



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

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April 17, 2001

Johnny Pappas, Sr. Environmental Engineer
Plateau Mining Corporation
847 Northwest Highway 191
Helper, Utah 84526

Re: Findings for Revision to Exhibit 20, Plateau Mining Corporation, Willow Creek Mine,

CONFIDENTIAL

Dear Mr. Pappas:

The above-referenced amendment has been reviewed and there are deficiencies that must be adequately addressed prior to approval. A copy of our Technical Analysis is enclosed for your information. In order for us to continue processing your application, please respond to these deficiencies by May 18, 2001

If you have any questions, please call me at (801) 538-5325 or Priscilla Burton at (801) 538-5288.

Sincerely,

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

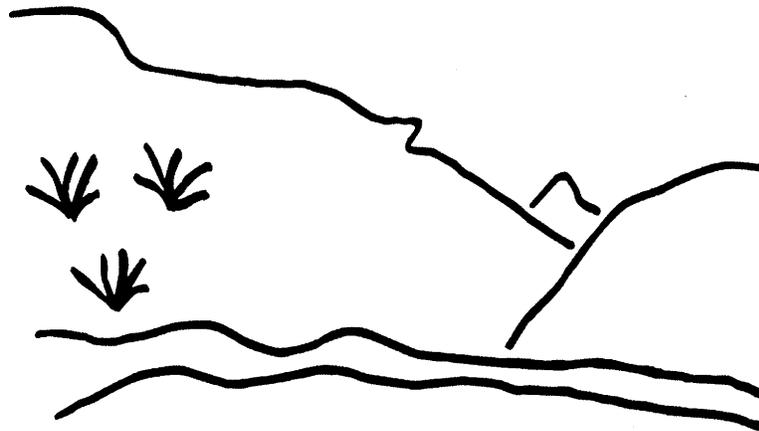
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Enclosure:

cc: Price Field Office

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State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Willow Creek Mine
Revision to Exhibit 20
C/007/038-SR01A
Technical Analysis
April 5, 2001

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INTRODUCTION

TECHNICAL ANALYSIS**INTRODUCTION**

Plateau Mining Corporation, 847 Northwest Highway 191, Helper, Utah 84526, a subsidiary of RAG American Coal Company, 999 Corporate Blvd., Linthicum Heights, MD 21090, has filed an application with the Utah Department of Natural Resources, Division of Oil, Gas and Mining for a change in post mining land use to Permit C/007/038. The land use change from "grazing and wildlife" to "recreational" use will be supported by a permanent road in Crandall Canyon under the provisions of the Utah Coal Mining and Reclamation Act pursuant to R645-301-413.300 of the Utah Coal Program Regulations.

The proposed changes to Exhibit 20, Section 3.7 of the Willow Creek /Crandall Canyon MRP were received at the Division on January 8, 2001. Due to a change in the proposed post-mining land use, the current amendment is considered a Significant Revision. As a result of the retention of the paved road, changes were made in plans for backfilling and grading, slope reconstruction and channel design during reclamation.

The upper portion of the Canyon (essentially a portion of ancillary road A-1) above the propane tank foundations was reclaimed in 1990 or 1991. Although the adjacent landowner is desirous to have all of the access road left in place, Plateau Mining Corporation will not reopen the reclaimed portion of the road. Rather, they will apply for Phase III bond release in that area and then transfer ownership to the adjacent landowner.

In this amendment, Plateau Mining Corporation has not accurately reflected field conditions on Exhibits; has not demonstrated that responsibility for road maintenance and repair will be accepted by the landowner; has not evaluated the feasibility of 'natural stream corridor restoration' practices; has not submitted information to show that "recreation" is a higher and better use; has not discussed the likelihood of achieving "recreational" use and whether local land use regulations are compatible with such use. A more complete list of outstanding deficiencies is below. Further discussion of each item on the list can be found within this Technical Analysis.

SUMMARY OF OUTSTANDING DEFICIENCIES

The Technical Analysis of the proposed permit changes can not be completed at this time. Additional information is requested of the Permittee to address outstanding deficiencies in the proposal. A summary of those outstanding deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any outstanding deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the Division, result in denial of the proposed permit changes, or may result in other executive or enforcement action as deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

- R645-300-133.100, Correct minor typographic errors on Exhibits 3.7-7B and 3.7-7C so they are complete and accurate. 31
- R645-301-112.600, Update the text in Section 2.1.2.4 (Surface and Mineral Ownership) and the Regional Surface Ownership Map, (Map 1) to include Reed L. Martineau, Esq., and to delete Blackhawk Coal Co. 5
- R645-301-113.300, Update the text in Exhibit 2 Volume 8. 6
- R645-301-121.100, Update Exhibit 3, Volume 8, with an Affidavit of Publication. 7
- R645-301-341.250, The application needs to include the woody plant density success standards discussed in this analysis. 25
- R645-301-341.250, The statement in Section 3.7-5(3)(9) that the applicant will meet diversity requirements for each of the reclaimed areas except the riparian area needs to be modified. While it is not necessary to meet revegetation standards in the channel, it is necessary to meet them in adjacent areas which includes the riparian area. 25
- R645-301-358, There may be some practical ways to enhance wildlife habitat that are not discussed in the application. The applicant needs to investigate these and include them in the plan if they meet the criteria for the best technology currently available. 17
- R645-301-413.300, The applicant needs to submit information to comply with R645-301-413.300. This information needs to show that the proposed land use is a higher and better use and discuss the likelihood of achieving the use and whether it is compatible with local land use regulations. 16

R645-301-414 , The application includes a proposal to change the postmining land use which is a significant revision. The applicant needs to submit proof of publication.	16
R645-301-521.131, R645-301-112.600 , The text and map showing surface ownership need to be updated to show the new land ownership information.	16
R645-301-527.240, -534.330 , The applicant must demonstrate the landowner is aware of their responsibility to repair and maintain the road.	21
R645-301-532, -731.121 , Demonstrate a true evaluation of whether ‘natural stream corridor restoration’ practices are economically feasible at the site.	22
R645-301-542.310 , Exhibits 3.7-7A, 7B, 7C, and 7D address numerous requirements within the same four maps. The analysis below raises several concerns which are relative to the accuracy of some. These are specifically addressed within the cross section analysis as well as one of the plan view drawings. Exhibit 3.7-7A and 7B do not accurately represent the current field conditions in Crandall Canyon, starting 140 feet NW of the propane tank foundations and ending in the extreme upper end of the disturbance. The road in this area has been reclaimed, and the maps indicate that same still exists as a portion of reclamation road R-1. Exhibit 3.7-7D, cross-section G-G’ depicts the “operational” ancillary road A-1 as still being in place. The cross section lies in the area which was reclaimed by AMAX Coal Company in 1990 or 1991. No final reclamation contours, as they currently exist are shown. None of the cross sections shown on Exhibit 3.7-7D show a “pre land development” surface contour. It is not known if the permittee is able to obtain that information due to man’s utilization and development of the Crandall Canyon area long before SMCRA. Without this information, it is difficult to determine if the meeting of approximate original contour requirements can be effectively accomplished. The permittee must submit revised Exhibits 3.7-7A, 7B, and 7D (cross section G-G’) such that the field conditions in the upper Canyon are accurately reflected.	31
R645-301-542.600, -542.630 , Describe through illustration or narrative, how the Topsoil Stockpiles will be accessed, and if any additional reclamation will occur in those areas.	31
R645-301-746.220 , Consistently and accurately outline which cut-slopes are going to be reclaimed. Also, if cut-slopes are to be reclaimed they need to be illustrated as existing within the Disturbed Area boundary.	31

GENERAL CONTENTS

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Volume 1, Section 2.1.2 contains information relative to R645-301-112. Figure 2.1-1, dated March 28, 2000, outlines the location of Plateau Mining Corporation (PMC) within the RAG American Coal Company corporate structure. Figure 2.1-1 contains the names of those operations affiliated with the Applicant. Plateau Mining Corporation is a wholly owned subsidiary of RAG American Coal Company which is a wholly owned subsidiary of RAG American Coal Holding, Inc. All the corporations mentioned above were incorporated under the laws of the State of Delaware. Ownership and control information is listed in Exhibit 1, Volume 4 as required under R645-112.300.

Plateau Mining Corporation (PMC) as the Applicant and Operator, is authorized to do business in the State of Utah, Colorado and Delaware. Section 2.1.2.1 lists the employer I.D. number, address and telephone number of PMC. PMC's resident agent is CT Corporation System; 50 West Broadway; Salt Lake City, Utah 84101. PMC will be responsible for the payment of Abandoned Mine fees. The main MSHA number will be 42-02113; some facilities will have separate MSHA numbers.

The surface of the disturbed area is owned by Plateau Mining Company.

The owners of the coal to be mined within the permit area are shown on the Regional Coal Ownership Map, (Map 2), and are listed in Section 2.1.2.4 as Blackhawk Coal Co., Carbon County, USDI - Bureau of Land Management, and Utah DNR. These same four entities own mineral rights contiguous to the property.

The owners of the surface to be affected by operations are shown on the Regional Surface Ownership Map, (Map 1). According to this map and the text, Harry C. and Alda M. Edqards own land contiguous to the proposed permit area, but the application does not include their address. It says the address is not in Carbon County records. It should be provided fi it becomes available.

Appendix 3.7V of the application indicates that, 800 acres in Crandall Canyon is owned by Reed L. Martineau, Esq. This surface owner is not listed on Regional Surface Ownership Map, (Map 1) or in Section 2.1.2.4 Surface and Mineral Ownership. Page 3.7.27 of the application indicates that land within the disturbed area is under real estate contract to Reed L. Martineau, Esq.

Findings:

R645-301-112.600, Update the text in Section 2.1.2.4 (Surface and Mineral Ownership) and the Regional Surface Ownership Map, (Map 1) to include Reed L. Martineau, Esq., and to delete Blackhawk Coal Co.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Compliance information is presented in Section 2.1.4 and Exhibit 2 (Volume 8). Neither the Applicant nor any affiliate, subsidiary or persons controlled by or under common control with the Applicant has had a federal or state mining permit suspended or revoked in the five years prior to the date of the application, and these entities have not forfeited a mining bond or similar security deposited in lieu of bond.

R645-301-113.300 requires a list of all unabated cessation orders and air and water quality violation notices received by the Applicant or any operation owned or controlled by either the Applicant or any person that owns or controls the Applicant. Exhibit 2 (dated October 1999) provides such information, however, a current listing is required to reflect activity since 1999.

Findings:

R645-301-113.300, Update the text in Exhibit 2 Volume 8.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

Plateau Mining Corporation presents legal descriptions of land, coal leases and access agreements in Section 2.1.5 by which PMC has right of entry.

Findings:

Right of entry information is considered complete and accurate.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

Section 2.1.5.1 has legal descriptions for fee surface and coal and for coal leases held by Cyprus Western Coal Company.

GENERAL CONTENTS

Section 2.1.6.1 and 2.1.6.2 discuss areas unsuitable for mining and operations within 100 feet of a public road.

Findings:

This portion of the application is complete and accurate.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The permit term of five years from the initial issuance in 1996 may be extended over the life of the mine. Information provided in the permit is for the life of the mine (Section 2.1.7).

Findings:

This portion of the application is complete and accurate.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

A copy of the publication has been obtained by the Division from the Sun Advocate as published on March 1, 8, 15 and 22, 2001. The legal description in the advertisement is correct, and it includes other information required by R645-300-121.100. To date, no public comment has been received on the issue of the post-mining land use change for Crandall Canyon. An Affidavit of Publication is required for insertion into Exhibit 3.

Findings:

R645-301-121.100, Update Exhibit 3, Volume 8, with an Affidavit of Publication.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

Mr. Johnny Pappas, a responsible Plateau Mining Corporation official has affirmed by signature on the C1 Form that the information in the amendment is true and correct to the best of the official's

information and belief. This affirmation was included in the transmittal which accompanied the permit application submittal. The C1 Form will be included in the Mining and Reclamation Plan before the table of contents.

Findings:

This portion of the application is complete and accurate.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

Section 2.1.11 lists the individuals and consulting companies who were engaged in writing and compiling the MRP along with their field of expertise. No soil scientists were noted on the list.

Findings:

This portion of the application is complete and accurate.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

All maps in the MRP are either U.S. Geologic Survey Mapping or site specific mapping developed using surveyed aerial control and accepted aerial photogrammetry methods. Where required by R645-301-512, maps have been certified by a qualified, registered professional engineer or land surveyor.

Findings:

This portion of the application is complete and accurate.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

GENERAL CONTENTS

Analysis:

The application for change of postmining land use was determined to be administratively complete which means that the application contained the minimum information required under R645-301.

Findings:

This portion of the application is complete and accurate.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

Crandall Canyon is a narrow canyon holding Crandall Creek, a tributary of the Price River. At its upper reaches, Crandall Canyon is at an elevation of 7,400 feet. As it converges with Price Canyon, the elevation is 6,400 feet. The natural topography of Crandall Canyon is characterized by steep canyon side slopes and a broad canyon bottom (Exhibits 3.7-1 and 3.7-2). The stream meanders from one side of the canyon to the other throughout the length of the canyon. Exhibit 3.7-7B and D show cross-sections of the undisturbed area of the canyon and illustrate the steep slopes cut by the stream through unconsolidated material.

There exists an unconfined aquifer in Crandall Canyon at a depth of approximately 30 - 60 feet at the unconsolidated soil/rock interface. This aquifer was intercepted by the two ventilation shafts in Crandall Canyon. As discussed in Exhibit 20, Section 3.7-5(3) (3), water flows in through the concrete lined shafts at a rate of approximately 13 - 50 gpm and is transmitted through the mine to the Blackhawk formation to recharge the regional aquifer.

Since the Price River mean annual discharge rate is 112 cfs, 50 gpm represents a loss of 0.1% to the Price River. Plateau Mining Corporation has 1.7 cfs (763 gpm) of water right on the Price River to mitigate the minor reduction in yield from the drainage basin.

Findings:

This portion of the application is complete and accurate.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The Crandall Canyon disturbed area is located in Carbon County, Utah as follows:

Township 12 South, Range 9 East

- Section 22: Portions of SW/4 SE/4; SE/4 SW/4;
- Section 27: Portions of S/2 NW/4; NE/4 NW/4; NW/4 SW/4;
- Section 28: Portions of S/2;
- Section 29: Portions of SE/4

The permit area is shown on the Kyune U.S. Geological Survey 7.5-minute map.

Findings:

This portion of the application is complete and accurate.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

Exhibit 3.7-2 shows some rock structures of cultural significance. Historical study reports are included in Exhibit 19 of the MRP.

Findings:

This portion of the application is complete and accurate.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

Climatological information is found in Sections 3.7.1.4, and 3.7.4. Information specific to temperatures, precipitation and wind is located in Sections 3.7.4.1, 3.7.4.2, and 3.7.4.3, respectively. More climatological information is found on Page 3.7-28, Section 3.7.3.1. Table 3.7-7 is the summary of climatological data.

Average monthly temperatures are listed in Table 3.7-7. The frost free period ranges from 60 to 120 days, depending on elevation and exposure. Temperatures can change rapidly when fast moving storm fronts pass. Annual precipitation is 14.8 inches. Rainfall frequently comes in brief, high-intensity storms. Average monthly precipitation is lowest in June, 0.65-inches, and highest in September, 1.86-inches.

Prevailing summer wind are from the West and Northwest, usually blowing less than 20 mile per hour. Winter wind tend to be more variable, blowing frequently from the Northeast. Diurnal flow tend to be upslope in the daytime and downslope at night.

Findings:

This portion of the application is complete and accurate.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Initial topsoil and subsoil sampling for the Crandall Canyon area is located in Volume 4, Exhibit 5, "Price River Coal 1984 Permit Soil Analyses." Samples taken in 1981 portray a loamy sand subsoil and loam topsoil. The topsoil was fertile with nitrogen levels \approx 4, phosphorus levels \approx 10, and potassium levels \approx 150. The pH was in the range of 8.0 and EC was below 0.5.

More detailed soil information is found in Volume 15, Exhibit 20, Appendix 3.7S, "Crandall Canyon Soil Sampling Results." Here are found the results of overburden and topsoil evaluations conducted in 1995. Seven soil pits were dug with a backhoe in the facilities area. An auger was used to sample the two topsoil piles. Soil logs and profile descriptions are provided.

The 1995 survey identified the Soils along the bottom of Crandall Canyon as Shupert and Winetti mapping units; along the lower slopes of the canyon is the Datino Variant; and along the upper slopes is the Pathead and Comodore families. During construction in the canyon, soils from the upper and lower slopes were used to construct the facilities pad. These soils are represented by pits EF-4, EF-5, and EF-6. Construction of the shafts brought shale and coarse fragments to the surface which is represented in pits EF-1, EF-2, EF-3 and EF - 7 (Figure 1, Appendix 3.7S). The 1995 survey indicates that soils on the pad from shaft construction is less desirable for topsoil substitute due to higher content of clay, salts, selenium, coal and coarse fragments. The soils in the pad represented by pits EF-4, EF-5, and EF-6 are the most suitable topsoil substitutes. Although this overburden has a higher coarse fragment content (32%) than the topsoil (13%), it meets the Division's suitability criteria.¹ This proposal indicates that soil from the location of soil pits EF-4, EF-5 and EF-6 will be utilized as substitute topsoil.

Findings:

The information in the proposal is adequate to meet the requirements of this regulations.

¹Leatherwood, James and Dan Duce. 1988. "Guidelines for Topsoil and Overburden Management For Underground and Surface Coal Mines." Utah Department of Natural Resources. Division of Oil, Gas, and Mining.

RECLAMATION PLAN

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-830.

Analysis:

Exhibit 20, Crandall Canyon is a proposed revision to the reclamation plan for this area associated with the Willow Creek Mine. The Crandall Canyon surface facilities/disturbed area consists of an access road, two ventilation shafts which penetrate the "D", "A", and "sub-3" coal seams relative to the Castle Gate #5 and #3 Mines, a large capacity hoist/man cage, a return air shaft emergency escape capsule/hoist, a substation, two sediment ponds, and several smaller buildings. The propane tanks which previously existed here were moved to the Willow Creek Mine site when that main Mine surface facilities area was constructed.

This technical memo will address the revision of the reclamation plan to retain the access road from U.S. highway 6 to the surface facilities located 1.04 miles up-canyon. Retention of the road is contingent upon the approval of a change in the approved post-mining land use, which is currently listed as "undeveloped land".

The Operator has met the minimum regulatory requirements for providing the Division with a general reclamation plan. Specific details of the reclamation plan will be discussed in the following sections.

Findings:

The Operator has met the minimum regulatory requirements.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

According to the approved mining and reclamation plan, the premining land use for Crandall Canyon is undeveloped land. The definition of "undeveloped land" in R645-100 says undeveloped land is land that is undeveloped or if previously developed, land that has been allowed to return naturally to an undeveloped state or has been allowed to return to forest through natural succession.

RECLAMATION PLAN

According to information in the application and verbal information from the applicant, Reed Martineau now owns some of the land in Crandall Canyon. None of Mr. Martineau's land is within the boundaries of the disturbed area, but the applicant, which is also the land owner for the disturbed area, intends to deed this land to Mr. Martineau after final bond release.

With the change in ownership of lands within or contiguous to the permit area, the applicant needs to update the land ownership section of the mining and reclamation plan, including maps of the area.

The applicant is proposing to leave the road through the canyon to accommodate the desires of the person who will own the land to have better access. A letter in Appendix 3.7V from Mr. Martineau says he needs access to the property "to be able to use and develop needed improvements and facilities for enjoyment of the property." Section 3.7-5(2) of the application says the postmining land use is for hunting, cabin sites, access for grazing, access for land management, and for other recreational uses.

These uses constitute a change from the premining land use; therefore, the proposal is a significant revision requiring public comment. Retention of the road is not, of itself, a change in the postmining land use, but the Division judges those uses for which the road will be used. "Undeveloped land" implies the land will have no structures or facilities and that it is not actively managed for wildlife or grazing. This is contrary to the uses Mr. Martineau plans. It appears the land uses would be recreation, grazing, and possibly residential. The applicant has apparently been advertising the revision but needs to submit proof of publication.

The applicant needs to address the requirement of R645-301-413.300. The application should discuss whether the proposed use falls within the definition of "higher and better use." It should also address the likelihood for achieving the use and whether it is consistent with local land use policies. The application already contains some information indicating there would be a reduced threat for water pollution but it does not mention anything about water diminution.

Findings:

Information in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-521.131, R645-301-112.600, The text and map showing surface ownership need to be updated to show the new land ownership information.

R645-301-414, The application includes a proposal to change the postmining land use which is a significant revision. The applicant needs to submit proof of publication.

R645-301-413.300, The applicant needs to submit information to comply with R645-301-413.300. This information needs to show that the proposed land use is a higher and better use and discuss the likelihood of achieving the use and whether it is compatible with local land use regulations.

RECLAMATION PLAN

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The only specific wildlife habitat enhancement measure included in the reclamation plan is to retain any power poles that are being used by raptors.

The applicant is required to use the best technology currently available to protect and enhance wildlife habitat, and there may be additional feasible alternatives that could be used. Although the postmining land use would not be wildlife habitat, wildlife would continue to use the area, and practical habitat enhancement is required for any land use, even including industrial sites.

The channel design is for a riprapped meandering channel. Soil would be placed among the riprap to help facilitate revegetation. Because this is an intermittent stream where water often flows at least until early summer, there may be ways of enhancing the riparian habitat. The applicant might be able to use willow wattles on the outside of some of the meanders or could possibly install in-stream structures, such as large rocks or logs. These types of features would create more places for riparian vegetation to establish.

It appears there is a seep or spring in the vicinity of pond 14, but the applicant does not show plans to develop this spring. Developing the spring, however, would probably require a water right, and it may be just as well to allow the water to flow down the channel. It would still be available for wildlife, and it would enhance the riparian vegetation.

The plant species in the seed and planting mixture meet the requirements of R645-301-342.200. They should lead to good quality wildlife habitat.

Findings:

Information in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-358, There may be some practical ways to enhance wildlife habitat that are not discussed in the application. The applicant needs to investigate these and include them in the plan if they meet the criteria for the best technology currently available.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

As part of the Division's review of Exhibit 20, Crandall Canyon, it was determined that a necessity existed relative to the capability of achieving approximate original contour requirements while leaving roads P-1 and A-1 in place.

There are no highwalls in the Canyon; the mineable reserves in the "D" seam, the "A" seam, and the "sub-3" coal seams are accessed by the two Crandall Canyon air shafts which average 1,425 feet in depth.

All requirements in the Canyon relative to the restoration of approximate original contour will deal with cut banks relative to road construction. Section 3.7-5(3)(4) of Exhibit 20, Approximate Original Contour Compliance, beginning on page 3.7-41 through 43 address AOC. **"As allowed under existing UDOGM Approximate Original Contour Regulations, limited portions of cut slopes will remain where they mimic or blend with existing topography and where fully reclaiming the cut slopes would result in slopes with a static factor of safety less than 1.3. Page 3.7-42 states that "The cut slopes identified along the road will remain, except in the facilities area where cut slopes are anticipated to be reclaimed."**

There are two "post reclamation cut slopes" discussed in Appendix 3.7U, which are adjacent to the primary road designated as "P-1". PRCS-3 is located NE of sediment pond 014; (its up-canyon end lies 740 feet down-canyon of the #2 air shaft). PRCS-3 is approximately 750 feet long with a maximum height of thirty feet.

"Post reclamation cut slope #4" (PRCS-4) begins 900 feet up-canyon of the US-6 gate and extends 850 feet; the maximum height of the cut slope is approximately thirty-five feet.

Both of the cut slopes are located along portions of primary road P-1 which will have no reclamation activities performed upon them, i.e., they will remain as they exist today assuming that the change in the approved post-mining land use is successful and that the approval to retain primary road P-1 as approved access is inherent with that approval.

The reclamation of the access road within the surface facilities area will affect 750 feet of "pre-reclamation cut slopes", (three areas) which are not mentioned in Appendix 3.7U.

The first area is a 110 foot length of PRCS located adjacent to where the reclamation of the road begins 200 feet up-canyon of the #2 air shaft. This portion of cut slope lies half way between cross sections A-A' and B-B'. Examination of Exhibit 3.7-7D reveals that, although there are no "pre land development" surface contours shown, the final reclamation contour which is depicted shows an aesthetically pleasing slope. This, plus the fact that a static safety factor of 1.3 is achievable are felt to be adequate justification to meet the requirements of approximate original contour.

Area 2 is the 525 foot pre-reclamation cut slope which is intersected on the lower end by cross section C-C' and on the upper end by D-D'. As depicted by these cross sections, the final contour of the reclamation work will not achieve strict approximate original contour because 3.7-7D does not depict the pre-development surface contours of the area. The northern toe of the reclaimed area (C-C') intersects a nearly vertical slope which rises fifteen feet to the head of the cut slope. The northern edge

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of the reclamation work as depicted on cross section D-D' intersects a sixty degree slope. The attempt to return this cross section to AOC would probably encounter two problems. The first would be the stability of the area due to the amount of fill necessary to return the area to AOC; the second would be where to obtain that fill. It is therefore felt that although the requirements of AOC are not necessarily achievable, the aesthetic appearance of the reclaimed area plus the increased assurance of a more stable area due to the lower slope angle compensate for the lack of strict enforcement of AOC requirements.

Area 3 is about sixty feet up-canyon of cross section E-E' on the north side of the reclamation area. The "operational" phase slope of this area lies forty degrees from horizontal. The slope of the fill in the reclaimed area will be graded to approach the existing slope on a ten degree angle. Once again, the benefits of an increased assurance of stability, plus the aesthetically pleasing appearance of the reclaimed slope are felt to offset the benefits realized by the strict adherence to approximate original contour requirements.

Findings:

Assuming that a change in the approved post-mining land use is approved by the Division, and that the retention of the primary road P-1 for access is inherent within that approval, no reclamation activities will occur along the primary access road from the US-6 gate to 220 feet up-canyon of the #2 air shaft. Therefore, no attempt will be made to reclaim this portion of the road or return the area from which the road was developed to approximate original contour. The requirements of **R645-301-553.110** cannot be achieved in conjunction with the retention of the primary access road.

Relative to the achievement of approximate original contour requirements within the surface facilities reclamation area, it is felt that the achievement of same is secondary to the achievement of ensured stability and aesthetic visual value in the pre-reclamation cut slope areas. The requirements of **R645-301-553.110** are felt to have been adequately addressed.

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 backfilling and grading plan is presented on Exhibits 3.7-7A, 7B, 7C, and 7D and discussed in Section 3.7-5(3)(3). Reclamation slopes will be concave in cross-section and will not exceed a slope of 2:1. Table 3.7-10 summarizes the cut/fill calculations: 85,860 cubic yards of cut and 83,990 cubic yards of fill and 6,680 cubic yards of topsoil.

Some cut slopes will remain. They will blend with the existing topography, and they will be compatible with the approved postmining land use. Cut slopes are discussed in more detail under Approximate Original Contour and also under Maps Plans and Cross-Sections of this Technical Analysis.

During Phase I and Phase II reclamation, 18.7 acres will be reclaimed. Of these acres, 16 will require topsoil. Topsoil will be applied at a depth of twelve inches, requiring 25,800 cubic yards.

Findings:

The information in the proposal is adequate to meet the requirements of this regulations.

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:

As of October 23, 1991, Shafts No.1 and No.2 were sealed with six inch thick concrete slabs. A two inch PVC vent pipe was installed through the seal of each shaft. The sealing plan is detailed in Appendix 3.7M. The seals were intended to be temporary. Although the Applicant asserts that the present seals appear to be in compliance with MSHA guidelines 30 CFR 75.1711-1, there will be further sealing work done during Phase I of the reclamation as described in Section 3.7-5(3)(2). If the mine is not reactivated and the existing seals remain, then the permanent seals will be placed directly over the existing seals.

Findings:

The information in the proposal is adequate to meet the requirements of this regulations.

TOPSOIL AND SUBSOIL

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

Analysis:

Two topsoil piles exist at the site. These stockpiles were sampled in 1995. The results of that sampling are reported in Volume 15, Exhibit 20, Appendix 3.7S, "Crandall Canyon Soil Sampling Results." Topsoil pile No. 1 (referred to as stockpile A in the afore-mentioned report) is infested with noxious weeds and therefore its use as a source of topsoil is impaired. The 1,210 cubic yards in this pile could be used as subsoil, however.

Topsoil will be used from stockpile No. 2 (referred to as stockpile B in Appendix 3.7S) located on access road P-1. Stockpile No.2 has 6,680 cubic yards of soil (Exhibit 3.7-5C and Table 3.7-10), enough to cover 4 acres with twelve inches. The material in stockpile No 2 will be used as needed depending upon the results of soil sampling of the lower pad during reclamation and may not be entirely used. The excess soil in stockpile No 2 will be made available for reclamation of other Willow Creek Mine sites.

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Substitute topsoil material will come from the facilities pad area. This material was tested according to the Division Guidelines² (see report in Appendix 3.7S). The Applicant suggests that the top eight feet of soil in the facilities area can be used as substitute topsoil. This would provide 51,400 cubic yards of soil, more than enough to cover the site with one foot of topsoil. This material will be used first to achieve final grade. Approximately 18,920 cubic yards are required as "substitute topsoil".

A test plot was gouged and seeded in 1996 on the upper and middle pads to prove that these pad soils could produce adequate vegetation. In October of 2000, the total cover on the site was 46%, which was adequate to meet the success standard, as concluded by Paul Baker, Division Biologist.

Further information on topsoil is location in Section 3.7-5(5) and Exhibit 5, Volume 4, Figure 8-5 contains the soil test results for samples taken during Crandall Canyon development in 1981.

Soils in the lower pad will again be sampled before use as substitute topsoil to avoid the soils with elevated selenium concentrations. At least three samples will be obtained from the soils in the lower pad.

Findings:

The information in the proposal is adequate to meet the requirements of this regulations. The Division recommends utilizing stockpile No.2 as a subsoil source.

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:

Pending the approval of the Significant Revision to retain the access road, the applicant must demonstrate the landowner is aware of their assumed responsibility to repair and maintain the road. Appendix 3.7V outlines the landowners' request that the road will remain, but does not address the responsibility for maintenance.

Findings:

Prior to final approval, the applicant must supply the following information:

R645-301-527.240, -534.330, The applicant must demonstrate the landowner is aware of their responsibility to repair and maintain the road.

HYDROLOGIC INFORMATION

²Leatherwood, James and Dan Duce. 1988. "Guidelines for Topsoil and Overburden Management For Underground and Surface Coal Mines." Utah Department of Natural Resources. Division of Oil, Gas, and Mining.

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Acid and toxic-forming materials

Section 3.7-5(3)(1) states, "Any non-coal mine waste defined as "hazardous" under 3001 of the Resource Conservation and Recovery Act (RCRA) and 40 CFR Part 261 will be handled in accordance with the requirements of Subtitle C of RCRA and any implementing agency."

Section 3.7-5(3)(3) states, "Any acid forming or toxic materials exposed during the grading operation, ...will be treated or buried at a depth of no less than four feet."

Hilfiker retaining walls not covered by a minimum of four feet of soil will be removed. Concrete placed in the fill will also be buried four feet deep.

Sediment control measures

The combined application of sediment control measures and "Best Technology Currently Available"(BTCA) suggests an alternative to the standard/proposed rip-rap channel should be discussed. Current technology indicates 'natural stream corridor restoration' has many benefits over the standard rip-rap channel. The current design of the channel is a constant 5.6 percent grade extended over a length of 3450 feet (Map Exhibit 3.7-7E). From an engineering design standpoint, incorporating drop structures and natural stream bank construction would provide the channel with lower velocities, longer retention time, and trap additional sediment traps compared to a rip-rap channel. In a rip-rap channel, if rock becomes dislodged, a scour point develops a breach in the bed. Without an extensive and diverse root-mat a potential failure of the channel is possible. In a naturally restored channel, a more extensive and varied root-mat reduces the likelihood of a potential breach in the system, and generally provides better habitat.

Findings:

Prior to final approval, the applicant must supply the following information:

R645-301-532, -731.121, Demonstrate a true evaluation of whether 'natural stream corridor restoration' practices are economically feasible at the site.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Timing

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The current mining and reclamation plan says seeding and planting will be done in the fall whenever possible but that it may sometimes be necessary to seed or plant in the spring. The applicant has had good success with planting seedlings in the fall, and this is considered the normal time to seed. Seeding in the spring increases the risk that vegetation will take much longer to establish, so although the mining and reclamation plan complies with regulatory requirements, the applicant should try to avoid spring seeding.

Mulching and other soil stabilizing practices.

Before redistributing topsoil, the applicant will rip the underlying spoil to a depth of 18 to 24 inches. Topsoil will be redistributed on only part of the disturbed area; substitute topsoil will be used in the rest of the area. The applicant will spread alfalfa hay on the soil and substitute soil at a rate of about two tons per acre, and this will be mixed into the soil through gouging. The alfalfa serves as a soil amendment. No fertilizer will be added because fertilizer tends to increase the number of weeds.

Following soil surface preparation, the area will be broadcast seeded followed by application of between one and one and one-half tons per acre of straw and 500 pounds per acre of wood fiber hydromulch. The hydromulch is to anchor the straw. The gouging and mulching methods keep water from running off thereby promoting vegetation establishment and growth.

The seed mix consists of fifteen native species. The applicant has elected to use only one seed mix rather than having different seed mixes for different aspects or for the riparian area. The mix has species adapted to all the conditions at the mine from south-facing slopes to riparian areas to north-facing slopes.

The planting mix includes two species of conifers, bigtooth maple, and cottonwoods. The conifers will be planted near the main channel (CCRD-11) and in the side canyon with CCRD-3. The planting rates for the conifers were designed to not create a climax, closed forest type of community. The maples and cottonwoods will be planted about every twenty feet along the channel.

The revegetation methods proposed are the best of which the Division is aware and should lead to good revegetation success.

Standards for success

General revegetation requirements are in R645-301-353, and the success standards specifically required for areas with grazing and recreation land uses are in R645-301-356.210 and R645-301-356.230. Revegetation success for these areas is judged on the basis of ground cover, productivity, and woody plant density. Since the requirements for these uses are different than the requirements for the "undeveloped" land use, the plan needs to be changed to include the new standards.

According to the original vegetation survey, five vegetation types were identified in the area that was proposed to be disturbed. These are conifer, riparian, grass/sage, mixed brush, and previously disturbed. According to the mining and reclamation plan and the application, the disturbed area would be compared with riparian and conifer reference areas in Crandall Canyon and with a grass sage reference area above the clean coal stockpile at the Willow Creek Preparation Plant.

Ground cover and productivity standards are relatively straightforward. The reclaimed areas can be compared statistically with the appropriate reference areas. This can be done combining the information currently in the mining and reclamation plan and the performance standards.

Diversity is judged using the Motyka Index as discussed in Chapter 9 of Exhibit 19. The standard is that the similarity between the reference and reclaimed areas must be at least the lower of 70% or the average similarity between each vegetation sample in the reference area. The Division has previously approved this standard and found it acceptable.

In Section 3.7-5(3)(9), the application says the applicant will meet diversity requirements for each of the reclaimed areas except the riparian area. The riparian area needs to meet revegetation criteria, but water areas do not. The channel is considered a water area, but the areas adjacent to the channel with riparian vegetation need to meet revegetation success standards. Therefore, the statement in Section 3.7-5(3)(9) needs to be modified.

Because the postmining land use has not previously been either recreation or wildlife habitat, no woody plant density standard was established. With the change in land use, the Division is required to establish a density standard in consultation with the Division of Wildlife Resources.

When the vegetation measurements were taken in 1981, the conifer reference area had 5244 shrubs and 389 trees per acre for a total of 5633 woody plants per acre. Most of these were Oregon grape, a very small shrub that often grows in the conifer understory. Considering the number of trees to be planted, the number of trees and shrubs in the reference area, and the desired vegetation community, the success standard has been set at 800 woody plants per acre. This should be composed of no more than about 250 conifers per acre, and the rest should be shrubs or other kinds of trees. If there were more conifers than this, it would tend to lead to a closed stand with little understory.

The riparian area only had 223 woody plants per acre in 1981, but the applicant intends to plant about 700 per acre. While grasses and trees tend to dominate this area with few shrubs, the Division and Wildlife Resources decided to set the standard at 400 per acre.

Most of the site will be compared with the grass/sage reference area where woody plant density was measured at 981 per acre. According to the Division of Wildlife Resources, the area is in elk winter range, but deer do not winter in this area. At this elevation, deer instead prefer more exposed sites where forage is more easily available.

Elk are primarily grazers although they will eat some shrubs and mushrooms. For this reason and because Crandall Canyon does not contain winter habitat for mule deer, shrubs are not as important in this area as they would be in deer winter range. The main part of Crandall Canyon can meet the postmining land use even if it contains only a limited number of shrubs. However, the Division expects that many of the grasses that establish in this area to be tall grasses, such as basin wild rye and slender wheatgrass. Basin wild rye is a preferred species for elk because of its height and because it cures well and maintains its nutritional value into the winter.

Since shrubs are not as critical for meeting the postmining land use, the standards have been set relatively low. They are 200 per acre for the leach field area and 800 per acre elsewhere. The leach field area is next to pinyon/juniper, riparian, and conifer areas, so leaving it primarily as a grassland will

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provide more diversity and greater forage for wildlife. The rest of the area is more open, so establishing shrubs for both cover and forage is more desirable.

Findings:

Information in the proposal is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following information in accordance with:

R645-301-341.250, The statement in Section 3.7-5(3)(9) that the applicant will meet diversity requirements for each of the reclaimed areas except the riparian area needs to be modified. While it is not necessary to meet revegetation standards in the channel, it is necessary to meet them in adjacent areas which includes the riparian area.

R645-301-341.250, The application needs to include the woody plant density success standards discussed in this analysis.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Section 3.7-5(2) itemizes the benefits of retaining an asphalt road in Crandall Canyon:

- travel will occur on the road, not overland;
- the road surface is resistant to erosion;
- the runoff from the road is controlled; and
- the road allows easy access for vegetation husbandry practices to ensure vegetation success.

One drawback is also pointed out:

- the road culverts will require maintenance which Plateau Mining Corporation will not provide, but which must be assumed by the landowner.

The Applicant asserts that the watershed will be improved as a result of reclamation with retention of the asphalt road due to the reduction of total suspended solids and through reduced flood hazards and by eliminating interference with natural flows of the stream.

As discussed in Section 3.7-5(3)(3) straw bales and/or silt fences will be installed within the main channel prior to conducting any activity in the channel. Depressions or catch basins in the main channel will also be used. Sediment ponds will be removed as reclamation overtakes them.

Prior to spreading topsoil, all regraded areas will be scarified to a depth of 18-24 inches by deep ripping to reduce slippage, increase moisture retention and promote root penetration. Should reclamation work be incomplete when seasonal conditions make it impossible to continue, then the backfilled and graded portions of the site will be left in a roughened state.

Findings:

The information in the proposal is adequate to meet the requirements of this regulations.

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

The aforementioned coal rules require a permittee to close or permanently reclaim all affected areas impacted by coal mining and reclamation operations upon cessation of mining. The permittee must have a Division approved reclamation plan in place in order to conduct the reclamation activities for all of those areas. R645-301-541.300 states that "for the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, all surface equipment, structures, or other facilities not required for continued underground mining activities and monitoring, **"unless approved by the Division as suitable for the post-mining land use or environmental monitoring will be removed and the affected lands reclaimed"**. Hence, -541.300 must be addressed by this application in order to obtain the Division approval necessary to retain the access road as part of the approved post-mining land use.

The permittee has submitted Exhibit 20, Crandall Canyon, which proposes a change in the approved reclamation plan for the surface facilities area. Part of the proposed change to this plan includes a change in the approved post-mining land use, which is currently approved as undeveloped land. Adjacent surface land owners have requested that the permittee propose this change, such that the access road may remain in place in order to ease development of not only Crandall Canyon, but also those lands adjacent to it. Thus, an approved change in the post- mining land use is necessary before the access road can be allowed to remain.

Findings:

The Division made a determination on February 14, 2001 that Exhibit 20, Crandall Canyon and the reclamation plan changes which had been incorporated into that document were administratively complete. The review of that document and its inherent pending determination of adequacy will provide justification as to whether the Division will grant approval for a change in the post-mining land use of the area, which in turn will provide the justification necessary to retain the access road.

The conclusions and recommendations found within this technical memorandum are contingent upon a Division approval for a change in the post-mining land use for the Crandall Canyon area.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

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

Analysis:

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Reclamation facilities maps

Within the amendment there are numerous references to the reclaiming of the cut-slopes within the facilities area. Appendix 3.7U indicates all cut-slopes will be backfilled, with the exception of PRCS-1 through PRCS-4. With the road remaining in place, cut-slopes along the road will no longer be reclaimed. Maps labeled Exhibits 3.7-7A through 3.7-7C illustrate all the cut-slopes as existing outside the Disturbed Area boundary. Exhibit 3.7-7B illustrates one area where the cut-slope will remain (PRCS-1, while PRCS-2 is absent), which suggests all other cut-slopes within the facilities area will be reclaimed. Exhibit 3.7-7 illustrate cross sections that intersect such cut-slopes, yet cross sections A-A', C-C', D-D' and G-G' do not indicated that the cut-slopes are being re-graded/reclaimed.

Reclamation surface and subsurface manmade features maps

Alternate Sediment Control Measures will be implemented at Topsoil stockpiles No.1 and No.2, as outlined in Section 3.7-64, but Map Exhibit 3.7-7C does not illustrate that these areas will be reclaimed; only that they will be re-contoured after the removal of the stockpiles. The operator needs to illustrate/demonstrate how these stockpiles will be accessed, and if any additional reclamation will occur. Primarily, outline how Stockpile No. 2 is going to be transported across the drainage. It is assumed that any sediment controls necessary, when transporting Stockpile No. 2 across the creek, will be implemented.

Final surface configuration maps

The following are a few apparent typographic errors located on some of the Exhibit maps. On Exhibit 3.7-7C, culverts 22 and 23 are labeled as CCD (Ditches as opposed to CCC), and culvert CCC-17 is mislabeled as CCC-27. On Exhibit 3.7-7B, there are two ditches labeled as CCD-11.

Exhibits 3.7-7A, 7B, 7C, and 7D of Exhibit 20, Crandall Canyon have been submitted to attempt to meet the requirements of the R645 coal rules relative to map requirements in proposed reclamation areas. The aforementioned maps address specific concerns relative to the retention of the access road P-1 and R-1 within the reclaimed facilities area.

The operational stage of the Crandall Canyon surface facilities area which existed under Plateau Mining Corporation management was that of storage for mining related apparatus. The "operational stage" Crandall Canyon access road consists of a primary road designated as P-1 (7,150 feet from the US 6 gate to approximately 200 feet past the main intake (or #1) air shaft). From that point, the road was designated as ancillary (and designated as A-1). This ancillary portion was 5,065 feet or 0.96 miles in length, and was partially reclaimed (ripped and seeded) by AMAX Coal Company in 1990 or 1991.

The reclamation phase of the Crandall Canyon access road proposes the following:

- The primary road P-1 will remain as it currently exists, up to a point approximately 200 feet up-canyon of the #2 (or return) air shaft.

Twelve culverts will remain in place to route collected drainage under the road toward Crandall Creek. These culverts include CCC-14 through CCC-21, CCC-24 and 27, and CCD-22 and 23.

- A portion of the in-place primary road P-1 will be reclaimed, starting at a point approximately 200 feet up-canyon of the #2 air (return) shaft. The reclaimed road will be designated as R-1, and will be reclaimed for approximately 2,480 feet. Thus, as depicted on Exhibit 3.7-7B, approximately 1,000 feet of P-1, and 1,550 feet of A-1 will be reclaimed and re-designated as R-1.

Two culverts CCRC-1 and CCRC-2 will route drainage under the reclaimed road R-1 toward Crandall Creek.

- Although not depicted on Exhibit 3.7-7A, **all of the ancillary roads originally designated as A-1 (starting 175 feet west of the propane tank foundations) and terminating at the western end of the Canyon has been reclaimed.** Exhibit 3.7-7A depicts this road as still being in place and re-designates it as a portion of reclamation road R-1. The total length of R-1 is depicted as being 4,950 feet, if the permittee re-establishes the road for the convenience of the landowner. However, if the permittee does this, additional costs and responsibility requirements will once again become those of the permittee. As the field conditions of the area are not accurately represented by Exhibits 3.7-7A and 7B (extreme up-canyon end) the applicant must submit an exhibit which shows that the area has been reclaimed.

Four culverts are associated with the ancillary road A-1, starting at the propane tank foundations and terminating at the end of the disturbed area, (CCC 1-4). These were not reclaimed and remain as part of the drainage system for the area.

The portion of P-1 which is to be reclaimed (and re-designated as a portion of R-1) incorporates two plan view sections B-B', and C-C' as depicted on Exhibit 3.7-7B.

Each cross section, as shown on Exhibit 3.7-7D will be discussed separately.

Cross Section B-B'

On cross section B-B', the center of the reclaimed road will be shifted approximately eighteen feet ESE toward the Canyon center. The original elevation of the road surface here will remain almost unchanged, being lowered an average of one foot in the center, and sloped away from the center of the drainage, such that runoff will report into ditch CCRD-9. The major changes noted in Section B-B' are the following:

- The operational channel on the WNW side of the road will be completely backfilled.
- The drainage will be relocated 175 feet to the ESE.
- The surface elevation of the area will be lowered approximately 7.5 feet.

Cross Section C-C'

Cross section C-C' is located 150 feet down-canyon of the #1 or intake ventilation air shaft. As depicted on Exhibit 3.7-7D, the elevation of P-1 at this location will remain virtually unchanged, but will be sloped to the outside to collection ditch CCRD-9. This section is similar to B-B' in that the major

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changes noted are the backfilling of the P-1 drainage channel on the north side of the road and the moving of the center of the drainage 133 feet toward the south.

To obtain the material to fill the old drainage, the overall elevation of the surface will be lowered about six feet over a 110 foot width. Some fill will be disposed of in the toe of the southern embankment of C-C'. Both cross-sections C-C' and D-D' will intersect a "pre-reclamation cut slope" (which is depicted as 525 feet in length) as shown on Exhibit 3.7-7B.

However, based on examination of the cross-sections C-C' and D-D' of Exhibit 3.7-7D, the final contour of the reclamation work will not achieve approximate original contour because 3.7-7D does not depict the pre-development surface contours of the area. The northern toe of the reclaimed area intersects a nearly vertical slope which rises fifteen feet to the toe of the original slope.

Ancillary road A-1, (reclaimed as a portion of R-1)

The 1,666 feet of ancillary road A-1, which starts 200 feet up-canyon of the #1 or intake air shaft at the facility (and will be re-designated as a portion of R-1) which will be reclaimed incorporates three cross sections, as shown on the plan view depicted on Exhibit 3.7-7B. Cross sections D-D', E-E', and F-F' will be discussed individually.

Cross Section D-D'

Cross section D-D' is located 350 feet up-canyon of the #1 intake air shaft (transects the downstream crest of pond 015's dam). The center of the road R-1 is shifted almost due south twenty feet, but its surface elevation will be raised nine feet. As noted above, cross-section D-D' intersects a pre-reclamation cut slope located along the northern edge of the disturbed area. Examination of Exhibit 3.7-7D indicates that the final contour of the reclaimed area intersects the toe of a sixty degree slope. This contour will be more stable than trying to achieve an AOC configuration, and is felt to be more acceptable for the Division's purposes. The impounding embankment of pond 015 will be lowered twelve feet (at the relocated center of the channel) to provide fill in this area. The only other significant change in this area is that the channel will be relocated 75 feet to the north or center of the Canyon. The surface elevation of the relocated/ reclamation channel bottom will be raised about eleven feet. The operational channel will be backfilled to a fifteen degree slope, starting at the crest of the south bank of the reclamation channel.

It needs to be noted here that although the reclaimed road R-1 will be built on nine feet of fill material, the fill will be compacted in a troughed area that has been in place for at least twenty years and is considered stable.

Cross Section E-E'

Cross Section E-E' is located 480 feet up-canyon of D-D'. The center of the reclaimed road R-1 has been moved about ten feet to the SWS, although its surface elevation has been raised about six and a half feet. Slopes above and below R-1 at this section are depicted to be graded to a maximum ten degree slope. This is adequate for stability.

Other changes indicated by cross section E-E' are that the operational drainage located on the SWS side of Crandall Canyon will be moved 97 feet to the NEN, placing it in the center of the Canyon. The operational channel will be backfilled, and the slopes will be graded to a final angle varying from nine to fifteen degrees from horizontal.

Cross Section F-F'

Cross Section F-F' is located 1300 feet up-canyon of the #1 (or intake) air shaft. The center of reclamation road R-1 will be moved about 17 feet to the SW (of the operational road A-1 center). R-1 will be raised approximately three and a half feet from the operational elevation. Only a minor amount of fill will be needed in this area (on the inside berm) ensuring a stable road surface. The fill slope above the road will be graded to a maximum of sixteen degrees above horizontal, and the placement will be in a trough which has been stable for many years. The cut below the road will be graded to a maximum of fifteen degrees from horizontal. Both angles are low enough to ensure adequate stability of the reclamation road when constructed of competent material kept free of saturation.

Other pertinent features of cross-section F-F' are as follows:

- The center of the operational drainage will be moved 100 feet to the NE. The reclaimed drainage will be one foot lower at the center of the channel than the operational drainage.
- The operational channel will be backfilled; in general the overall surface elevation in the area will be lowered approximately eight feet.

Cross Section G-G'

Cross Section G-G' is 500 feet up-canyon of F-F' and lies within the portion of the ancillary road A-1 which was ripped and re-seeded (reclaimed) in 1990 or 1991 by AMAX Coal Company. Exhibit 3.7-7D shows the center of reclamation road R-1 as identical to the center of the "operational" or ancillary road A-1. The outslope of the road here will be reshaped to a ten degree down dip. This section has been in place for twenty years. There are no concerns relative to the stability of the road here. G-G' also intersects a pre-reclamation cut slope, as indicated by Exhibit 3.7-7B. This cut slope will remain unchanged, as indicated on Exhibit 3.7-7D. However, the area has been reclaimed, thus the submitted plan and cross section drawings for the proposed changes were made on a drawing which does not accurately reflect the field conditions as they currently exist in the G-G' area. No determination relative to approximate original contour can be made because, although the area has been reclaimed, a cross section representing the contour of this final reclamation has not been provided.

The only significant changes relative to this cross section are:

- The center of the reclaimed drainage will be 25 feet NNW of the operational drainage.
- The operational drainage will be backfilled; the reclamation channel bottom will be about 2.5 feet higher in surface elevation than was the operational channel bottom.
- The cut which will be made on the north side of the operational channel appears to be at least twice the amount of material necessary to reclaim the operational channel.

RECLAMATION PLAN

Exhibit 3.7-7D contains a typical road cross section for reclamation road R-1. Same shows a twelve to fifteen foot roadway width having a one to three percent slope toward the ditch located along the inside berm. This ditch has a four foot top width and a one foot depth with 2:1 side slopes.

Exhibit 3.7-7D is P.E. certified by Mr. Layne D. Jensen, Utah registered professional engineer.

The requirements of **R645-301-542.310** have not been adequately addressed. Exhibits 3.7-7A, 7B, 7C, and 7D address numerous requirements within the same four maps. The analysis below raises several concerns which are relative to the accuracy of some. These are specifically addressed within the cross section analysis as well as one of the plan view drawings. Exhibit 3.7-7A and 7B do not accurately represent the current field conditions in Crandall Canyon, starting 140 feet NW of the propane tank foundations and ending in the extreme upper end of the disturbance. The road in this area has been reclaimed, and the maps indicate that same still exists as a portion of reclamation road R-1. Exhibit 3.7-7D, cross-section G-G' depicts the "operational" ancillary road A-1 as still being in place. The cross section lies in the area which was reclaimed by AMAX Coal Company in 1990 or 1991. No final reclamation contours, as they currently exist are shown. None of the cross sections shown on Exhibit 3.7-7D show a "pre land development" surface contour. It is not known if the permittee is able to obtain that information due to man's utilization and development of the Crandall Canyon area long before SMCRA. Without this information, it is difficult to determine if the meeting of approximate original contour requirements can be effectively accomplished.

Findings:

Prior to approval, the applicant must supply the following information in accordance with:

R645-300-133.100, Correct minor typographic errors on Exhibits 3.7-7B and 3.7-7C so they are complete and accurate.

R645-301-542.600, -542.630, Describe through illustration or narrative, how the Topsoil Stockpiles will be accessed, and if any additional reclamation will occur in those areas.

R645-301-542.310, The permittee must submit revised Exhibits 3.7-7A, 7B, and 7D (cross section G-G') such that the field conditions in the upper Canyon are accurately reflected.

R645-301-746.220, Consistently and accurately outline which cut-slopes are going to be reclaimed. Also, if cut-slopes are to be reclaimed they need to be illustrated as existing within the Disturbed Area boundary.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of bond (Reclamation Agreement)

Three Surety bonds are in place for the Willow Creek Mine site:

Bond No. 103198931-059	in the amount of \$ 3,983,069.00
Bond No. KA2990-059	in the amount of \$ 3,983,068.00
Bond No. 210067-059	in the amount of \$ 3,983,068.00
TOTAL	\$11,949,205.00

All bonds were signed by the St. Paul Fire and Marine Insurance Company on July 1, 1999 and by Plateau Mining Corporation on August 17, 1999 and accepted by the Division Director, Lowell Braxton.

Determination of bond amount

The permittee currently has a reclamation bond in the amount of \$11,949,205.00 to cover the reclamation of the disturbed areas incorporated within the Willow Creek Mine's 14,670 permitted acres. Of this amount, \$1,841,245 (See Table 3.1-2 and Appendix 3-2 relative to Crandall Canyon in the currently approved Willow Creek MRP) has been dedicated to the reclamation of the Crandall Canyon area. Since this amount has been reviewed and approved by the UDNR/OGM via previous submittals, that amount is considered adequate to reclaim the area. Additional justification that this amount is adequate can be assumed if the considerations below are evaluated:

- the ancillary road designated as A-1 in the leach field area has already been reclaimed, and
- the primary road designated as P-1 (starts at permittee's gate at U.S. 6 and extends to the lower end of the surface facilities area) in Crandall Canyon and its associated post-reclamation cut slopes will remain as they currently exist if the change in the approved post-mining land use is approved by the UDNR/OGM. The amount of dirt moving necessary to reclaim the Crandall Canyon area will be much less than what the approved bond amount of \$1,841,245 was calculated for to reclaim.

Thus, the bond amount, as currently approved, will be used to reclaim much less than what was anticipated when that \$1.85 million amount was determined and approved.

Findings:

The bond amount determination of \$1,841,245 (as currently approved in the Willow Creek mining and reclamation plan) is adequate to reclaim the Crandall Canyon area.

REQUIREMENTS FOR PERMITS FOR SPECIAL CATEGORIES OF MINING

PRIME FARMLAND

Regulatory Reference: 30 CFR Sec. 785.16, 823; R645-301-221, -302-300 et seq.

Analysis:

Exhibit 19, Figure 8-3 contains a letter from the Soil Conservation Service indicating that no prime farmland exists within the disturbed area boundary. The letter is dated May 21, 1991.

Findings:

This portion of the application is complete and accurate.

OPERATIONS IN ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR Sec. 822; R645-302-324.

Analysis:

The approved MRP refers to a decision document by the Division of Oil Gas and Mining (DOGM) in 1982. At that time, a multi-disciplinary team studied the vicinity of the Castle Gate Preparation Plant. The team determined that the site was in an alluvial valley, but that there were no effects on the soils or water quality by the adjacent mining activity. This document is reprinted in Exhibit 10.

The Price River is impacted by the power plant; the Dept of Transportation road salt storage facility; highway activity and abandoned coal refuse piles along the river banks.

Crandall Canyon is a narrow canyon holding Crandall Creek, a tributary of the Price River. At its upper reaches, Crandall Canyon is at an elevation of 7,400 feet. As it converges with Price Canyon, the elevation is 6,400 feet. The natural topography of Crandall Canyon is characterized by steep canyon side slopes and a broad canyon bottom (Exhibits 3.7-1 and 3.7-2). The stream meanders from one side of the canyon to the other throughout the length of the canyon. Exhibit 3.7-7B and D show cross-sections of the undisturbed area of the canyon and illustrate the steep slopes cut by the stream through unconsolidated material.

There exists an unconfined aquifer in Crandall Canyon at a depth of approximately 30 - 60 feet at the unconsolidated soil/rock interface. This aquifer was intercepted by the two ventilation shafts in Crandall Canyon. As discussed in Exhibit 20, Section 3.7-5(3) (3), water flows in through the concrete lined shafts at a rate of approximately 13 - 50 gpm and is transmitted through the mine to the Blackhawk formation to recharge the regional aquifer.

Since the Price River mean annual discharge rate is 112 cfs, 50 gpm represents a loss of 0.1% to the Price River. Plateau Mining Corporation has 1.7 cfs (763 gpm) of water right on the Price River to mitigate the minor reduction in yield from the drainage basin.

Findings:

The plan is considered technically adequate with regard to the Alluvial Valley discussion. The pre-mining land use of Crandall Canyon is undeveloped rangeland which is not significant to farming.

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