Section 2.10 Mine Plan

Section 2.10.1 Introduction

In fulfillment of W.S.§ 35-11-406(a) and (b) and LQD Noncoal Rules and Regulations Chapters 2 and 3, the permittee provides the following general information.

There was no specific Mine Plan document with the original Conversion Permit. In general, the historical Chapter XXV (and later Chapter 13) Updates did not contain specific Mine Plan documents. The permittee has historically used the Annual Report to show historic mining progressions and to project the mining progression for the next Annual Report cycle.

The LQD and permittee developed the following format for a general Mine Plan which meets the minimum requirements of the Environmental Quality Act and LQD Noncoal Rules and Regulations.

As the permittee amends new lands or updates permitted lands, the major elements of the Mine Plan for the amendment area will be described in a new section of this Mine Plan.

Section 2.10.2 Mining Method and Type

The permittee has and will continue to mine bentonite for commercial processing and sales using the surface mining process defined in W.S. § 35-ll-103(e)(x).

The permittee has and will continue to mine pit-run shale to surface access and haul roads within the permit and amendment areas. The permittee uses the surface mining method. The permittee uses the shale for noncommercial uses. It does not process nor sell the shale.

Section 2.10.3 Life of the Mining Operations

The permittee and its predecessors have mined within the boundary of the original conversion permit since the effective date of the Wyoming Environmental Quality Act.

The permittee will continue to mine within the original permit area boundary via historically approved Mine Plans, via information presented in Chapter XXV (now Chapter 13) Updates and via information presented in the Annual Report. The permittee has no projected date for exhaustion of mineable bentonite reserves within the original permit area.

The permittee received approval of the A1 and A2 amendments on July 23, 2000. The permitting of these reserves extends the life of operations under Permit No. 267C. Periodically, the permittee will add new lands via the

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amendment process and briefly update the projected life of operations on the amended lands or on Chapter 13 Update lands.

Section 2.10.4 Quantity of Materials Moved And Number Of Acres Affected Annually

As per current LQD procedures, the permittee does not make these projections in the permit document. The LQD requests and the permittee provide this information in each Annual report.

Section 2.10.5 Major Equipment Used In the Mining Operations

The permittee normally conducts the bentonite and shale mining operations with some combination of the following equipment:

- D9L & D8N Caterpillar dozers
- Caterpillar 637E & 637D scrapers
- Caterpillar 988 front-end loaders
- Caterpillar 14G patrol blade
- Track-hoe excavator
- Highway Tractor-Trailers Haul Trucks
- Water trucks

This equipment list may change as new equipment is incorporated into the current fleet. The company also uses contractors for various operations. The contractor's equipment fleet is determined on an as-needed basis.

Section 2.10.6 Mining Progression: Original Permit and All Amendments

The Annual Report process has historically been used to show the historical and projected mining sequences. The general mining process excavates a sequence of small pits which are 2-5 acres in size. Each small pit or cut removes 50,000-150,000 cubic yards of overburden depending upon the depth of overburden and the size of the pit.

As each new cut is made, the salvaged topsoil and subsoil and overburden materials are used to reclaim the previous pits in a timely and contemporaneous manner. Mine Plan Figure 1 illustrates the integrated mining and reclamation process. The mining progression for amendment lands will follow one of the three generalized sequences described as A, B and C:

Schedule A The overburden from the first pit is used to re-contour the landscape near the pit. Then the tiered system of backfilling of successive pits will be utilized. The last pit is filled by leveling out the immediate area surrounding that pit. This scenario is useful to make the landscape more traversable to livestock and wildlife and to stabilize slopes.

Schedule B The overburden from the first pit is stockpiled and each new pit is backfilled into the previous pit. The last pit is backfilled with the stockpiled overburden completing the sequence.

Schedule C The overburden from the first pit is used to backfill the last pit of different sequence. The last pit is filled by leveling out the immediate area surrounding that pit.

Permanent spoil dumps are usually constructed only at the first pit in the series, and then only when pre-EQA disturbances are not adjacent. When pre-EQA disturbances are nearby, spoil from the first one or two pits in a series is backfilled onto the pre-EQA disturbance and reclaimed as part of the mine series.

Since the actual date of the approval of amendments is not precisely known, each amendment application subsequent to the approved A1 and A2 amendments will include a numbered map which delineates at least the first year's projected mining sequence on the amendment area.

Each subsequent Chapter 13 Update package will either include a map (or reference an existing Annual Report map) which delineates the first years projected mining sequence.

Section 2.10.7 Mining Progression Time Schedule

Neither the Wyoming Environmental Quality Act nor the Noncoal Rules and Regulations require a specific time schedule. As previously noted, the permittee has historically used the Annual Report process to establish the *initial* mine processions schedule for a new pit sequence and/or *continuation* of the mine progression schedule for an existing pit sequence within the original permit area.

The permittee will continue to use the Annual Report process to present the time schedule for all active mining progressions in the original permit area and the approved A1 and A2 amendment areas and all subsequently approved amendments.

Since the actual date of the approval of amendments is not precisely known, each amendment application subsequent to the A1 and A2 application will provide:

- A map outlining the likely pit locations and sequences, the location of the initial topsoil and subsoil stockpiles and the location of

existing and new haul/roads which will service the pit sequence.
- Brief text which identifies the likely starting date for the first pit of each identified pit sequence.
- Text commitment to provide additional pit progression information in each subsequent annual Report.
- Text which states that Schedule A, B or C (Section 2.10.6 above) will be used; if not the text will specify the specific alternative Mine Plan.

Section 2.10.8 Topsoil And Subsoil Salvage, Storage And Protection Procedures

The permittee will use the definitions of subsoil and topsoil from the LQD Noncoal Rules and Regulations, Chapter 1. The permittee will use the topsoil and subsoil salvage depths established in Section 2.7 (Appendix D-7) for each respective update or amendment application. The permittee will follow the recommendations in Section 2.7 for previously affected lands such as lands affected (and reclaimed) prior to the July 1, 1973 effective date of the Wyoming Environmental Quality Act and lands rehabilitated by the Abandoned Mine Lands (AML) Division.

Topsoil and subsoil will be separately and selectively salvaged. In general A horizons and top of B horizon are salvaged as topsoil and the bottom of B horizons and C horizons are salvaged as subsoil: Paralithic material is not salvaged with the subsoil.

Before soil stripping is initiated Mining Supervisors are accompanied with a pit diagram which identifies the soils series and distinguishes topsoil and subsoil depths to be salvaged. Typically rubber-tired scrapers are used in the soil salvaging process; in areas where soil salvage depths abruptly vary or equipment maneuverability is constrained, the operators will employ the use of other types of equipment to ensure proper depths are salvaged. Once soil stripping begins, trained operators and/or supervisors will routinely check soil to ensure proper depths are being salvaged. Supervisors and equipment operators use indicators such as vegetation rooting depth, change in soil coloration and monitoring equipment cylinder exposure to assure desired soil depth is salvaged.

The permittee will salvage all topsoil and subsoil from affected lands including:

- overburden stockpile sites
- bentonite stockpile sites
- new haul roads
- all pit areas and a buffer zone around their perimeter
- all equipment parking and fueling and maintenance areas

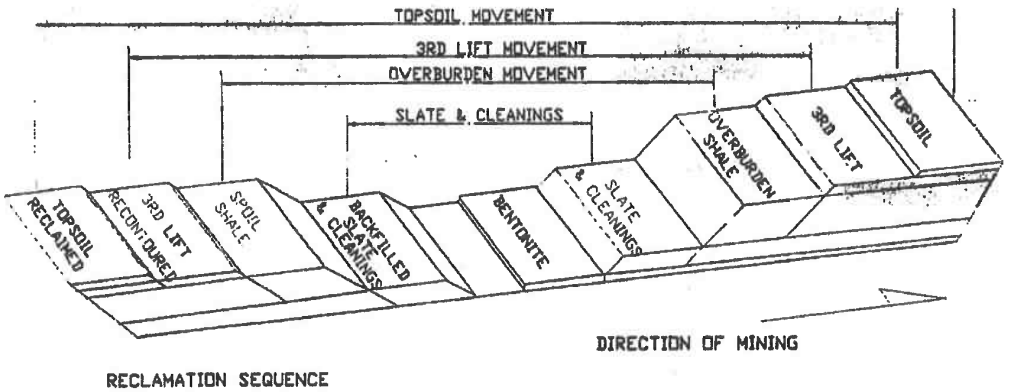
If adjacent backfilled and regraded lands are available, the permittee will seek to direct haul and redistribute the salvaged subsoil and topsoil in their premining vertical arrangement, this practice in known as "live-spreading".

The topsoil and subsoil stockpiles will be marked with signs reading TOPSOIL or SUBSOIL respectively. The sign lettering will be at least six (6) inches tall. The Annual Report will show the location and type of all existing stockpiles. New topsoil and subsoil stockpiles will be seeded with the approved permanent seed mix during the first available fall seeding period.

Section 2.10.9 Overburden Removal, Handling And Backfilling Procedures

Section 2.5 (Appendix D-5) describes the general characteristics of the native overburden. After removing the defined topsoil and subsoil on a specific pit, dozers usually rip the overburden in lifts. Rubber-tired scrapers remove the overburden and use it to backfill an open pit. Mine Plan Figure 1 illustrates the general process.

FIGURE 1. MINING & RECLAMATION SCHEMATIC OF MATERIAL MOVEMENT



RECLAMATION SEQUENCE

The permittee has developed and commits to using a "tiered" system for backfilling open pits. The tiered system consists of placing poor quality overburden from pit excavation to fill the lower third of the previous pits. The upper portion of overburden removed from the next pit is placed on top of the previous pit's lower quality material. This procedure enables the overburden closest to the bentonite to be buried as deep as possible. Third lift material immediately below the subsoil from the next successive pit is then placed on top of the upper portion of overburden removed from the previous pit. The third lift material is brought to the approximate original grade and blended with the surrounding native lands. Topsoil and subsoil are then direct hauled from the next pit and placed on the third lift.

If the overburden is not directly backfilled, it will be stockpiled on lands stripped of subsoil and topsoil. A containment berm will prevent stockpile runoff from contaminating native soils and to minimize loss of materials due to water erosion. Temporary Overburden stockpiles will not block intermittent or perennial stream channels and will not be placed directly in defined ephemeral drainage channels.

Historical analyses of overburden and bentonite beds have not identified combustible, toxic, acid-forming or otherwise hazardous materials. Should any such materials be encountered in the mining process, it will be handled according to applicable state and federal laws.

Section 2.10.10 Bentonite Handling Procedures

The exposed bentonite bed is usually ripped by a dozer. The bentonite may be removed by rubber-tired scrapers and stockpiled for field drying or other temporary stockpiling needs.

The stockpiles will be created only on surface without native topsoil and subsoil. If the stockpile is not confined by an open pit, a containment berm will minimize the loss of material and prevent pollution of surface waters.

The bentonite may be loaded into semitrailer trucks (from the pit or stockpiles) for over-the-road delivery to the permittee's processing plant at Colony, WY

Section 2.10.11 Protection Of Other Resources

Due to shallow depth to which mining will occur, it is not anticipated that groundwater will be impacted by mining operations.

Watersheds to existing drainages will be minimally affected during mining; surface flow will be temporarily diverted around active disturbance and into the existing drainages. Final contouring will direct similar-size watersheds toward the existing natural outlets. No significant effects on surface water are anticipated due to mining.

Section 2.10.11-1 Best Management Practices

General BMP's, concerning discharge, utilized are listed in the Bentonite Performance Minerals' Wyoming General Storm Water Permit for Mining Operations. These BMP's include:

- The TSS (clay) resulting from entrainment from sediment into stormwater is managed by placing a buffer and depressions around overburden piles that collect runoff. Further, any errant runoff from the overburden is collected in drainages that have additional Best Management Practices (BMPs) such as water bars, sediment ponds and less often filtrations dams.
- Before pumping from a pit, the clay in the water must first be given an opportunity to settle. Water then may only be pumped into an area that does not connect with a major

drainage. If water is pumped to a major drainage, the drainage must contain BMPs such as water bars or a sediment pond(s).

- Topsoil is usually spread immediately after it is collected in accordance with BPM's policy of concurrent mining and reclamation. However, there are times when topsoil and subsoil piles must be created to reclaim pits, roads and other miscellaneous disturbances. The topsoil and subsoil piles that remain in place for longer than 6 months are sloped at 3:1 or less and seeded to minimize erosion and pile diminution. A buffer and catchment is sometimes placed around piles as a BMP to help minimize sediment loading to the surrounding native ground.
- Each campsite is bermed and constructed on a 1-2% grade. On the down-gradient end of the camp a sump is constructed to catch runoff and prevent a discharge. All trash and debris generated at the camp is collected and regularly transported to the plant site or landfill for disposal.
- The management of field storage, dispensing, and clean-up of hydrocarbons is discussed in the BPM SPCC Plan (Appendix C). In summary, this plan directs all storage of petroleum products to be maintained within the bermed and graded camp area. The camp area has a sump that is capable of storing 110% of the largest storage container in the camp area. The regular fueling of equipment is also to be performed in the camp area. The camp area is typically situated on bentonitic clays and soils or shale-clay soils. Both surfaces are extremely impermeable and readily soak up petroleum products and other liquids. This unique characteristic of bentonite makes it an ideal surface for containment of spills. In the event of a spill of petroleum product, the soil is excavated and placed into pile and transported to the PCS landfarm. The spill is reported internally as a spill inside containment per the SPCC plan.
- The management of the roads includes, dust control (watering), blading and ditching, crowning, use of proper road construction materials (shale) and routine maintenance. The dust control measures include watering the roads using several water trucks on a regular basis during each day. The roads are also bladed with a maintainer to remove fines and help establish a crown. The road ditches are cut to help promote water runoff and settling. Appropriately sized culverts are installed to divert water under roads and keep open drainages.
- The stockpiled bentonite is cupped (ditched) and bermed to prevent loss of material (product).

- The loading of bentonite outside of pits occurs in areas that have been cleared of topsoil and has had a berm placed around it to prevent contamination of stormwater.
- The fueling of the pumps is performed either in the pit bottom or in camp areas which have been stripped of topsoil and are cupped/bermed for containment.

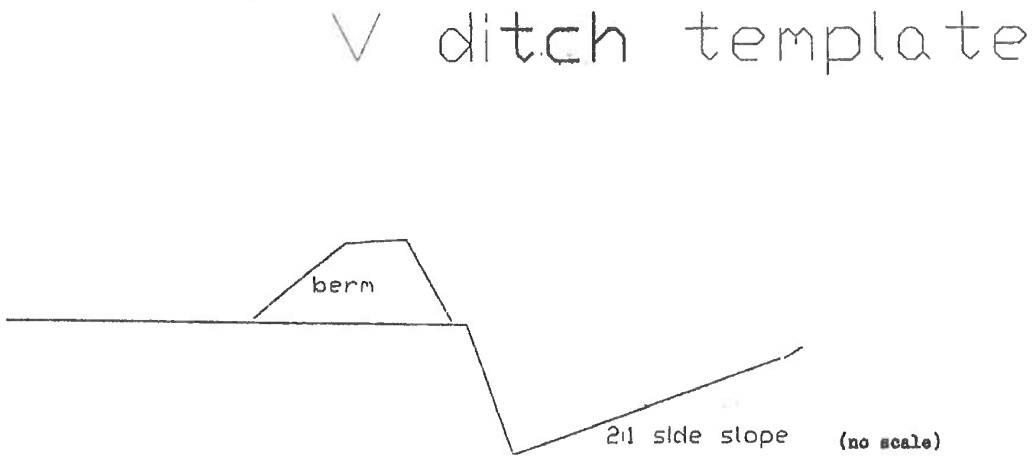
Section 2.10.12 Temporary Diversion of Unchannelized and Ephemeral Stream Flows

The permittee may temporarily divert unchannelized surface water flows and /or ephemeral streams for any of the following reasons:

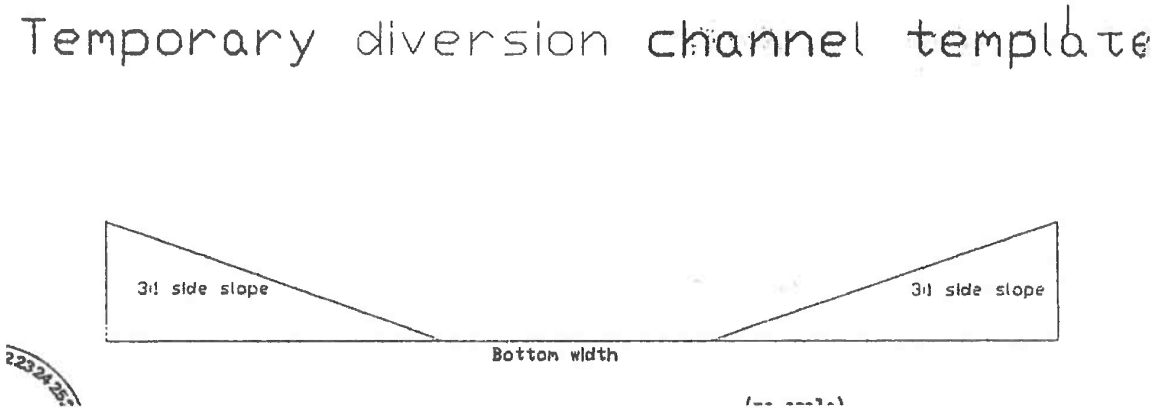
- assistance in controlling pollution of the waters of the State.
- prevention or control of unnecessary erosion.
- protection of the on-going mining reclamation processes.
- protection of downstream water rights.

In designing and construction such diversions, the permittee will use the performance standards in the 1993 Noncoal Rules and Regulation, Chapter 3, Section 2. (e)(ii). the permittee will not submit specific designs but will have information available to confirm attainment of these standards. The permittee will generally divert surface flows around the open pit sequence with v-ditches when the watershed is small, e.g. ten to thirty acres (see Mine Plan Figure 2). When the watershed is larger, the permittee will construct a trapezoidal channel (see Mine Plan Figure 3). In all cases, topsoil will be salvaged prior to construction. In all cases, the V-ditch or trapezoidal channel will be designed to the 2-year, 6 hour precipitation event in a non-erosive manner.

Mine Plan Figure 2. Schematic diagram for a v-ditch diversion of surface water in ephemeral drainages with small (10-30 acres). The berm material is the ditch cut material if the total depth does not exceed the defined depth of topsoi plus subsoil. If the necessary ditch depth exceeds the topsoil plus subsoil, the berm will be exclusively topsoil plus subsoil or exclusively overburden material.



Mine Plan Figure 3. Schematic diagram for trapezoidal channels for diverting ephemeral drainages which watersheds greater than 30 acres



Section 2.10.13 Mining through Intermittent or Perennial Streams

The permittee does not anticipate the need to mine through any streams identified by the intermittent stream or perennial stream USGS map symbol as shown on the USGS map associated with the original permit area or any amendment area. The permittee will consult with LQD should it ever anticipate mining through an intermittent or perennial stream.

Section 2.10.14 Processing and Handling Facilities

The permittee operates a single processing plant at Colony, WY which services all mining conducted under Permit No. 267C. This processing plant was originally constructed in 1948 and has been progressively upgraded to meet changes in bentonite processing and marketing. The lands occupied by the Colony plant were added to the permit area in 1982 under a "Plant Site and Haul Road" amendment. The LQD did not formally approve and number that amendment. At the Colony plant different grades (qualities) of bentonite are stockpiled and, as necessary, blended to meet marketing needs and then dried to reduce the moisture content to approximately ten percent. After drying, it is sized by a series of screens and air classifiers. Finally it is bagged for loading or loaded in bulk for shipment to a customer by truck or rail. No tailings are produced from the process, therefore no tailings disposal site is required.

Section 2.10.15 Solid Waste Disposal

The permittee has a single designated solid waste disposal area southeast of the Colony plant. This site was originally permitted under the Solid and Hazardous Waste Division (SHWD) of the Department of Environmental Quality. The LQD was subsequently mandated to assume regulation of non-hazardous solid wastes which are generated by the bentonite mining and processing operations. The LQD's regulatory mandate derives from the LQD Noncoal Rules and Regulations Chapter 2, Section 2(b)(iii)(l) and Chapter 3, Section 2 (c)(v).

As of December, 2000, the LQD does not have specific and detailed solid waste disposal regulations. Those regulations cited above cross-reference to "...those provisions of the Solid Waste Management Rules and Regulations deemed appropriate by the Administrator". The LQD Administrator has not listed "appropriate" regulations. Thus, the permittee understands that it is held to all applicable SHWD regulations which apply to non-hazardous "...industrial solid waste generated by the operation".

The permittee will not establish other solid waste disposal sites within the permit area or amendment areas without prior approval from the LQD.

The existing solid waste disposal site accepts only non-hazardous materials generated by the plant, office, and mining operation. The wastes are covered weekly.

Section 2.10.16 Power Transmissions and Communication Lines

No power transmission or communication lines will be constructed for the mining operations associated with the original permit area or the approved Al and A2 amendments. The permittee will not mine within a ten foot radius of any power or communication poles. This practice ensures a stable pedestal will be left around any poles in the permitted area, thus preventing destabilization. Any underground utilities will be relocated before mining, or marked by the utility company to ensure mining does not impact those utilities.

Standard utility, power and communications lines service the Colony plant. Modifications to these systems will not require any consultation with the LQD.

Section 2.10.17 Haul, Access and Light Use Roads

LQD Noncoal Rules and Regulations Chapter 2, Section 2.(b)(iii)(G) list the permitting requirements for roads. Chapter 1, Section 2(ax) defines the road categories.

These road permitting requirements have been treated different ways in the original conversion permit and the approved Al and A2 amendments; these historic treatments will not be revisited or held to the permitting procedures discussed below. All existing haul and access roads will be held to the maintenance performance standards of W.S. § 35-11-406 (b)(xv) and LQD Noncoal Rules and Regulations Chapter 3, Section 2(i).

All Chapter 13 Updates and Form 1 amendment applications submitted after July, 2000 will address the road permitting requirements by submitting the following information on the mine sequence map noted in Section 2.10.7:

- Show the applicable types of roads which will be built or utilized in support of mining operations.
- List the road types in the legend
- Show the location and size of all culverts which exist and/or will be upgraded and/or will be newly installed.

If existing two-track roads fit the definition of light-use roads, the LQD will not require salvage of topsoil or subsoil when the permittee uses these light-use roads.

All newly constructed and upgraded haul and access roads will be built in accordance with the performance standards of LQD Noncoal Rules and Regulations Chapter 3, Section 2(i).

All newly constructed or upgraded access and haul roads will be shown on and

identified on Annual Report maps.

The Colony plant is serviced by a railroad spur. However, the spur does not provide exclusive service to the permittee's operation, so only portions of the railroad spur are incidentally included in the original conversion permit area boundary. The railroad corridor and railroad spur are not owned by the permittee.

Section 2.10.18 Buildings and Structures

W.S. § 35-ll-406(b)(iv) and LQD Noncoal Rules and Regulations Chapter 2, Section 2(b)(iii)(H) and Chapter 3, Section 2(j) hold the permittee responsible to remove and/or dismantle all buildings and structures erected, constructed, used, improved and/or modified by the operator unless the permittee provides written proof documenting the surface owner's desires.

Historically, the LQD has not required the Reclamation Performance Bond (bond) itemize demolition and final reclamation costs for the Colony plant buildings. The permittee has no satellite buildings or structures which support the mining operations. The permittee understands its responsibilities to demolish and reclaim structures. Such demolition will not occur until the Colony plant ceases operation; there is no identified date for cessation of the current mining and processing operations.

Section 2.10.19 Signs and Markers

W.S. § 35-11-41.5.(b)(i) requires the permittee to "conspicuously post and maintain at each entrance to the operation, a sign which clearly shows the name, address and telephone number of the operator, the name of his local authorized agent, and the permit number of his operation".

The permit area is far-flung and is accessible at many points by government maintained or private roads. There is no realistic possibility of posting and maintaining a sign at each entrance. The permittee will post and maintain an identification sign near the main entrance to the Colony plant. The permittee may post other signs at other locations within the mining operations.

As noted in Section 2.10.8, the permittee will post and maintain identification signs on all topsoil and subsoil stockpiles.

Section 2.10.20 Operational Water Use

W.S. § 35-11-406(b)(xvi) requires "a statement of the source, quality and quantity of water, if any, to be used in the mining and reclamation operations". The permittee uses water in its plant and office operations. These water sources are permitted and maintained according to applicable regulatory requirements; quality meets the requirements of the uses.

The permittee and its contractors periodically water the haul and access roads within the mining operations. The source of this water is permitted according to applicable regulatory requirements; quality meets the requirements of the use. The quantity of water used is reported to Wyoming Department of Environmental Quality/Air Quality Division per operating permit #3-2-096-2 semiannually.

Section 2.10.21 Impoundments

The permittee does not generate any tailings as discussed in Noncoal Rules and Regulations Chapter 3, Section 2(h). Thus, the permittee will construct no tailings impoundments.

Permanent post-mining impoundments are discussed in the Reclamation Plan (Section 2.11.5).

Section 2.10.22 Unanticipated Conditions

The LQD Noncoal Rules and Regulations Chapter 3, Section 2.(l)(ii) defines an *unanticipated condition* as "...any condition encountered in a mining operation and not mentioned by the operator in his mining or reclamation plan which may seriously affect the procedures, timing, or outcome of mining or reclamation". This citation further states that *unanticipated conditions* include but are not limited to:

- The uncovering during mining operations of any acid-forming, radioactive, inflammable, or toxic materials which must be burned, impounded, or otherwise disposed of in order to eliminate pollution or safety hazards;
- The discovery during mining operations of a significant flow of groundwater in any stratigraphic horizon;
- The occurrence of slides, faults, or unstable soil and overburden materials which may cause sliding or caving in a pit which could cause problems or delays with mining or reclamation;
- The occurrence of uncontrolled underground caving or subsidence which reaches the surface, causing problems with reclamation and safety hazards; and
- A discovery of significant archaeological or paleontological importance.

If the permittee encounters any of these unanticipated conditions in its mining or reclamation activities, the permittee shall notify the LQD District III office as soon as possible and in any event no more than five days after discovering the unanticipated condition. The permittee will take appropriate measures to correct (in compliance with applicable regulatory agencies), eliminate or adapt

to the unanticipated condition before resuming the mining operation in the immediate vicinity of the discovered condition.

Section 2.10.23 Absence of Public Nuisance And Endangerment

W.S. § 35-11-406(b)(xiii) requires procedures to avoid constituting a public nuisance or endangering public safety, property or other life forms. The permittee has conducted its mining operations for many years without creating any of the nuisances or endangerments mentioned in this portion of the Wyoming Environmental Quality Act. The permittee will continue to operate in such a fashion.

The permittee does not generally fence any of its bentonite pits, equipment parking areas, access or haul roads or stockpiles. The permittee does occasionally fence those portions of pits which are close to access or haul roads or government maintained roads in order to prevent safety compromises. These decisions to fence are made on site-specific considerations.

The permittee does maintain fencing around certain portions of its Colony plant site and the associated solid waste disposal site. These fences will be maintained to limit public access to these areas.

The permittee does selectively fence some portions of active pit areas and reclaimed lands to maintain pasture units for respective surface owners. These fence patterns also serve to limit public access and thereby prevent public nuisances and endangerment. These fencing decisions are made on site-specific considerations and consider surface owner preferences.

Section 2.10.24 Potential U.S. Fish And Wildlife Service Mitigation Plan

As discussed in Section 2.9.2, the permittee will contact and secure the U.S. Fish and Wildlife Service (Service) recommendations for all necessary actions. In past contacts with the Service, the permittee developed generic mitigation plans such as the following documented in Don A. Dahlgren's letter of January 21, 2000 to Pat Deibert of the Service:

> "The mitigation plan for this nest is to prevent any taking of raptors during nesting. Bentonite Performance Minerals will not conduct any mining activities (drilling, hauling, or stripping) between February 1 and August 14 of each year on the Proctor-Maurer State Lease property. BPM can conduct mining activities on Proctor-Maurer State Lease property between August 15 and January 31 of each year.
>
> If BPM needs to conduct mining activities between February 1 & August 14, must receive written approval from the U.S. F&WS prior to conducting any activities on the Proctor-Maurer State Lease property."

When necessary, the permittee will secure written agreements on mitigation

plans from the Service. The permittee will copy the LQD District III on such written mitigation plans. The permittee understands that the LQD District III is not directly involved in the execution of these mitigation plans.

Section 2.10.25 and 2.10.26 Reserved for Future Permitting