

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 2, 2005

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

THRU: Pete Hess, Environmental Specialist III, Team Lead

FROM: David Darby, Reclamation Specialist, Hydrologist

RE: Pace Canyon Fan Portal, Canyon Fuel Company, Dugout Mine, C/007/0039, Task #2104

SUMMARY:

The Division received an amendment in January 2005 that addresses the Pace Canyon fan portal area. This memo describes the review of the biology and cultural sections for the first version of the amendment dated January 2005.

This project would increase the disturbance area by 2.7 acres. The acreage and section numbers do not include transportation or power-line corridors.

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TECHNICAL ANALYSIS:

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:

The Permittee has submitted an amendment to the Dugout Mine plan on January 4, 2005. The amendment contains information and engineered designs to construct a fan portal in Pace Canyon. The amendment also provides information and design criteria to contain and control runoff from the disturbed area, and to divert undisturbed drainage away from the facilities. A design maps have been certified by a registered professional engineer.

Findings:

Information provided by the Permittee meets the minimum requirements of the General resource information section.

PERMIT AREA

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

Analysis:

The permit area and adjacent lands are shown on Plate 4-1 and Plate 7-1. The disturbed area for Pace Canyon Fan is shown on Plates PC5-2 and Plate PC5-5.

Findings:

The information in the MRP meets the minimum requirements of the regulations for the Permit Area section.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Baseline Information

Analysis:

Sampling and Analysis

The Permittee has proposed to meet this requirement by adding another stream sampling site to the current water monitoring plan, just above the proposed fan portal site. Two other stream monitoring sites already exist. Stream monitoring site PC-1 is located about ½ mile above the proposed fan portal and site PC-2 is located below the fan site. Monitoring these sites should provide an indication of any difference in water quality diminution as a result of mining activity. Any water samples collected will be analyzed according to methods in either "Standard Methods for the Examination of Water and Wastewater" or 40 CFR parts 136 and 434.

Appendices 7-2 and 7-7 contain tabulated summaries of the water-quality data but the original laboratory reports are not in the MRP. Much of the water-quality data in the appendices was not obtained directly by the Permittee and the Permittee had no control over either collection or analysis methods.

Ground-water information

The Permittee has provided maps showing there are no groundwater sources, springs or wells in the proposed fan portal area that may be affected. Plate 7-1 identifies three springs in the canyon at least one to two miles above the fan portal site. These springs supply flow to the channel that flows along the south side of the fan portal site. These springs will not be impacted by development of the fan portal facility.

Baseline Cumulative Impact Area Information

The Pace Canyon fan portal lies within the permitted area and within the boundaries of the existing CIA. The Permittee states that mine water will be discharged from the fan portal directly to the stream. The volume of discharge is unknown and can change with mining conditions. Potential impacts may wash sediments downstream and widen the channel. Given this potential, the Permittee should establish baseline characteristics of the receiving stream channel in the event mitigation or restoration has to be done.

Modeling

No numerical groundwater or surface water modeling was conducted for this site.

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Probable Hydrologic Consequences Determination

A PHC determination prepared by Mayo and Associates in 1996 is in Appendix 7-2.. The PHC determination for the MRP begins on page 741

Adverse impacts to the hydrologic balance

The Permittee has committed to install various sediment control measures to prevent contributions of sediment to the stream. Mine water discharge has been identified as having the potential of transporting fine sediments downstream and possibly eroding the channel banks. The volume of mine water discharge is unknown at this time. Preventative measures are planned in the form of riprap to dissipate energy.

Acid forming or toxic forming materials

The probable impacts from acidity, total suspended solids and total dissolved solids were assessed by the Permittee. Information in Chapter 6 and 7 indicates there are no acid- and toxic-forming materials at the Dugout Canyon Mine to cause . There is no significant potential for contamination of surface and ground waters in the permit and adjacent areas (p. 7-41).

Important water quality parameters

The Permittee has analyzed baseline and operational data from surface water monitoring sites in Pace Creek. Data suggest the TDS concentration of water in Pace Creek may roughly double during lowest flow if water is discharged from the mine to the creek. Dominant ions (sodium and bicarbonate) in the Blackhawk Formation water closely match those in Dugout Creek during periods of low streamflow (sodium, manganese, bicarbonate, and sulfate). During periods of high streamflow the dominant cation in Pace Creek is Magnesium. Use of powdered limestone or dolomite (calcium-magnesium carbonate) rather than gypsum (calcium sulfate) as rock dust in the mine should reduce the possible chemical influence of mine-discharge water on Pace Creek.

Pace Creek is classified as class 2B (secondary contact recreation use), 3C (nongame fish and other aquatic life use), and 4 (agricultural use). If discharges occur from the Dugout Canyon Mine to Pace Creek, TDS concentration of these discharges will not exceed applicable water-quality standards. Iron and manganese concentrations in waters from the Blackhawk Formation and Pace Creek indicate that the concentration of iron and manganese in the creek should not be significantly affected by discharges from the mine (p. 7-44).

Ground water and surface-water availability

The Permittee has evaluated potential adverse effects to the hydrologic balance from the proposed mining operations as well as the fan portal proposal. If water is discharged from the fan portal to Pace Creek there will likely be both decreased and increased stream flows depending on the amount of water discharged and the amount of precipitation received at the site.

Flooding or streamflow alteration

The volume of streamflow will increase in Dugout Creek if water is discharged from the mine to the creek: care will be taken during discharge of this water to avoid flooding of downstream areas. Potential impacts to the creek channel include displacement of fines on the channel bottom and minor widening of the channel. It is anticipated that the streambank vegetative community will increase in density and vigor as a result of mine-water discharges, and this vegetation will in turn minimize widening of the channel.

Flooding and streamflow alteration were assessed by the Permittee. The volume of flow may increase in Pace Creek if water is discharged from the mine. The Permittee has submitted designs for a sedimentation pond and other sediment-control devices that will treat runoff prior to discharge to Pace Creek. The structures are designed to be stable. Flow routing through sediment control structures will reduce peak flows from the disturbed area. Runoff from all disturbed areas will flow through a catch basin or other sediment control device prior to discharge to Pace Creek, which will minimize or preclude flooding impacts to downstream areas.

Once mining ceases the mine will be sealed, discharges will cease, and Pace Creek will return to pre-mining discharge levels. Following reclamation, stream channels altered by mining operations will be returned to a stable state. Reclamation channels have been designed to safely pass the peak flow resulting from the 10-year, 6-hr precipitation event, so flooding in the reclaimed areas will be minimized. Interim sediment-control measures and maintenance of the reclaimed areas during the post-mining period will preclude deposition of significant amounts of sediment in downstream channels, maintain the hydraulic capacity of the channels, and control adverse off-site flooding.

Sediment yield from the disturbed area

The potential impact of mining and reclamation on sediment yield is an increase in sediment in surface waters downstream from disturbed areas. Sediment-control measures such as catch basin and diversions will be installed to minimize this impact while the mine is being actively operated, and silt fences and straw-bale dikes will be installed to control erosion as vegetation becomes established during reclamation. These measures will reduce the amount of erosion and control adverse impacts to the environment.

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Potential Hydrocarbon Contamination

Diesel fuel, oils, greases, and other hydrocarbon products will be stored and used at the site for a variety of purposes. Diesel and oil stored in above-ground tanks at the mine surface facilities may spill onto the ground during filling of the storage tank, leakage of the storage tank, or filling of vehicle tanks. Similarly, greases and other oils may be spilled during use in surface and underground operations. The probable future extent of the contamination caused by diesel and oil spillage is expected to be small because the tanks will be located above ground and spillage during filling of the storage or vehicle tanks will be minimized to avoid loss of an economically valuable product.

A Spill Prevention Control and Countermeasure Plan (SPCC) will be developed for the site upon completion of Phase II construction will provide inspection, training, and operation measures to minimize the extent of contamination resulting from the use of hydrocarbons at the site. This plan is not required to be submitted as part of the MRP; however, a copy will be maintained at the mine site as required by the Utah Division of Water Quality (p. 7-50). Phase I is currently proceeding under a construction SPCC.

Road Salting

No salting of roads will occur within the permit area so this potential impact is not a concern (p. 7-50).

Surface-Water Monitoring Plan

The Permittee has monitored hydrologic sites in Pace Canyon for baseline conditions. The data has been entered into the Utah Coal Water Monitoring database. Overall surface-water quality and quantity information was considered sufficient to characterize baseline conditions for the fan portal area.

Findings:

Information provided in the plan does not meet the minimum requirements of the regulations for this section. Prior to approval, the Permittee must act in accordance with the following:

R645-301-724.310, The Permittee will be required to collect stream morphology data on Pace Creek below the proposed mine water discharge site to provide baseline information. The information will be used to identify impacts to the channel from erosion over the time of discharge.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The Permittee has met the requirements of R645-301-521.141. Plate PC 5-5 clearly shows the boundaries of the proposed fan portal area to be affected.

Mine Workings Maps

Plate PC5-2 shows the location of surface facilities, their elevations and dimensions.

Monitoring and Sampling Location Maps

Elevations and locations of monitoring stations used to gather data on water quality and quantity in preparation of the application are on Plate 7-1.

Subsurface Water Resource Maps

The surface water resources adjacent to Pace Canyon are identified on Map 7-1.

Surface Water Resource Maps

Surface waters that will receive discharges from affected areas in the proposed permit area are shown on Plate 7-1.

Well Maps

There are no gas, oil or water wells within the proposed Pace Canyon fan portal area.

Contour Maps

Plate PC5-2 shows the existing topography and the proposed topography during mining and Plate PC 5-5 shows the topography after reclamation.

Findings:

The information provided by the Permittee meets the minimum regulatory requirements

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of the Maps, Plans and Cross Sections or Resource Information.

OPERATION PLAN

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:

Ground-water monitoring.

There are no groundwater sites on the Pace Canyon fan portal area other than the proposed UPDES discharge site. The Permittee commits that no water will be discharged prior to obtaining the necessary UPDES permit. The applicant has submitted a UPDES approved application for Dugout Canyon Mine in Appendix 7-6. The permit allow Canyon Fuel Company to discharge to Dugout Canyon and an unnamed canyon tributary of Grassy Trail Creek. It does not specify Pace Canyon. The UPDES permit will have to be obtained and specify the minimum monitoring requirements and maximum discharge values.

The Permittee has committed to submit all ground water monitoring data for the minesite by the end of the quarter following sampling. If analysis of any ground water sample indicates noncompliance with the permit condition, the Permittee will notify the Division and take immediate appropriate action.

Surface Water Monitoring

Operational surface-water monitoring protocols are given on pages 7-58 of the MRP. Sites PC-1 and PC-3, located above and below the disturbed areas and UPDES discharge points, are to be monitored quarterly for flow and operational field and laboratory parameters. Operational surface-water quality parameters to be monitored at the Dugout Canyon Mine are listed in Table 7-5 of the MRP. The operator elected to establish monitoring plan consistent with operational parameters in Table 3 of Tech-004 except that total alkalinity and hardness are not included.

For surface water, Tech-004 recommends one water-quality sample at low flow every fifth year, either during the year proceeding re-permitting or at midterm review, to be analyzed for baseline parameters. In addition to the regular monitoring, the MRP contains a

commitment to collect one water sample at each sampling point during low flow period every fifth year, during the year preceding re-permitting, to be analyzed for baseline parameters (p. 7-59).

Acid- and Toxic-Forming Materials and Underground Development Waste

Analyses presented in Chapters 6 and 7 of the MRP indicate that acid- and toxic--forming materials are not present within the permit area. Parameters defining acid- and toxic-forming materials will periodically be monitored as described in Chapter 6. In the event that acid- or toxic-forming materials are identified, they will be disposed of in appropriate waste-rock disposal facilities as described in Chapter 5 of the proposed Phase II MRP.

No storage of acid- and toxic-forming materials and underground development waste is planned for the Dugout Canyon Mine. (Although not part of this permit submittal, future development of a waste-rock disposal site has been contemplated.) Waste rock will not be used during reclamation, and soil substitutes will be used only if their chemical and physical properties are determined to be adequate through appropriate analyses.

Discharges Into An Underground Mine

In Section 513.600 of the PAP the Permittee states that no discharges will occur from the surface to mine workings underground.

Gravity Discharges From Underground Mines

No gravity discharges will be made from an underground mine in the permit and adjacent areas (p. 760).

Water-Quality Standards And Effluent Limitations

Discharges of water from disturbed areas will be in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining contained in 40 CFR Part 434 (p. 7-90).

Diversions: General

The Permittee has developed designs to implement several diversion structures (culverts and a berm) on the surface facilities to direct and control runoff. Plate PC5-2 identifies the culverts and berms. The designs for the diversion ditches are in Appendix 7-12.

The fan portal facilities will be constructed adjacent to Pace Creek. The main channel will not be obstructed or lined with a culvert. Three culverts, PCUC-1 PCUC-2 and PCUC-3,

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will direct undisturbed runoff around or under the fan portal pad. Culvert PCDC-1 will be used to direct decanted flows and overflows from the catch basin to the stream channel. And, another culvert will direct mine water discharge (UPDES) flows to the creek. The Permittee should label the culverts on Plate PC5-2, providing identification and size.

Plate PC7-5 shows a berm that will run the length of the disturbed area above the canyon road. It should prevent disturbed area runoff from running onto the road or leaving the disturbed area. Any flow from fan portal area will be collected by the berm, then directed to catch basin. There are no designs provided for the berm. The Permittee will have to provide the designs for the berm. Another berm circles the topsoil pile and contains its runoff. Design calculations have been provided for the berm in Appendix 7-12.

Stream Buffer Zones

Section 731.600 of the application identified that mining activities will take place within the 100 foot buffer zone of Pace Creek. None of the plates show a buffer zone. The Permittee should identify that a buffer zone will be established and where the buffer zone markers will be placed and when the markers will be erected. This information should be reflected on Map PC5-2 and PC5-5.

Sediment Control Measures

Measures to control sediment include the main sedimentation trap, containment berms, silt fences, and straw bales and riprap protection. The runoff and sediment control plan has been designed to ensure the operations within the disturbed area should not cause or contribute to degradation of water-quality or the stream channel quality. Riprap calculation have been submitted along with a cross-section for PCUD-2 showing a filter and graded riprap to a depth of 1 foot. The Permittee should identify on surface design maps (Plates PC5-2, PC7-4 and PC7-5) the locations where riprap will be placed.

It is not identified how runoff will be controlled from the dirt road bisecting the fan portal site. The permittee could consider constructing a water bar to divert water off the road at the upper end of the site and slope the road so the water is diverted to one side. The runoff generated on the road could be diverted to the sediment trap. The sediment trap would have to be sized to handle the extra runoff.

Siltation Structures: Exemptions

ASCA's are disturbed area, which cannot drain to the catch basin. Runoff from these areas are appropriately treated using silt fences and straw bales. They often consist of ditches, outcast slopes and riprapped outlets for the culverts. The fan portal area has an outcast area below the road that does not drain to the catch basin. Runoff from this area should be contained

by silt fences or straw bales. Map PC5-2 should identify ASCA areas and the type of siltation structure to contain sediment.

Discharge Structures

Culvert PCDC-1 will convey runoff in excess of the sediment trap capacity to a tributary of Pace Creek. This culvert is the sediment trap spillway.

Hydrologic Balance Protection.

The information provided by the Permittee indicates no water will be consumed for this operation. Mine water discharge has been addressed in the MRP for the Dugout Mine.

The Permittee has addressed this section by submitting plans to route and control undisturbed and disturbed runoff over the fan portal site. The Permittee has provided calculations and maps to establish design flows for the fan portal site. Plate PC7-6 identifies the undisturbed watersheds (PCWS-1, PCWS-2, PCWS-3 and PCWS-4) where runoff will accumulate and flow through culverts (PCUC-1, PCUC-2 and PCUC3) shown on Plate PC7-5.

Findings:

Information provided in the plan does not meet the minimum requirements of the regulations for this section. Prior to approval, the Permittee must act in accordance with the following:

R645-301-731-dwd. The Permittee will be required to submit updated information to clarify the to location and existence of hydrologic structures on respective text and maps.

The Permittee should identify the locations where riprap will be placed to protect disturbed channel areas and to protect out slopes of discharge pipes. These areas should be identified on surface design maps, Plates PC5-2, PC7-4 and PC7-5.

Map PC5-2 should identify the ASCA areas on the proposed fan portal site, and the type of siltation structure to contain sediment.

R645-301-742.312-dwd. There is no design provided for the berm shown on the west side of the new access road on Plate PC7-5. The Permittee will have to provide the designs for the berm.

R645-301-742.423-dwd. The Permittee shall submit plans to have adequate drainage control on roads.

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R645-301-731.600-dwd. The Permittee should identify that a buffer zone will be established and where the buffer zone markers will be placed and when the markers will be erected. This information should be reflected on Map PC5-2 and PC5-5.

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

The Permittee has supplied several maps, that show the boundaries of the proposed fan portal site.

Mining Facilities Maps

Plate PC5-2 shows the location of the proposed surface facilities.

Monitoring and Sampling Location Maps

Elevations and locations of monitoring stations used to gather operational water quality and quantity data are on Plate 7-1.

Certification Requirements

Cross sections, maps, and plans have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer.

Findings:

This review identified deficiencies in the maps. The deficiencies have already been listed under the Hydrologic Information section.

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, -301-764, -301-830.

Analysis:

During reclamation of the Pace Canyon fan portal site two drainages will be affected. A dirt road exists in the canyon and crossed the channels of the drainages. The Permittee will place culverts in the road during mining operations, but remove them at reclamation, since they are considered a temporary structure. The channels will be reconstructed so that a swale will provide access and direct flow through the channel. Designs and cross-sections are shown in Appendix 7-12.

Findings:

The Permittee has supplied sufficient information to met the minimum regulatory requirements of the General Requirements section.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -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:

The fan portal area is relatively small at 2.7 acres. At mine closure the fan portal area will be reclaimed back to approximate original contour. Channels will be recontoured. Plate PC5-5 identifies the configuration of channel PCRD-1. Plate PC7-5A show the different areas that will be stabilized by gouging and reseeding, graveled, riprapped, or mulched. The Permittee has provided riprap calculations for the reclaimed channel PCRW5-2. It appears that this channel is the only one that will be riprapped during reclamation. In Appendix 7-12 the Permittee provided calculations for disturbed channels that all exceeded 5.0 ft/s. These areas should be evaluated for riprap design for reclamation. The Permittee does not show proposed riprap areas on any maps.

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Findings:

Information provided in the plan does not meet the minimum requirements of the regulations for this section. Prior to approval, the Permittee must act in accordance with the following:

R645-301-760, The Permittee will be required to evaluate areas that have been disturbed along stream channels. Disturbed channels reaches that will receive flows with velocities greater than 5 ft/s need to be protected by riprap. These areas should be shown on the reclamation map.

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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:

Ground-water monitoring.

No groundwater monitoring sites, other than the UPDES site, exist on the fan portal area.

Since the Pace Canyon intake and exhaust portals are in the lower seam and there is an in-mine connection between the two seams, the reclamation of the portal and the shaft require a discussion of any water issues with the sealing and final reclamation. A map showing the final piezometric water level should be put in the plan.

Surface-water monitoring.

Data will be collected from the sedimentation pond discharge point in accordance with the UPDES permit. Data will be collected under the surface water monitoring program every year until bond release (p. 7-59). Locations of surface-water monitoring sites are on Plate 7-1.

Acid and toxic-forming materials.

Numerous places in the text describe how there are no acid- or toxic-forming materials at this site. Included are Chapter 6, Geology, Chapter 5, Engineering, and Chapter 7, Hydrology. It appears this is not a problem at this site.

Transfer of wells.

No wells exist within the fan portal area.

Discharges into an underground mine.

No discharges of surface water will be made to an underground mine in the permit and adjacent areas (p. 7-60).

Gravity discharges.

No gravity discharges will be made from an underground mine in the permit and adjacent areas (p. 7-60).

Water quality standards and effluent limitations.

Discharges of water from disturbed areas will be in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining contained in 40 CFR Part 434 (p. 7-86).

Diversions.

All corrugated metal culverts will be removed during reclamation and the canyon is restored to its approximate original contour. Disturbed areas along stream channels will be rebuilt. The Permittee has been asked to evaluate the expected velocities where the stream channel has been disturbed to see if they should be riprapped. The required 100-year, 6-hour design event was used to size the channels.

The overall impact of the stream reclamation will be to provide a channel that is significantly improved over that which was left by pre-SMCRA mining and a channel that will promote riparian revegetation. It should be noted that no fish have been found in Pace Creek.

Stream buffer zones.

The Permittee has been asked to identify the stream buffer zone on operational maps and state the distance disturbance will take place, away from the stream channel. The Permittee will have to provide this same information for the reclamation phase.

Sediment control measures.

The sediment control measures during reclamation include silt fences and straw bales, which are considered adequate when used as described.

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Siltation structures.

At reclamation the Permittee will remove the sediment trap and recontour the site. The Permittee plans to use siltation structures, such as straw bales and silt fences to treat any sediment yield during and after the site is regarded to approximate original contour.

Other treatment facilities.

The Permittee will use gouging, mulch and reseeding, to establish vegetation, to control erosion and contribution of sediment to stream channels during and after reclamation.

Discharge structures.

No discharge structures or impoundments will exist at the fan portal site after it has been reclaimed.

Casing and sealing of wells.

There are no wells associated with the Pace Canyon fan portal.

Findings:

Information provided in the plan does not meet the minimum requirements of the regulations for this section. Prior to approval, the Permittee must act in accordance with the following:

R645-301-631, The Permittee will be required to establish and maintain stream buffer markers during the reclamation phase to identify the limit where construction activities will take place. These areas should be identified on the reclamation map.

The permittee shall submit a map showing the final piezometric water level in the mine in relationship to the coal seams and portals. The map shall identify any interconnection of in mine water between coal seams and sealing problems and final reclamation.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Analysis:

Affected Area Boundary Maps

The Permittee has supplied Plate PC7-5A, identifying the sediment control area during reclamation. Plate PC5-5 identifies the reclamation topography and cross-sections. Deficiencies listed in the above will require updates to these maps.

Reclamation Backfilling And Grading Maps

Plates 5-5 and Plate PC7-5A show the backfilling and grading plans.

Reclamation Facilities Maps

No facilities will be left at reclamation.

Final Surface Configuration Maps

Plates PC5-5 and Plate PC7-5A show the final surface configuration

Certification Requirements.

Cross sections, maps, and plans have been prepared by, or under the direction of, and certified by a qualified, registered, professional engineer.

Findings:

Deficiencies were listed in the Reclamation Section

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The Permittee has indicated under the Flooding or Streamflow Alteration section of the MRP a likelihood of mine discharge from the Pace Canyon fan portal. There may be temporary hydrologic impacts as mine water is discharged into Pace Creek, that was not contributed before. The volume of streamflow will increase in Pace Creek. Potential impacts to the creek could include displacement of fines on channel bottom and minor widening of the channel, depending

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on the amount of water discharged from the mine. Riprap will be placed at the end of the discharge pipe to dissipate energy and protect the channel from erosion. Since there is a potential for changes in the channel morphology, the Permittee will have to submit cross-sections of the stream channel, sufficient to establish baseline characteristics prior to discharging mine water.

Findings:

The Division will update the CHIA to include the potential affects of surface disturbance and mine water discharge to Pace Creek when baseline stream channel cross-sections are submitted.

RECOMMENDATIONS:

Do not approve the amendment until the Permittee addresses all deficiencies.