would be reestablished well enough to provide forage for wildlife and livestock.

Usually reclaimed mining areas are not fenced out of grazing allotments. Because of this, cattle are rarely prevented from grazing on reclaimed lands where seeds are trying to germinate and establish themselves. This can be detrimental to both the grazing and the mining effort. Grazing before plants have established stresses seedlings and makes it very difficult for them to survive, spread, or create healthy rangeland. Grazing during the early stages of re-vegetation can lead to an increase of weed growth; native seeds in the seed mix are more desirable to cattle and are quickly grazed off, leaving the barren area to be established by weeds.

Wyo-Ben, Inc. would be responsible for successful reseeding & re-vegetation, and would be held accountable by WDEQ-LQD and the BLM until an acceptable vegetative community has established.

Livestock would be present during portions of the mining activity. It is not expected that the activity would affect the livestock and prevent them from grazing. Impacts would not be significant.

4.7.2 Alternative 2- No Action

There would be no effect on livestock grazing under Alternative 2, except that that cattle grazing would not have to halt for the proposed mining disturbance, and the forage would not change to post-mining species.

4.8 Wildlife

4.8.1 Alternative 1- Proposed Action

Seasonal and year-long use of the area by large ungulates such as elk, mule deer, and antelope would likely be altered during periods of increased vehicular traffic and operation of heavy equipment associated with the mining activity. These animals would likely be displaced to adjacent areas where suitable habitat exists. A period of non-use by these species may occur as a result of mining areas being void of vegetation until revegetation takes place. Numerous small mammals, predators, passerines, and reptiles which may be present would likely move to adjacent areas where suitable habitat is found. Impacts would not be significant.

4.8.2 Alternative 2- No Action

Alternative 2 would not add to the effects that already exist in the area because the proposed bentonite mining would not take place.

4.9 Recreation and Visual Resources

4.9.1 Alternative 1 – Proposed Action

4.9.1.1 Recreation

The project area will further alter the current recreational settings to a more urbanized/industrial setting. The goal interferences will result in unrealized benefits and experiences, which will displace users to alternative areas. User conflicts may increase between visitors and work related activities, visitor safety may be compromised by mining activities, most notably by the increase in traffic on the access roads. These conflicts and recreational impacts will be observed only during the mining activities. Through the castback reclamation method, adequate safety signing, avoiding restricting access to public lands, and maintaining a subordinate level of contrasting elements against the surrounding visual elements of form, line, color, and texture, impacts to recreation would not be significant.

4.9.1.2 Visual Resources

The 101T mine project will impact the scenic qualities during the life of the project. The project may conflict with Class II objectives by introducing additional contrasting elements of form, line, color, and texture against the surrounding natural elements, which may interfere with or distract the casual observer's viewshed. These impacts will be observed during the extraction activities where a mined area can reach up to 45 acres at one time (three 15-acre plots). However, upon monitoring the 108T mine and assessing the visual impacts from the project, and the size and the rolling reclamation methodology used for the mining operations, the project may not conflict with VRM Class II objectives.

A visual contrast rating worksheet was completed to assess the visual impacts from the 101T pit.

Degree of Contrast from Visual Contrast Rating Worksheet – 1/12/2011

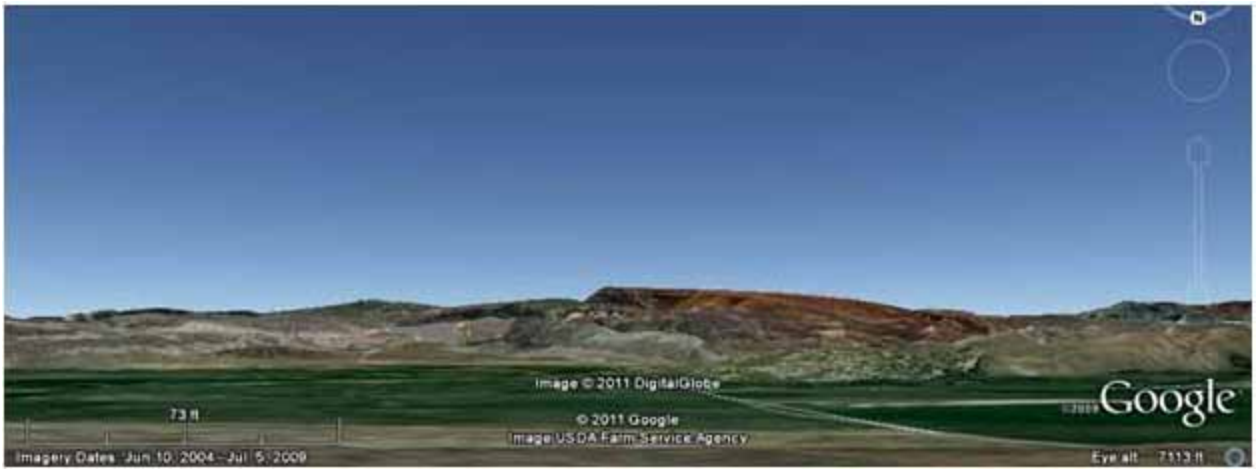
Degree of Contrast	Land/Water Body				Vegetation				Structures			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form		X				X			X			
Line		X				X			X			
Color		X						X	X			
Texture			X					X		X		

The following simulations illustrate the location of the proposed 101T mine as observed from Highway 120. The simulations display the entire 101T mine, other than the 15-acre mining strips. Visual impacts are not assessed based solely on the simulations. Periodic monitoring of the 108T mine has aided in assessing visual impacts.

Picture taken from Key Observation Point along Highway 120 for VRM contrast rating analysis on Jan. 12, 2011

Picture taken from same Key Observation Point along Highway 120 for VRM Contrast Rating analysis for the 108T Mine taken on April 8, 2009. This picture is referenced in this analysis for the purposes of capturing the existing environment free of snow.

Simulation of the proposed Wyo-Ben 101T mine location (illustrated as the white polygon).



The proposed project will introduce contrasting elements of form, line, and most especially color against the surrounding natural elements. This contrast will be evident from the south bound travelers on U.S. Highway 120, and from the residents of the area. The pits will introduce contrasting elements of (dark grey) color, (blocky polygons) form, and (straight and angular) line. Pit 101T is located on the slope which will display the project footprint to casual observers (refer to simulation above). Mining activities of any sort will introduce a high degree of contrasting elements against the natural elements beyond Class II thresholds, which will not meet the objectives of this class.

However, the project will be completed in a phased manner using the castback reclamation operating procedure. This phased approach will minimize the contrasting elements, but will not eliminate those elements from view. The rolling reclamation operating procedure will allow for 3 pits of up to 15 acres per pit to be excavated and then filled back in. A total of up to 45 acres may be visible, resulting in a short-term impact to visual resources. Those contrasts will be minimized once the pits are back-filled before the next pit is excavated. Situations such as poor reclamation, or slow bentonite excavation could impact visual resources for the long term. The naturalness of the extracted bentonite and the off-site drying pits will further minimize contrasting elements, and may not be noticeable from the casual observer, primarily from U.S. Highway 120. Adherence to other resource stipulations, the mining plan, and castback reclamation operating procedures, the project should meet VRM Class II objectives. Impacts to visual resources would not be significant.

4.9.2 Alternative 2 (No Action)

Visitors to the areas will freely strive to realize their beneficial outcomes with minimum goal interference from mineral development activities. The recreational settings will be maintained in the middle to front country settings. Users will not be displaced to alternative areas due to the no action.

4.9.2.1 Recreation

Recreation will experience no significant impacts.

4.9.2.2 Visual Resource Management

The scenic qualities of the areas will remain undisturbed. There will be no contrasting elements of form, line, color, and texture against the surrounding natural elements. There will be no impacts to visual resources.

4.9.2.3 Lands with Wilderness Characteristics

Because the project area is absent of wilderness characteristics, there will be no impacts to wilderness characteristics from the proposed action.

4.10 Cumulative Impacts

4.10.1 Geology

In 2009 Wyo-Ben mined 247889 bank tons of bentonite (Adcock, 2009). Mining of the proposed Pit 101T extension could result in 46, 774 bank tons of material being permanently deleted from the total resources.

4.10.2 Recreation

Continued mining development in areas with legal public access which are popular for dispersed recreational opportunities will alter the settings to an urban and industrialized setting, which will interfere with visitors' beneficial outcomes. Most dispersed recreationists enjoy the natural settings and the benefits that can be obtained from those natural settings. The alteration of the recreational settings to an urban and industrialized setting conflicts with recreationists' desired settings which are essential in obtaining desired outcomes. This conflict will create personal, community, environmental, and possibly economic non-beneficial outcomes, as well as displace community and regional visitors to alternative areas. Site specific mitigation measures can be applied to individual projects so as to minimize the impacts to recreation, but the settings, and the benefits, and experiences desired by the recreationists in these settings will be compromised.

4.10.3 Visual Resource Management

Continued mining development will impact the scenic qualities of the area. The visual impacts will degrade the viewsheds to the degree where a lower Visual Resource Management Class objective must be prescribed. Maintaining scenic qualities over a landscape under a lower VRM objective is difficult and nearly unachievable. The unique scenic qualities enjoyed in the Bighorn Basin will be compromised by introducing the unnatural conflicting elements of form, line, color, and texture; as well as the inability to maintain visual resources on BLM-administered public lands. Through site specific mitigation measures, contrasting elements from development could be minimized, but not to the standard of the VRM Class II objectives.

4.10.4 Lands with Wilderness Characteristics

Continued development throughout the planning area will degrade the wilderness characteristics of solitude, naturalness, size, and outstanding opportunities for primitive recreation.

4.10.5 Livestock

Impacts directly affecting grazing on public land from the extension of PIT 101T are: the displacement of approximately 15 AUMs (73 acres of disturbance/5.1 Acres per AUM) or 37 total AUMs (private and public) within the North Pasture annually until the vegetation is re-established. About 137 AUMs are provided from the North Pasture therefore the pit extension impacts/displaces 9% of the public land AUMs for the life of the mining and reclamation project.

5.0 CONSULTATION AND COORDINATION

5.2 Persons, Groups, and Agencies Consulted:

Table 5-1

List of all Persons, Agencies and Organizations Consulted for Purposes of this EA.

5.3 Summary of Public Participation

The public was invited to comment on the proposed project during a Public Scoping process via a news release in area newspapers for 30 days prior to the writing of the EA. One comment was received from the public during the 30 day scoping period.

5.3.1 Comment Analysis

One comment was received during the 30 day scoping process. That comment was favorable to bentonite mining as the member of the public felt that mining was good for the local economy and that mining did not cause any permanent effects to the public lands due to the efforts of mitigation and reclamation carried out by Wyo-Ben, Inc. Additionally the commenter liked the access for horseback riding that bentonite mining provides.

5.3.2 List of Commenters

Shane Kannard

5.3.3 Response to Public Comment:

The BLM appreciates that the public feels that mining is being carried out responsibly by the company, that mining creates opportunities in Hot Springs County, and that the permitting process works.

5.4 List of Preparers

Table 5.4 List of Preparers

5.4.1 BLM

Name	Title	**Responsible for the Following Section(s) of this Document**
Marilyn D. Wegweiser	Geologist; CME	**Author/Geology**
Mike Bies	Archaeologist	**Cultural Resources**
Marit Bovee	Archaeologist	**Cultural Resources**
Carol Sheaff	Realty Specialist	**Land law Examiner**
John Elliott	Range Management Specialist	**Range, Forage, Vegetation**
Tim Stephens	Wildlife Biologist	**Wildlife**
CJ Grimes	Noxious Weeds	**Reclamation**
Paul Rau	Outdoor Recreation	**Visual Resources/Reclamation**

	Planner	
Steve Kiracofe	Soil Scientist/Hazmat Specialist	**Soils/Reclamation**
Karen Hepp	T&E/Range Management Specialist	**Endangered Species/Range**
Monica Goepferd	Civil Engineer	**Engineering**

5.4.2 Non-BLM Preparers

Air Quality Division, Wyoming Dept of Environmental Quality, Cheyenne and Lander Offices

Hot Springs County Planner, Thermopolis, WY

Land Quality Division, Wyoming Dept. of Environmental Quality, Lander District Office

Wyoming Game & Fish Department, 5400 Bishop Blvd., Cheyenne, WY 82006

Wyoming State Office, Bureau of Land Management

6.0 REFERENCES, GLOSSARY AND ACRONYMS

6.1 References Cited

Adcock, T.W., 2009 Annual Report of the State Inspector of Mines of Wyoming office of Mine Inspector. Pg. 32,

Soil Survey Staff. 1999. Keys to Soil Taxonomy. Eight Edition. Pocahontas Press, Inc. Blacksburg, Virginia.

United States Department of Agriculture (USDA). 1981/1993. Soil Survey Manual, Chapter 4, Examination and Description of Soils in the Field. Manuscript (430-V-SSM, May 1981).

Wyoming Department of Environmental Quality. November, 1984. Guideline No. 1, Topsoil and Overburden.

BLM, 2009, Summary of the Analysis of the Management Situation for the Bighorn Basin Resource Management Plan Revision project; Cody and Worland Field Offices, Wyoming, pp. 2-1 – 2-9.

U.S. Census Bureau, 2009, Hot Springs County QuickFacts; http://quickfacts.census.gov/qfd/states/56/56017.html, Washington, DC.

State of Wyoming, 2008, Wyoming Ambient Air Monitoring Annual Network Plan 2008; Dept. of Environmental Quality, 35 pp., Cheyenne, WY.