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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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April 2, 1998

Johnny Pappas, Senior Environmental Engineer
Cyprus Plateau Mining Corp.
Willow Creek Mine
847 Northwest Highway 191
Helper, Utah 84526

Re: Barn Canyon Ventilation Facility, Cyprus Plateau Mining Company, Willow Creek Mine, ACT/007/038-98B, File #2, Carbon County, Utah

Dear Mr. Pappas:

The technical analysis for the referenced amendment has been completed by our staff. Please respond to these deficiencies by April 16, 1998.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-220, -301-411.

Analysis:

The Barn Canyon Ventilation Facility amendment contains adequate information regarding the soils environmental resources as follows:

- Order-I Soil Survey and Map
- Soils Identification, Description and Characterization

Order-I Soil Survey and Map

An Order-I soil survey supplies information for the ventilation facility area. Mr. Jim Nyenhuis, ARCPACS Certified Professional Soil Scientist, conducted the survey for Mt. Nebo Scientific on January 14, 1998. Mr. Robert Davidson, Soils Senior Reclamation Specialist, Utah Division Oil, Gas and Mining (DOGM), was also present on the site during fieldwork. Four soil pits were dug, described, and sampled for the survey. Two native, undisturbed soils (BC3 and BC4), and two disturbed sites (BC1 and BC2) were sampled. For site BC2, the surface had been disturbed with the underlying soil substratum (C horizon) still present. Standard soil descriptions were completed in the field and a total of eleven soil samples were collected from the four pits. *Copies of the actual field data sheets are not provided with the amendment submittal.*

The amendment contains an Order-I soils map delineating each soil, sampling locations and soil descriptions for each map unit (Figure 3.1-1). The map scale 1:360 is within the required 1:15,840 or larger scale for Order-I surveys. Likewise, the 0.91 acre surveyed site is within the minimum delineation size (2.5 acres) for an Order-I soil survey. *No elevation markers are given for identifying the map contour intervals. No bar scale is provided to ensure the map's accuracy (e.g., 1" = 30'). In addition, the Potential Disturbed Area boundary does not encompass the Topsoil Stockpile Area or construction access points to and from the Stockpile.*

Soils Identification, Description and Characterization

For the Order-I soil survey, the four soil areas described are listed as follows with their respective soil series and taxonomic class:

MAP UNIT	PIT LOCATION	SOIL SERIES	TAXONOMIC CLASS ¹
A	BC-4	Perma Sandy Loam 10-25% slopes	loamy-skeletal, mixed, Typic Haploboroll
B	BC-3	Pathead Cobbly Loam 35-65% slopes	loamy-skeletal, mixed (calcareous), frigid Typic Ustorthent
C	BC-2	Disturbed Hillside Pathead (C horizon) 4-12% slopes	loamy-skeletal, mixed (calcareous), frigid Typic Ustorthent
D	BC-1	Disturbed Drainage 3-8% slopes.	None

The Order-I soil survey provides (1) a description of each map unit in areas A, B, C, and D; (2) a profile description of each of the soils at the four sample sites, BC1 through 4; and (3) a copy of the soil laboratory data for the eleven soil samples taken from the four sample sites.

Samples were sent to Inter-Mountain Laboratory (IML, Farmington, NM) for analysis according to the Division's Guidelines for Management of Topsoil and Overburden² and by consultation with Mr. Robert Davidson, DOGM. Parameters analyzed include pH, EC, saturation percent, Ca, Mg, Na, SAR, texture, CaCO₃, soluble B, soluble Se, TOC, and organic matter.

With the exception of rock fragments, soils have physical and chemical properties that are within DOGM's acceptable range for soil and overburden guidelines. The Division recognizes that native soils contain high percentages of rock fragments, which is inevitable and does not present a reclamation hazard. Certainly, to reclaim and restore the land to pre-mining conditions will require soils with indigenous rock

¹ Jensen, E.H., and Borchert, J.W., 1988. Soil Survey of Carbon Area, Utah Soil Conservation Service, United States Department of Agriculture, Washington D.C.

² Leatherwood, James, and Dan Duce. 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah, Department of Natural Resources, Division of Oil, Gas and Mining. Salt Lake City, Utah.

fragment volumes and content. Therefore, it is not only acceptable, but desirable to salvage soils containing intrinsic rock, gravels, cobbles and boulders.

Findings:

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-120, Copies of the actual field data sheets are not provided with the amendment submittal.

R645-301-140, (1) Although the soils map is contoured, no elevation markers are given for identifying the map contour intervals. (2) No bar scale is provided to ensure the map's accuracy (e.g., 1" = 30'). (3) In addition, the Potential Disturbed Area boundary does not encompass the Topsoil Stockpile Area or construction access points to and from the Stockpile.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

The Order-I soil survey for Barn Canyon Air Ventilation/Fan Shaft site includes discussion of topsoil suitability and potential soil salvage depths for each of the four soil map units as follows:

- Topsoil Salvage
- Short-Term Soil Storage

- Long-Term Soil Storage

- Topsoil Salvage Summary

Topsoil Salvage

Soil salvage recommendations are based on the Order-I soil survey which identifies topsoil suitability and volumes calculated for each of the four soil map units. Soil will be salvaged prior to construction and will include long-term and temporary soil storage. The Permit Area encompasses 0.91 acres. Within the Permit area is the Potential Disturbed Area (0.36 acres) and The Topsoil Stockpile Area (an additional 0.096 acres). The Stockpile should be included within the Potential Disturbed Area boundary (see soil resource section).

Map Unit A, Perma sandy loam, is mapped in an undisturbed area under predominantly Gambel's oak vegetation. An average 2 feet of suitable soil is available for salvage and will include a 0.03 acres. Pockets of soil salvage may reach depths of 35 inches, but are not included within the projected soil

salvage volumes. An additional 0.009 acres of Perma soil is located in the area behind the to-be-built retaining wall.

Map Unit B, Pathead cobbly loam, is mapped in an undisturbed area under mixed vegetation including scattered Juniper. An average of 18 inches of suitable soil is available for salvage. In the affected area, it occupies 0.13 acres with an additional 0.12 acres of soil located behind the to-be-built retaining wall.

Map Unit C, disturbed hillside, is located in an old disturbed side-hill cut where a pad site was created. Present vegetation consists of mixed grasses and some sagebrush. Six inches of this soil will be salvaged and stored in the long-term topsoil stockpile.

Map Unit D, disturbed drainage, is located adjacent to the main dirt road in Barn Canyon and includes the Barn Canyon drainage channel bottom areas. No soil salvage will occur from this unit because the exposed surface soils are compacted and the underlying soil substratum contain greater than 65% total gravels, cobbles and stones.

Short-Term Soil Storage

In the area behind the to-be-constructed retaining wall, soils will be salvaged and placed in a short-term topsoil storage pile. Reapplication of the temporarily stored soils to the soil surface will occur subsequent to completion of back-filling and grading behind the newly constructed wall. *The amendment does not disclose where the short-term storage pile will be placed nor does it describe methods to protect soil resource during storage.*

Long-Term Soil Storage

A portion of the soil salvaged will be placed in long-term storage. The topsoil stockpile will be located immediately south of the ventilation pad area.

Topsoil Salvage Summary

Potential topsoil salvage depths and volumes are summarized for each of the four soil map units in the following table:

MAP UNIT	AVERAGE SOIL SALVAGE DEPTH (INCHES)	LONG-TERM STORAGE (CUBIC YARDS)	SHORT-TERM STORAGE (CUBIC YARDS)
A	24	91.4	29.8
B	18	317.3	296.6
C	6	39.3	-
D	0	-	-
Total	-	448.0	326.4

Findings:

The permittee must provide the following, prior to approval, in accordance with the requirements of:

R645-301-234.100 through R645-301-234.240, The amendment does not disclose where the short-term storage pile will be placed or methods to protect the soil resource.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

A summary of topsoil volumes available for reclamation is given for both long-term and short-term soil storage. Short-term storage soils will be used to reclaim the area behind the retaining wall subsequent to completion of construction. Long-term storage soils will be used during final reclamation at mine closure. The following table breaks down disturbance acreage and soil replacement depths according to reclamation periods:

Reclamation Period	Potential Disturbance Area (acres)	Long & Short Term Stockpiled Soil (cubic yards)	Soil Replacement Depth (inches)
Interim	0.13	326.4	18.5
Final	0.23	448	14.5
Total	0.36	774.4	16.0

No further information is provided for reclamation commitments of the ventilation disturbance area other than those generally contained in existing Mine Reclamation Plan.

Findings:

The information provided meets the regulatory requirements of this section.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

VEGETATION AND FISH AND WILDLIFE RESOURCES

Regulatory Reference: R645-301-320

Analysis:

The application includes a qualitative survey of the vegetation in the area of the proposed shaft. Because the shaft would be near the bottom of the canyon, there are two aspects and three vegetation communities. They are pinyon/juniper, grass/sage, and Gambel oak/maple. The application also includes a discussion of the predominant species in these communities.

Two of these three communities are described in detail in the current mining and reclamation plan. The plan does not contain a description of the Gambel oak/maple community, but it does have a description of a very similar community, mixed brush. However, considering the size of the proposed disturbance and the similarity of the vegetation to what is described in the plan, it is not necessary to acquire additional quantitative vegetation information.

The proposed shaft is near a golden eagle nest, and the applicant has proposed monitoring this nest in the spring of 1998 for activity. In the most recent helicopter survey, the nest was described as old and dilapidated. To date, the applicant's representative has not seen any eagles in the area, and the nest will be checked from a helicopter in May. This plan is acceptable.

The current mining and reclamation plan contains information about other wildlife species in the area. Barn Canyon in the vicinity of the proposed shaft contains critical elk and deer winter range.

Findings:

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.

OPERATION PLAN

PROTECTION OF BIOLOGICAL RESOURCES

Regulatory Reference: R645-301-330

Analysis:

The current mining and reclamation plan contains a plan for interim revegetation of disturbed areas, and this should be adequate for this site.

The Division and the applicant are unsure whether the shaft site is visible from the eagle nest, but it is close enough to the nest that it is very possible shaft construction would cause nesting eagles to abandon the nest. Assuming the nest is not active in 1998 when the applicant intends to begin construction, the only potential problem would be for eagles wanting to use the nest in subsequent years. However, birds that begin nesting in areas that are already disturbed are generally able to tolerate the disturbance.

To not disturb wintering big game, the applicant has committed to not do shaft construction

between December 1 and April 15. If the fan is built, the applicant would need to inspect the site daily, and this could cause some disruption of big game. Anyone using the road during the winter needs to be instructed to not harass big game, and they should not stop to observe the animals.

In a visit to the Willow Creek Mine on March 18, 1998, a Division representative saw thirteen deer in the Barn Canyon substation area. These deer seemed to have habituated to the nearby disturbance and were not particularly frightened.

Findings:

Information provided in the application is considered adequate to meet the requirements of this section of the regulations.

RECLAMATION PLAN

REVEGETATION

Regulatory Reference: R645-301-341

Analysis:

Except for riparian areas, the same seed mix would be used to revegetate the entire disturbed area of the Willow Creek Mine. This seed mix was designed primarily for big sage/grass and pinyon/juniper areas, and most of the species are adapted to the Barn Canyon site. However, the bottom of the canyon contains oak and maple trees that would not be planted using the existing revegetation plan. These are the dominant species in this area, and the applicant needs to show how these would be reestablished. It is suggested that containerized plants be planted.

Findings:

Information provided in the application is not considered adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant needs to provide the following in accordance with:

R645-301-341, The applicant needs to show how big tooth maple and Gambel oak trees would be reestablished at the proposed shaft site.

LAND USE

Regulatory Reference: R645-301-400

Analysis:

Land uses in the area are described in the existing mining and reclamation plan, and no additional information is needed. The area has been surveyed for cultural resources, and none were

found. The application contains a clearance letter from the Division of State History giving their determination of no effect.

No changes to the postmining land use are proposed. The Division is requiring the applicant to permit the road to the shaft, and the revised application will need to address reclamation of the road.

Findings:

Information provided in the application is considered adequate to meet the requirements of this section of the regulations. When the applicant proposes to permit the road, they will need to address reclamation of the road, in particular the postmining land use.

RECOMMENDATIONS:

The application should not be approved until the deficiency discussed in this memorandum is addressed. There are also some problems with the maps, acreage figures, and terminology that need to be corrected. In addition, when the applicant submits a proposal to permit the road in Barn Canyon, they will need to include a reclamation plan for the road showing the postmining land use.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR Sec. 784.2, 784.11; R645-301-231, -301-526, -301-528.

Type and Method of Mining Operations

Analysis:

On page 4.5-27 of Amendment 98B the Operator states:

A modification to the mine ventilation plan was necessitated in the later part of 1997 wherein it was discovered that subsurface geologic conditions were interfering with original mine layouts and ventilation plans. To adequately control ventilation within the mine, a vertical shaft and ventilation fan was proposed for immediate construction within Barn Canyon.

The Operator needs to modify the mine plan because they encountered old stream channels in the coal. The modifications include constructing a ventilation shaft in Barn Canyon and changing the mine layout.

The purpose of R645-301-526 is to ensure that the Division has reliable information on the underground mining activities. The Division uses that information to ensure that all mining activities comply with the regulatory program.

Findings:

The Operator met the requirements of R645-301-526.

Facilities and Structures

Analysis:

The Operator proposes to construction a ventilation fan shaft in Barn Canyon. The shaft is needed as part of the new ventilation plan. The Division will include the Barn Canyon shaft facilities into the reclamation bond calculations and include that site in future inspections.

Findings:

The Operator met the requirements of R645-301-526 regarding describing the Barn Canyon shaft.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR Sec. 784.18; R645-301-521, -301-526.

Analysis:

The Division needs to know if the access road to the Barn Canyon shaft is public or private. If the road is public then the Operator needs to address this section.

Findings:

The Operator did not meet the requirements of R645-301-121.100 by failing to state if the access road is public or private.

If the access road is public then the Operator did not meet the requirements of R645-301-526.116. The Operator needs to get the Division's approval for conducting mining operations within 100 feet of a public road and/or to relocate a public road.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR Sec. 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Subsidence control plan.

Analysis:

Map 20 shows the location of the projected subsidence areas. Barn Canyon is in the projected subsidence zone.

The Operator did not address how subsidence would affect the Barn Canyon shaft and the access road. The Operator needs to address the requirements of R645-301-525 by describing the anticipated subsidence effects on the Barn Canyon shaft and the access road, and any subsidence protection plan.

Findings:

The Operator failed to meet the requirements of R645-301-525. The Operator must address how subsidence will affect the Barn Canyon shaft and the access road.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Road Systems

Analysis:

Although the cover letter from Mr. Pappas to Ms. Grubaugh-Littig for this submittal dated 3/6/98 indicates that a ventilation fan may or may not be installed, the Division has been verbally informed that an escape capsule will be installed. As such, this hoisting system will require a weekly examination under MSHA. If a fan is installed, MSHA will require a daily examination of same. This indicates frequent access. Hence, a maintenance plan for snow removal must be addressed. The road will not be reclaimed, as it currently provides access to Utah Power and Light's 138kV power line. If the power line is to be relocated, it is uncertain if the post-mining land use will remain the same after the shaft is reclaimed..

The Division is not sure if the access road to the Barn Canyon fan shaft is public or private. If the road is private then the Operator must classify the road and include it in the disturbed area. If the road is public then the Operator must address this issue.

Findings:

The Operator did not address the requirements of sections R645-301-521, R645-301-527 and R645-301-534 regarding the access road to the Barn Canyon ventilation shaft. If the road is private then the Operator needs to classify the road and supply the Division with designs.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Coal mine waste.

R645-301-536.600. Underground Development Waste

The submittal fails to address any of the requirements of this regulation. No description is made of the shafts dimensions, depth, geologic stratigraphy, method of construction, etc. According to Mr. Pappas, the construction hole will be 17 feet in diameter and approximately 700 feet in depth. This equates to 5,900 cubic yards of waste, of which no method for disposal is mentioned. The requirements R645-301-536.510 as well as 536.300 et seq need to be addressed.

The Operator is approved to dispose of all mine development waste in the Schoolhouse Canyon refuse site. The Operator did not specifically address where the development waste would be placed. The Division assumes that the development waste will be placed at the Schoolhouse Canyon refuse site. The Division needs the Operator to clarify how and where the mine waste will be disposed.

Refuse piles.

The Schoolhouse Canyon refuse pile is an approved site for the disposal of the underground development waste that will be produced from the Barn Canyon shaft. The Division assumes that all development waste will be placed at the Schoolhouse Canyon refuse pile.

Findings:

The Operator did not the requirements of R645-301-121.200. The Operator needs to state how they intend to dispose of the mine waste material.

USE OF EXPLOSIVES

R645-301-524. Blasting and Explosives

According to Mr. Pappas, the method of construction to be used will be a shaft sinking jumbo and explosives. None of the R645 rules under this section have been addressed

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected area maps.

Map 31, Willow Creek Mine Barn Canyon Fan Pad Site Plan & Map, was certified by David Hansen a registered professional engineer. The Operator complied with the certifications requirements of R645-301-512.

Map 31 has several deficiencies:

- The Operator shows the permitted disturbed area boundary and the maximum disturbed area boundary on Map 31. The distinction between the permitted disturbed area boundary Division does not understand the difference between the two disturbed area boundaries. The Operator must clarify the meaning of the two disturbed area boundaries. See R645-301-121.200.
- The Operator may not have shown all affected areas (disturbed areas) associated with the Barn Canyon shaft. If the access road is private then the Operator must include that road in the disturbed area boundaries. See R645-301-521.141
- The Operator did not provide a map of the proposed site that shows the slope extending 100 linear feet outside the disturbed area. See R645-301-521.152
- The Operator did not provide a map and cross section of the access road. That information is only needed if the road is not a public road. See R645-301-521.170
- As noted above, the air shaft may or may not utilize a fan, but according to what the Division has been told, it will have an escape capsule. The capsule's hoist mechanism will supposedly get it's power from a cable which is routed up through a casing enclosed within the concrete lining of the shaft. If the mine has an emergency and this power supply is run underground, the possibility of the mine's monitoring system de-energizing this hoist is likely. An independent means of power must be provided for this hoist (as well as the ventilation fan). If the permittee decides to install a back up method of motivation for the hoist (i.e., diesel) that must be discussed and any fuel tanks/engine facilities must be shown on the surface facilities map.
- Map 31, Barn Canyon Fan Pad Site Plan and Map, shows no electrical substation. Neither is a power line corridor on any of the maps, although the reclamation costs for two power poles and 150 feet of power line are discussed. The step down of 138kV to the proper mine voltages must be done unless a power line is run up the Canyon from the preparation plant. A number of uncertainties exist here. See R645-301-526.220.
- Map 32, Willow Creek Mine Barn Canyon Surface Facilities Post Mining Topography, shows the contours and cross sections of the reclaimed Barn Canyon shaft area. Map 32 has contours on 5 foot intervals inside the disturbed area and 20 foot intervals outside the disturbed area. The contours in some areas extend for less than 10 feet from the disturbed area boundary. R645-301-542.300 allows the Division to set the specifications for all reclamation maps. The reclamation maps need to have the same specifications as the operation maps. The contour intervals inside and outside the disturbed area should be on at least 5 foot intervals and the contours should extend a minimum of 100 linear feet from the permit boundary.
- The Division needs a cross section suitable for calculating volumes of soils to be moved during reclamation. The cross sections supplied by the Operator are not suitable to volume calculations. See R645-301-542.300.

Findings:

The Applicant needs to address the following deficiencies to meet the minimum requirements of R645-301-521 and 301-542

- The reclamation maps need to have the same specifications as the operation maps.
- The contour intervals inside and outside the disturbed area should be on at least 5 foot intervals and the contours should extend a minimum of 100 linear feet from the permit boundary.
- The cross sections supplied by the Operator are not suitable to volume calculations. See R645-301-542.300.
- R645-301-121.200. State clearly where the disturbed area boundary is on Map 31.
- R645-301-521.141. Include the access road to the Barn Canyon shaft in the disturbed area. The Operator does not have to place the access road in the disturbed area boundary if the access road is a public road.
- See R645-301-521.152. Provide a map of the proposed site that shows the slope extending 100 linear feet outside the disturbed area.
- See R645-301-521.170. Provide a map and cross section of the access road. That information is only needed if the road is not a public road.
- R645-301-542.300. On Map 32 the contour intervals inside and outside the disturbed area should be on at least 5 foot intervals and the contours should extend a minimum of 100 linear feet from the permit boundary.
- R645-301-542.300. The Operator must supply the Division with cross section suitable for calculating volumes of soils to be moved during reclamation.

Mine workings maps.

Analysis:

The Operator did not submit revised mine maps showing the location of the Barn Canyon shaft and other changes. One way to meet the requirement of R645-301-521.142 is to supply the Division with a copy of the MSHA maps.

Findings:

The Operator failed to meet the minimum requirements of R645-301-521.142 by not supplying the Division with updated copies of the mine maps.

RECLAMATION PLAN

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

The pad area was previously disturbed. The Operator did not request that reclamation standards for previously mined areas be applied to the Barn Canyon shaft area. The Division will require the Operator to reclaim the site to the approximate original contours.

The Operator states in the Backfilling and Grading to Establish Final Configuration section of the MRP:

As can be seen from pre and post contours shown on the Barn Canyon Fan Pad Site Plan Map (Map 31) and the Barn Canyon Surface Facilities Area Postmining Topography Map (Map 32), reclamation contours will have the effect of eliminating pre pad disturbance and returning the contours to a more approximate natural configuration.

For the most part, backfilled areas at the Barn Canyon fan site will be placed at a 2H:1V slope since 1) the site has been previously disturbed and currently has slopes exceeding 3H:1V, 2) the site is located in a narrow canyon and slopes steeper than 2H:1V exceed available limits, and 3) natural local topography exceeds 3H:1H slopes. A small area located near the northern end of the pad will have reclaimed slopes exceeding 2H:1V. As can be seen on the Barn Canyon Surface Facilities Area - Postmining Topography Map, (Map 32) steeper slopes are required as a transition is made between the reclaimed surface and the adjacent natural topography.

Map 31 shows the reclaimed contours. That map does not adequately describe the reclaimed contours. The deficiencies for Map 32 are discussed in detail in the **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS** section of this TA. The Division cannot approve the backfilling and regrading plan until we have adequate maps and cross sections.

The Division agrees with the general backfilling and reclamation plan. The general reclamation plan calls for 2H:1V slopes. Since the site is in a narrow canyon, the reclaimed slopes will be similar to the surrounding area that has slopes between 3H:1V and 2H:1V.

The Division usually considers 2H:1V slopes to be stable. Slopes steeper than 2H:1V are considered suspect for failure. The Division needs to have a cross section of that slope. The Operator must also show that the slopes will have a safety factor greater than 1.3.

Findings:

The Operator did not meet the requirements of R645-301-553. The backfilling and grading plan is not adequately shown on Map 32.

- R645-301-542.300. On Map 32 the contour intervals inside and outside the disturbed area should be on at least 5 foot intervals and the contours should extend a minimum of 100 linear feet from the permit boundary.
- R645-301-542.300. The Operator must supply the Division with cross section suitable for calculating volumes of soils to be moved during reclamation. The Operator must supply the

Division with cross sections that show the slopes that are steeper than 2H:1V.

The Operator did not meet the minimum requirements of R645-301-553.130. The Operator must show that the slopes steeper than 2H:1V have a safety factor of at least 1.3.

. Due to the shallowness of the replaced fill (as represented by the drawn cross sections) and the gradient of the slopes, burying the concrete debris on site does not appear to be an adequate solution for the disposal of this material. Settling of the fill, plus snow pack and rainfall may expose the material shortly after it is buried. In lieu of hauling it to one of the already permitted disposal sites, the permittee may consider disposing of the concrete debris down the air shaft prior to sealing it. It would be necessary to establish safety devices/procedures to prevent unwanted entrance by machinery and/or employees, (MSHA). Also, although page 5.4-7 mentions disposal areas in reference to Map 32, Barn Canyon Surface Facilities-Post Mining Topography Map, It is not clear where these disposal areas are identified on the map. Only verbiage indicates where this concrete will be placed, and those places are "where voids will need to be minimized to the extent operationally practicable". This does not appear to be adequate, based on the depth of the placed backfill.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

In section Stabilization and Sealing of Mine Openings the Operator states:

The Barn Canyon ventilation shaft will be sealed using a permanent reinforced upward expanding concrete plug, or if more effective shaft sealing methods are available at the time of mine closure they may be utilized subject to UDOGM approval.

Concrete plugs are an effective method for shaft sealing. The main problem with concrete plugs is that they deteriorate over time. If more effective shaft sealing technology is developed, the Division will suggest that the Operator use the improved methods.

Each shaft must be capped consistent with 30 CFR 75.1711-1. No vent pipe is shown on page 1 of 10, Barn Canyon Shaft plug. It is not certain how many of the other requirements of CFR 75.1711-1 must be met to be granted MSHA approval.

It is recommended that the final design for the shaft plug be P.E. certified

Findings:

The Operator needs to address the following requirements of this section:

- Each shaft must be capped consistent with 30 CFR 75.1711-1.
- No vent pipe is shown on page 1 of 10, Barn Canyon Shaft plug.
- It is recommended that the final design for the shaft plug be P.E. certified

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

The Operator did not address the road reclamation. If the access road to the Barn Canyon shaft is private then the Operator needs to include the road in the disturbed area.

Findings:

The Operator did not meet the requirements of R645-301-121.100. The Operator must state if the access road to the Barn Canyon fan shaft is a public or private road. If the road is private then the Operator must include the road in the disturbed area and provide a reclamation plan for the road.

BONDING AND INSURANCE REQUIREMENTS

Determination of bond amount.

Analysis:

Since the reclamation plan has not been approved, the Division has not reviewed the reclamation cost estimates.

Findings:

The Division will not make a finding about the reclamation bond until the reclamation plan is approved.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

Analysis:

Surface-water information.

The Barn Canyon contains an ephemeral drainage. The proposed fan pad is to be built up so runoff will bypass the pad area.

Probable hydrologic consequences determination.

This amendment should not result in a change in the current PHC; however, findings for this section can not be made until the response to deficiencies identified in this technical analyses are reviewed. The potential for intercepting flow with the proposed post mining configuration was not adequately assessed. The application needs to describe the ventilation portal location in relation to the drainage and the post-mining configuration.

Findings:

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

R645-301-731. Discuss the potential for surface water interception from the adjacent ephemeral channel into the vertical ventilation fan for the proposed reclamation configuration. Include a cross section through the shaft to the channel (worst case scenario) and include the sealed shaft elevation to illustrate how the post mining configuration minimizes the potential for surface water interception. It is recommended that vertical and horizontal distance from the postmining channel are included in the text discussion.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Protection of Surface Water Quality

No description of the methods to be used to control any ground water, which may be encountered during the shaft construction or methods of treatment for same prior to discharge off the permit area, are given. If ground water is encountered during the construction process, a re-design of the shaft lining may be necessary to incorporate a water collection ring(s). A means of treating this water prior to discharging it off of the permit area will also need to be addressed.

Discharges into an underground mine.

No discharge into an underground mine was applied for or granted with this design.

Diversions.

Diversions around the fan portal were provided and sized to convey runoff from a 10 year - 6 hour event. The main undisturbed by pass area ditch is located on the edge of the pad along the concrete retaining wall. It is appears that this ditch would collect flow that spills over the retaining wall. Some flow will be directed around the retaining wall and be collected in the south ditch above the siltation structure. The north end of the disturbed area

appears to be directed off the site without sediment control. The ditches are not shown to drain to any existing drainage features. No drainage designs were associated with the ventilation shaft access road. No design was presented for the ditch that controls flow along the east side of the pad area.

Stream buffer zones.

The road and construction for this site is within an ephemeral drainage, therefore, Stream Buffer zone regulations are not applicable.

Sediment control measures.

The sediment control plan is presented on the Barn Canyon Fan Pad Site Plan (Map 31). Design calculations are provided in exhibit 13. An Alternate Sediment Control measure (ASCA) is used to treat the sediment coming from the Barn Canyon ventilation site. The volume of water required to be treated for a 10 year- 24 hour event is equal to 685 ft³. The proposed sediment control measure consists of a sediment trap designed to store 3 years of runoff sediment estimated to equal 6.12 ft³ leaving 18.36 ft³ capacity to attenuate flow passing through the structure. This structure does not contain the 10 year- 24 hr design event.

In order for the Division to determine the measure appropriate for the proposed use, the plan needs to demonstrate that the ASC measure is the Best Technology Currently available. The operator may use the following suggestions to make this demonstration:

- Compare the erosion rate prior to disturbance, with the erosion from the disturbance without treatment, and with the erosion from the treated area. Various treatments should be compared showing the proposed treatment is Best Technology Available. (Note: Gravel may increase the overall effectiveness of sediment control at this site).
- Provide a calculation showing the siltation device provides adequate settling rates specific to the soils at the site.
- Provide an estimate of the sediment rates that would accompany a 10 -year 24 hour design event.
- Provide a reference or other information to verify the siltation structure design is an accepted method based on the sizing criteria used (4 times the 3 year average sediment load).
- Provide maintenance and clean-out requirements.

Exemptions for siltation structures.

No exemption from siltation structures was requested or granted associated with the Barn Canyon ventilation portal amendment; however, there was mention of an access ramp area without sediment control. These two pieces of information conflict and need to be clarified.

Findings:

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

R645-301-742-300. Minimum design criteria for the berm that controls flow along the north

east portion of the fan pad area.

R645-301-742-400. Designs for the drainage control along the road should be provided if this road is determined to meet criteria for a primary road.

R645-301-742-240. Clarification as to whether an exemption or the berm shown on map 3:1 will control runoff in the access ramp area. Provide the pertinent regulatory information, designs and text where appropriate.

R645-301-742-110. Demonstrate that the ASC measure is the Best Technology Currently available or, show that this design technology is accepted under the general non-point source permit and, provide maintenance and clean out requirements. See suggestions in the T.A.

RECLAMATION PLAN

Water quality standards and effluent limitations.

Diversions.

The postmining topography is presented on Map 32. Reclaimed slopes at the Barn Canyon Fan Site will exceed 2H:1V in order to transition the slopes from the disturbed to the natural topography. The CPMC committed to establish a post mining configuration compatible with the natural drainage pattern of the surrounding terrain. No diversions are proposed during reclamation however some re-configuration of the ephemeral drainage will occur. The configuration shown blends with the existing configuration.

Sediment control measures.

The use of sediment control measures used during reclamation were not presented. The application should at a minimum cross-reference the reclamation measures to be applied at this site which provide sediment control.

Findings:

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

R645-301-742-240. Sediment control measures during the reclamation period.

RECOMMENDATION:

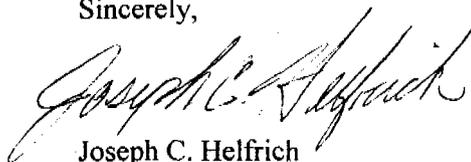
It is recommended that this submittal be returned to the permittee so, the necessary changes can be incorporated, and a complete document can be re-submitted for ease of review, approval and incorporation into the permit by the Division. It is recommended the permittee be appraised of the reason for return of

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the document.

If you have any questions, please call.

Sincerely,



Joseph C. Helfrich
Permit Supervisor

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cc: Price Field Office
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