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

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July 19, 2002

CERTIFIED MAIL
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Jay Marshall, Resident Agent
Utah American Energy Inc.
P.O. Box 986
Price, Utah 84501

Re: Determination to Deny Application in Part, New Permit Application, Lila Canyon Extension, UtahAmerican Energy, Inc. (UEI), Horse Canyon Mine, C/007/013-PM02B-1, Outgoing File

Dear Mr. Marshall:

The Division has completed a technical review of your permit application package for the Lila Canyon Extension to the Horse Canyon Mine. A copy of our Technical Analysis (TA) is enclosed which outlines the Division's findings with regard to technical adequacy. The TA serves as the Division's written determination, mandated by Regulation R645-300-131.100 and by the Order III of the Findings, Conclusions and Order Cause No.C/007/013 dated June 18, 2002. As required by the Order and by UCA 40-10-14 (1) the Division hereby notifies you that your application is denied in part because it is not considered to be technically adequate. A number of deficiencies still exist in your application, which must be corrected prior to our granting approval of the application.

Much thought and effort went into the production of the Technical Analysis. The comments made by the public, received by April 22, 2002 (end of public comment period) and comments made during the Informal Hearing on May 21, 2002 by the Southern Utah Wilderness Alliance (SUWA) were considered and have been noted and discussed throughout the TA.

The Division will not grant the application unless further information is received as outlined in the attached TA. In order for us to further process your application you should submit the required information/modifications by October 21, 2002.

If you have any questions, please call Daron Haddock, Permit Supervisor at (801) 538-5325, Priscilla Burton, Co-Team Lead at (801) 538-5288, or Dana Dean Co- Team Lead at (801) 538-5320.

Sincerely,

Mary Ann Wright
Associate Director, Mining

an
Enclosure
cc: Lowell P. Braxton, w/o
Clyde Burrell w/o
Herb McHarg (Certified Mail 7099 3400 0016 8895 6641)
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Jim Fulton, OSM w/o
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Robert Morgan, DNR w/o
Tom Faddies, SITLA w/o
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Bryant Anderson, Emery County Planning & Zoning w/o
Elise Erler w/o
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State of Utah

Utah Oil Gas and Mining

Coal Regulatory Program

Horse Canyon Mine
Lila Canyon Extension
C/007/013-PM02B-1
Technical Analysis
July 19, 2002

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TECHNICAL ANALYSIS

INTRODUCTION

The Horse Canyon Mine is in the Book Cliffs coalfield in Emery County near East Carbon and Sunnyside, Utah. The topography of Horse Canyon and Lila Canyon are shown on the Cedar and Lila Point 7.5 Minute Quad maps, produced by the Geological Survey of the U.S. Department of the Interior, 1985.

In its location on the western slope of the vast and largely undeveloped Tavaputs Plateau, the proposed area of development includes some areas that are designated as Wilderness Study Areas and some designated as Wilderness Inventory Areas. The proposed Lila Canyon portal site lies just five miles from State Highway 6 and is immediately adjacent to an "unimproved" road (Plate 1-1).

The existing Mining and Reclamation Plan (MRP) for Horse Canyon is referred to as Part A and this application for Lila Canyon Extension is referred to as Part B. The permit area for Horse Canyon Part A is 1,328 acres and the proposed permit area for Lila Canyon Extension Part B is 4,704 acres. The combination of Horse Canyon Part A and Lila Canyon Extension Part B would bring the total new permit area to 6,032 acres.

The Lila Canyon Extension (Part B) site has a southwest aspect at the base of the Book Cliffs. The pediments are composed of sandstone over shale with a prevalence of cobbles, stones and boulders. It is an erosional environment. The soil receives protection from surface rocks, vegetation and biologic soil crusts.

Salt desert shrub and juniper are the predominant vegetative communities.

ACRONYMS

AO.....DAQ Approval Order
AOC.....Approximate Original Contours
AML.....Utah Division of Oil, Gas and Mining, Abandoned Mined Lands Program
BLM.....United States Bureau of Land Management
BOR.....Bureau of Reclamation
CHIA.....Cumulative Hydrologic Impact Assessment
DAQ.....Division of Air Quality
DEQ.....Department of Environmental Quality
DOGM.....Utah Division of Oil, Gas and Mining
DSH.....Strych fine sandy loam variant, 3 to 8% slope
DWQ.....Utah Division of Water Quality
DWR.....Utah Division of Wildlife Resources
Division.....Utah Division of Oil, Gas and Mining
EA.....Environmental Assessment
ECDC.....East Carbon Development Corporation
EIS.....Environmental Impact Statement
IPA.....Intermountain Power Agency
JBR.....JBR Environmental Consultants Inc.
MDC.....Minerals Development Corporation
MRP.....Mining and Reclamation Plan
MSHA.....Mine Safety and Health Administration
NRCS.....Natural Resources Conservation Service
OSM.....Office of Surface Mining
PAP.....Permit Application Package
PE.....Registered Professional Engineer
PHC.....Probable Hydrologic Consequences
PHDI.....Palmer Hydrologic Drought Index
R2P2.....Resource Recovery and Protection Plan
RCRA.....Resource Conservation and Recovery Act
RDCC.....State of Utah Resource Development Coordinating Committee
SBG.....Strych bouldery fine sandy loam, 5 to 15% slopes
SCS.....Soil Conservation Service
SHPO.....State Historic Preservation Office
SITLA.....School and Institutional Trust Lands Administration
SMCRA.....Surface Mining Control and Reclamation Act
SUALG.....Southeastern Utah Association of Local Governments
SUWA.....Southern Utah Wilderness Alliance
TA.....Technical Analysis
TDS.....Total Dissolved Solids
TSS.....Total Suspended Solids
UEI.....UtahAmerican Energy, Inc.

ACRONYMS

UPDES .....Utah Pollutant Discharge Elimination System
USDI .....United States Department of Interior
USFWS.....United States Fish and Wildlife Service
USGS .....United States Geological Survey
VBJ .....Strych very bouldery fine sandy loam, 5 to 15% slope

SUMMARY OF DEFICIENCIES

The Technical Analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of 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 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:

Regulations

R45-301-731 If mine discharge is routed to the sediment pond, the Permittee must submit design plans for a sedimentation pond to contain and control the runoff from the mine pad area for treatment of the 10 year-24 hour precipitation event falling on the mine pad and treatment of at least a 500 gpm mine water discharge. 157

R45-301-731 Prior to mining, the Permittee must assess the channel morphology and characteristics of channels downstream from proposed UPDES monitoring sites. The Permittee must assess the potential impacts of mine water discharges to downstream channels from the discharge site to the Price River. In the PHC, the Permittee must describe the impacts to downstream channels. 157

R45-301-731 The Permittee must evaluate the impacts from mine discharges and sedimentation pond discharges on receiving channels prior to mining. The Permittee must assess the level contaminants such as dissolved salts, and toxic elements (such as boron and selenium), and channel sediments will cause downstream of the permit area to the Price River. A model using mine water discharges ranging from 0 to 500 gallons per minute shall be evaluated to determine the potential of impacts to the Price River and the fishery. In the PHC, the Permittee must describe the probable impacts from mine water discharges impacting the Price River and fishery from high mine water discharges, chemical and sediment contamination. 156

R45-301-731 The Permittee must submit a copy of the approved UPDES permit. 157

R45-301-731 The Permittee must submit appropriate plans to consolidate discharge points by routing mine water through the sedimentation pond or, if meeting UPDES limits, discharging in the same area as the sedimentation pond discharge. This action should reduce impacts to

stream channels and reduce monitoring and reporting of data. 157

R45-301-731 The Permittee must submit plans for the mine water discharge system prior to mining. The plan will specify pipe size to handle at least 500 gpm, routing, discharge area and designs for erosion control at the discharge area. 157

R45-301-731, The Permittee shall provide updated facilities maps to show the change in sedimentation pond location, change in culvert plans (UC-1 and UC-2), change of the mine discharge system, sedimentation pond discharge system, disturbed area drainage reconfiguration and UPDES discharge structures 165

R45-301-731, The Permittee will submit affected area maps showing the relationship of the mine permit to adjacent and downstream drainages. 165

R45-301-731.600, The Permittee shall submit maps depicting a 100 foot buffer zone along perennial and intermittent channels. 165

R641-301-761 The Permittee must submit pre-disturbance, operational and reclamation profiles and cross sections of the stream channel both upstream and downstream of the sediment pond, using an appropriate scale to show reclamation design. 184

R645-300-121.150, The Permittee must provide public notice of the intention to conduct mining within 100 feet of the outside right-of-way of the public roads and timing and duration of closure during installation of a culvert in the existing public road 24

R645-300-132.110, Evidence that the violation at Belmont Coal (OH permit D1020) has been corrected or is in the process of being corrected to the satisfaction of the agency that has jurisdiction over the violation must be provided to the Division 20

R645-301- 121.200, The PAP (section R6450301-320) infers that all vegetation resources of the entire Lila extension, except a 400-acre area have been described. The information presented does not support that statement. The Permittee must clarify what areas have been described and describe how the 400-acre area not surveyed (south face of the "Bookcliff") is similar... 37

R645-301-113.300, Appendix 1-3, Violation Information, needs to be updated for the period February 1999 to February 2002 to include at least three years of violation history for the Permittee and any subsidiary or affiliate of the Permittee. 20

R645-301-116.100, The Permittee must clearly state the anticipated number of acres of surface disturbance to be affected during the life of the mine and statements of the number of disturbed acres must be consistent within the PAP. 31

R645-301-120, (1) Page 25 of the PAP repeats several paragraphs on page 22, the plan must be revised to be clear and concise. (2) "Contemperance" seed mixture (page 29) and

"contemperance" (contemporaneous?) revegetation (page 30) must be described or clarified. (3) The entire section 356 is confusing and contradictory compared to other statements in section 341.250. The PAP must be modified to make the revegetation success standards clear and concise. (4) The process requires that DOGM must consult with DWR concerning shrub species and ratios to be transplanted. The statement concerning transplanted species and ratios are to be determined by the BLM and DWR is confusing to the process and must be modified. The species and planting rates must be provided..... 189

R645-301-120, Section 333 states; it has been demonstrated that subsidence has little direct impact on wildlife or vegetation with the exception of escarpment failure and disruption of ground water. Data must be provided to substantiate this claim or the statement amended in the PAP. 115

R645-301-120, The PAP discusses a coal prospect in Lila Canyon. The PAP must be changed to provide the correct information concerning coal mining in Lila Canyon..... 49

R645-301-120, The PAP statement "the operational activities at the site impact the wildlife slightly but most of the wildlife in the area will either accept or adjust their behavior to coexist with the operations" (Section 333.) should be amended or further explained in the PAP. 115

R645-301-120, The PAP states (page 10) that usage by sheep is considered infrequent and minimal and there is abundance of other suitable similar habitat. This statement must be substantiated or amended..... 115

R645-301-120, The Permittee has committed to working with USFWS and DWR in analyzing the potential and construction of alternative nest sites. This statement confuses the process required by the coal regulations. The Permittee must revise this statement to read that the mine will work with the Division who will then consult with USFWS, DWR and BLM for mitigation requirments (Section 322.220). 115

R645-301-121.100, Table 3-1 and Section 322.210 in the PAP must be updated. The peregrine falcon is not a threatened species. The map in Appendix 3-5 has a mislabeled nest; nest 946 is labeled as 820..... 42

R645-301-121.100, Plate 4-4 must be updated to reflect recent changes made by the BLM (January 2002) in the boundary of the Desolation Canyon Inventory Unit..... 49

R645-301-121.200 and R645-301-322.100, The process requires that DOGM must consult with DWR and USFWS. The statement that EIS will consult with these agencies is confusing to the public and must be changed to reflect the permitting process. 43

R645-301-121.200 and R645-301-521.180, The Permittee must give a complete list of all facilities and structures in the Lila Canyon disturbed area in section 520 of the PAP and on Plate 5-2. Items not listed include but are not limited to: power poles, potable water tank,

process water tank, sewer tank and drain field, ventilation fan, truck scale, truck loadout, underground pipes, chain link fence, asphalt parking lot, fuel tanks, rock dust bins, culverts, and explosive magazines..... 95

R645-301-121.200 and R645-301-521.190, The Permittee must 1) state in the text of the PAP where the inert rock slop material will be placed in the refuse pile and where coal mine waste that does contain coal will be placed, 2) show where coal mine waste suitable for structural fill will be placed and where material containing coal will be placed in the refuse pile. The maps and cross sections include, but are not limited to: drawing 5-7A and 5-7B, and Figure 1 and Figure 2 in Appendix 5-7..... 139

R645-301-121.200, (1) The Permittee must use the term "rock-slope material" in conjunction with, or replaced by, a term defined by the Regulations. (2) The Permittee will list separately the amount of rock slope material and coal processing waste material in Table 1 in Appendix 5-7. (3) Section 528.320 distinguishes the coal-free slope rock material used as structural fill for the shop – warehouse from the material that will go into an apparently separate refuse pile. The Permittee must 1) state in the text of the PAP where the inert rock slope material will be placed in the refuse pile and where coal mine waste that does contain coal will be placed, 2) show where coal mine waste suitable for structural fill will be placed and where material containing coal will be placed in the refuse pile. The text should make it clear that these two areas are adjacent and conjoining and will be treated as one area or structure, especially during reclamation (4) In Section 537.200, the distinction, or similarity, between low areas to be used as pads and the refuse storage area (sic. plural "pads" – there is only one pad shown on Figure 1 of App. 5-7 and Plate 5-2) is confusing and needs clarification. (5) The Permittee must clarify Section 536.300 to be consistent with Section 537.700. The Sections might appear contradictory in stating that there is unlikely to be any coal in the slope rock material, but treatment is planned for slope rock material containing coal. (6) Section 536.600 isn't clear as to how and why slope rock material placed in the pads will be spread out and graded; this leaves the impression it will not be buried as part of the refuse pile reclamation but rather spread across the site. Section 537.200 clarifies this, but 536.600 should also be clear. 140

R645-301-121.200, (1)The Permittee must provide a legible copy of the first page of the 1989 Water Monitoring Data in Appendix 7-2. (2) The Permittee must clarify the basis for the interpretation of the existence of a ground-water divide in the saturated zone and the implications for the hydrologic balance. (3) The Permittee must clarify and discuss the source of the information on the Geneva exploration tunnel, and the amount of water known to be in the entries and the amount that will be pumped when the Lila Canyon Extension intercepts the tunnel..... 81

R645-301-121.200, The Permittee makes reference to the Lila Canyon Extension Permit Area (LMPA) throughout Chapter 6. The Division understands this submittal is an extension to the Horse Canyon Mine permit. The Permittee needs to use clear and consistent language in identifying this submittal. 62

R645-301-121.200, The Permittee must update the statement on Page 32 (Ch. 7) that the springs have not been monitored since 1995..... 156

R645-301-121.200, -624.100, The Permittee needs to incorporate permeability values for the Sunnyside Sandstone, that were published by Balsley in 1981 and that are referred to in the PHC, into the PAP. 63

R645-301-121.200, 624.100, 130, Saturated strata in the lower Blackhawk Formation are separated from the perched zones in the upper Wasatch Group by upper Blackhawk, Price River and undifferentiated North Horn-Flagstaff Formations Strata that contain approximately 80 percent clays, shales, siltstones, and mudstones (Ch. 7, Page-7). The PAP needs to identify the sources of the information on percentage of fine-grained sediments in the stratigraphic column and on swelling clays. 63

R645-301-121.200, -624.100, Minor water inflows from the exploration entries is anticipated (Page-40, Ch. 6); this reference to exploration entries is unclear and confusing because there are no anticipated exploration entries identified in the Lila Canyon Extension. The Permittee needs to clarify whether this refers to the Geneva tunnel or other exploration entries. 62

R645-301-121.200, -624.100, The PAP states on page 11 (Ch. 6) that the portion of the Sunnyside Sandstone which underlies the Lower Seam is "occasionally considered to be a potential aquifer"; the basis or source of this consideration appears to be the ability of this unit to transmit ground water in the Sunnyside area, but this is not clear. The statement itself is unclear and confusing, in particular the meaning of "occasionally considered to be a potential aquifer" in this context. The Permittee needs to clarify and substantiate these statements..... 63

R645-301-121.200, -728, The PHC must contain the following findings: (1) The Permittee must include an assessment of the probable hydrologic consequences to the Range Creek drainage in the determination of the PHC. (2) The PHC determination does not include findings on whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies. The Permittee needs to add this finding to the PHC. (3) The Permittee states that downstream effects from discharging water from the mine will be similar to those experienced at the Horse Canyon Mine. The Permittee needs to discuss, describe, or quantify what the impacts were at the Horse Canyon Mine. (4) It is not clear what hydrologic resources might be impacted. The Permittee needs to determine the PHC to Lila, Coleman, and other intermittent washes. (5) The Permittee needs to determine pre-mine, pre- discharge characteristics of Lila Wash. (6) The Permittee needs to discuss in the PHC the springs and stream channels being monitored in the Lila Canyon Extension area. (7) The Permittee needs to evaluate current baseline data in determining the PHC. (8) The Permittee needs to evaluate probable impacts to water quality and water quantity with respect to water-right users and wildlife in determining the PHC. (9) In the PHC, the Permittee needs to address the issue that has been raised concerning increasing salinity in the Colorado River by discharging water from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the

Colorado River. This should include a determination of the probability of mine discharge reaching Grassy Trail Creek and the Price River. (10) The Permittee must characterize the channels and flow patterns within each drainage basin, describe all water uses associated with those basins, potential impacts to those uses and describe the total hydrologic impacts to surface water resources on and adjacent to the permit area based on sampling, monitoring, characterization and studies. (11) The Permittee must use this information to summarize the potential for mitigation and hydrologic impacts on and off the permit area in the PHC. (12) The PHC must describe all probable hydrologic consequences from subsidence, discharges to stream channels, impacts to channels, sediment loading, salt loading and impacts to aquatic wildlife. (13) The Permittee must survey and describe the surface water resources and drainage of Range Creek and address probable impacts from mining in the PHC. (14) The Permittee must provide adequate data, including water rights, to make a determination of the probable hydrologic consequences to the Range Creek drainage. (15) The Permittee states that downstream effects from the discharging of water from the mine will be similar to those experienced at the Horse Canyon Mine. The Permittee must provide discussion, description, or quantification of what the effects were at the Horse Canyon Mine. (16) The Permittee must address the probability of increasing salinity in the Colorado River from water discharged from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River. This should include a determination of the probability of mine discharge reaching the Price River. (17) The Permittee must determine pre-mine, pre- discharge characteristics of Lila Wash. 82

R645-301-121.200, 731.111, 731.121, Because the PAP uses the Sunnyside Mine as an example of why there is no need to perform further analysis for acid- and toxic-forming materials, the PAP needs to better explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid acid- and toxic-drainage, such as that evident at the Sunnyside Mine refuse pile..... 63

R645-301-121.200, The Permittee must clearly label the county road from Highway 6 to the mine site as a county road on maps. 126

R645-301-121.200, The Permittee must state that the county road that is located within the disturbed area will be left after reclamation. 181

R645-301-121.200, The Permittee must state the information about the roads and conveyors in a comprehensive form in one location in the PAP. At present, the information about the roads and conveyors is scattered throughout the PAP..... 126

R645-301-121.200, The Permittee needs to reconcile the contradictory statements on Page 40 that water inflow from fractures is expected to be insignificant and on Page 41 that faults may contain substantial water..... 62

R645-301-121.300, The Permittee needs to incorporate or reference all pertinent information from the existing MRP into the Lila Canyon Extension PAP. 25

R645-301-130 The Permittee shall reevaluate the PAP to identify sources of opinion, substantiate comments with specific, detailed information, or strike comments without basis. 26

R645-301-130, The PAP must contain the names, organizations and qualifications of all contributors to the application, including but not limited to the South Lease vegetation study, the Mexican spotted owl surveys, the soil survey, and consulting hydrologists, engineers and geologists. 25

R645-301-142, The Permittee should delineate coal mining and reclamation operations that occurred prior to August 3, 1977 (Pre-SMCRA) from those that occurred prior to August 3, 1977 but were continuously used, and those that occurred after August 3, 1977 (Post-SMCRA 26

R645-301-222.400, The Permittee should provide baseline soils analyses of total nitrogen and available phosphorus for the six soil map units. 47

R645-301-231.100, The PAP must describe a method of ensuring that the soil is neither too dry, nor too wet during topsoil removal operations. This may entail timing of operations during a favorable season or watering the soil to optimum moisture content between 10 and 15% before beginning removal. 120

R645-301-231.400, The Permittee must accurately relate the dimensions of the topsoil pile in Section 232.100 for a 26 foot high pile as calculated in Figure 1. 120

R645-301-232.200, Topsoil salvage described in the PAP should include salvage of the surface layer of topsoil from 0 – 4 inches along with the vegetation to be set aside for application to the surface of the topsoil pile after gouging 120

R645-301-232.700, The Permittee must provide in the next submittal the results of the conveyor pan feasibility analysis committed to in Section 232.710 in order to apply the best technology available to protect the topsoil where it will not be salvaged on the rocky slopes below the conveyor. 120

R645-301-234.220, The Permittee should evaluate an alternate location for storage of fan portal topsoil 120

R645-301-234.230, The topsoil pile construction should include the replacement of the surface 0 – 4 inches of the surface soil to the surface of the gouged pile, immediately followed by irrigation to ensure good contact with the topsoil pile. 120

R645-301-242.120, The PAP should eliminate from the equipment list any equipment that would create excessive compaction of the reclaimed surface. i.e. road grader. 180

R645-301-243, The PAP should outline the number of samples to be taken and the parameters to be analyzed during analysis of the topsoil stockpile before its use during reclamation and note in Appendix 5.8 that fertilizer choice and application will be based upon this testing. 180

R645-301-244.200, The PAP should describe the inoculation of the site with biologic soil crusts. 191

R645-301-251, The PAP should reference Plate 2-3 Topsoil salvage and Replacement, to illustrate and clarify the discussion found in Section 242.100. 180

R645-301-321.100, The disturbed area communities must be defined and sampled by a person qualified in the field of plant taxonomy and quantitative ecology and according to the Division's Vegetation Information Guidelines. Biologic soil crusts must be included in the vegetation sampling. Vegetation sampling must be performed during a time of greatest species diversity, preferably in late spring. Raw data sheets must be provided. 37

R645-301-322, The application must describe the vegetation surrounding each spring and address amphibian occurrence. 43

R645-301-322, The entire area that may be affected and adjacent areas must be surveyed for raptors. The southwest section of the permit area appears as suitable cliff habitat. This area is outside the subsidence buffer zone but within the permit area and immediately adjacent to the buffer zone. Other rock outcrops are within the permit area and require surveys. 42

R645-301-322, The Mexican spotted owl survey (Appendix 3-4) must be corrected to reflect the actual survey and a new plan must be submitted to survey all areas shown in the 1997 Mexican spotted owl habitat model. 42

R645-301-322, The PAP must be changed to state the actual areas surveyed for raptors. 42

R645-301-322.210, Surveys and/or habitat assessment must be provided for the bald eagle, San Rafael cactus, Winkler cactus, Wright fishhook cactus, Book Cliffs blazing star, and Creutzfeldt flower. Additional impact assessment must be provided for the bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker. 43

R645-301-322.230, A survey should be conducted for water sources along the face of the Book Cliffs. The seeps in the southwest canyon are significant to Rocky Mountain bighorn sheep and a commitment to monitoring throughout mining must be made. 43

R645-301-323.400, The vegetation maps of the permit and disturbed area must be corrected to include greater detail, adjacent areas, and correlate to each other. The plant communities found within the permit area must be described, including any associated with seeps, springs or other water sources. 37

R645-301-331, The interim seed mixture contains several aggressive spreading non-native species. Yellow sweetclover, alfalfa, and forage kochia must be removed or replaced in the interim seed mixture. 121

R645-301-332, The effects of subsidence on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss. Other effects of subsidence must also be discussed particularly in areas with less than 1000 feet of cover. The effects to snakes and other wildlife species must be addressed..... 115

R645-301-333, The PAP must describe all efforts to minimize disturbances to wildlife and wildlife habitat. This can be done by protecting the drainage immediately south of the disturbed area from construction. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this area when there are islands of undisturbed areas on the pediment. 115

R645-301-333, The PAP must include a discussion of the possible effects of a mine water discharge to the endangered fish of the Upper Colorado River Basin and methods of minimizing those effects. 114

R645-301-341, All references to disking as a seedbed preparation method must be removed from the PAP. 189

R645-301-353.120, The final reclamation seed mixture must be modified to replace the diversity found on site and remove the introduced species. 189

R645-301-353.140, The PAP must describe practices used to reestablish biological soil crusts. 189

R645-301-356, The PAP must describe success standards that will be used to judge the success of the reclamation. This requirement can only be met once all the resource data is complete. 189

R645-301-358.530, The PAP must describe how hazardous materials (i.e. oil and grease) will be removed from the pond and provide greater detail of the daily monitoring to ensure no negative impacts to wildlife will occur. 115

R645-301-411.140, The Permittee must provide the following: (1) The survey conducted by Rebecca Rauch, Miller in 1991 and Montgomery in 1999 must be included in the PAP, or reference removed from the PAP. (2) Site 42EM2517, a Fremont component rock shelter, must be shown on Plate 4-3 and discussed in the PAP. (3) The EA states that seven sites are found in Little Park Wash, only two are identified on Plate 4-3. Copies of <u>all</u> historic resources studies conducted in the permit area must be provided and all sites identified on Plate 4-3. (4) Studies conducted in spring 1998 as shown on Plate 4-3 must be provided and

the comment removed from the plate. 33

R645-301-521, The Permittee must explain and clarify the discrepancy between the acreage given for permit area on page 11, 14, Table 1.1 and Table 4.2 31

R645-301-521.141 and R645-301-521.190, The Permittee must state in the PAP text and on Plate 1-1 that Plate 1-1 is the official permit boundary map and it will be used to clarify any questions about the permit boundaries 31

R645-301-521.190, The Permittee must explain the environmental, safety, technical/engineering and economic reasons for building new portals and facilities. 95

R645-301-521.190, The Permittee must provide documentation on usage and ownership for the unimproved road from Horse Canyon to the mine site, County Road #126 from Highway 6 to the Lila Canyon Extension, and RS2477 south of the mine site 99

R645-301-521.565, The Permittee must include the topsoil pile as a topographic feature on the cross sections of Plate 5-7A-2 120

R645-301-525.110, The Permittee must show the precise location of each seep, spring, stock pond, existing water right and dirt road on Plate 5-3 108

R645-301-525.120, The Permittee must state what impact subsidence could have on dirt roads in the subsidence area and what mitigation methods will be used if damage occurs, including accessing the site. 108

R645-301-525.430 and R645-301-525.490, The Permittee must state what the possible effects of subsidence will be in areas of shallow cover (less than 1,000 feet), in particular stream channels. The Division is specifically interested in potential damage to Little Park Wash and the unnamed stream in the southwest corner of the permit area; the re-assessment of the subsidence control plan; and possible mitigation methods. 108

R645-301-525.490 and R645-301-525.540, The Permittee must demonstrate why a 21.5° angle-of-draw is valid for the Lila Canyon Extension instead of 30°. The 30° is assumed by the Division for all material damage unless demonstrated otherwise. 108

R645-301-526.110 and R645-301-526.115, The Permittee must describe the existing structures within the permit area that will be used for coal mining and reclamation in the existing structures section of the PAP. Those structures include public, and possibly private, dirt roads and vehicle ways that will be used for monitoring and sampling programs and the existing county road and culvert within the disturbed area boundary that will be upgraded. 96

R645-301-526.116, The Permittee must describe how public will be protected when the undisturbed drainage culvert and sediment pond spillways are installed within the disturbed

area under the county road. 99

R645-301-527.200, The Permittee needs to describe each of the conveyors that will be used, including but not limited to: the 60-inch conveyor from the portal to the stacking tube, the conveyor in the reclaim tunnel, the 48-inch conveyor from the stacking tube to the crusher, the conveyor from the crusher to the storage bin and the conveyor from the storage bin to the truck loadout. 126

R645-301-527.210, At a minimum the description of each mine road must include the road width, the average and maximum road gradient, road surfacing materials, the type of fill that will be used, if any culverts or bridges will be used, the drainage ditches and drainage structures. 126

R645-301-528, (1) The Permittee must describe how the coal mine waste that comes from the rock slope tunnels will be compacted to provide adequate support for the surface structures. At a minimum, the Permittee must state the lift thickness, the minimum compaction standard and what type of equipment can achieve the compaction standard. (2) The Permittee must explain the discrepancy in the design capacity of the refuse disposal site given in Section 520 which is conflicted by the information in App. 5-7 and provide estimation of projected waste disposal needs based on drill logs, historic information from the Horse Canyon Mine and current market requirements. 140

R645-301-528.323.1, The Coal Mine Waste Fire Extinguishing Plan (Appendix 5-3) must describe an alternative source of soil material for fire suppression, use of the salvaged subsoil is not acceptable. 139

R645-301-528.332, The Permittee must describe asphalt disposal. 139

R645-301-528.350, The Permittee must describe the methods that will be used to place the coal mine waste in the refuse pile to ensure that the material does not constitute a fire hazard. At a minimum, the Division needs to know the maximum lift thickness and how the material will be compacted to reduce air circulation. 139

R645-301-532.100, The Permittee must either eliminate the disturbance to the drainage in the southern end of the disturbed area by the truck turn around loop or show good cause. 126

R645-301-532.100, the Permittee must explain why Horse Canyon facilities are not being reclaimed concurrently with the development of the Lila Canyon Extension. 95

R645-301-536.900, (1) The Permittee must describe how all surface structures will be protected from any potential hazards associated with the refuse pile. The Division is interested in how the shop/warehouse will be protected from potential hazards including settling and coal mine waste fires. (2) The Permittee must describe how the refuse pile will be designed so as not to impede drainage or impound water. 140

R645-301-542 The Permittee will submit reclamation maps portraying reclamation at Phase I to illustrate the reclaimed surface area configuration after all mining structures are removed, and at Phase II to illustrate the reclaimed surface area configuration after all hydrologic structures are removed. 193

R645-301-542.600, The Permittee must state why the county road will be compatible with the postmining land use. 181

R645-301-542.742, The PAP should clearly indicate which road surfacing materials will be buried under a minimum of two feet of cover and which fall under the requirements for four feet of cover. 139

R645-301-553, The Permittee must describe the location of cut slopes that will be left after final backfilling and grading. The Permittee will also explain why those cut slopes will be left. See cross-section 16+00 in 5-7B-1 for details. 177

R645-301-553.252, Section 232.500 of the PAP should specify the use of subsoils as cover over the entire waste rock site, including rock slope waste and refuse and the Permittee must explain what contaminants will be monitored in the stored subsoil and how the monitoring will take place. 120

R645-301-622, -624, -722, -724, To help evaluate potential impacts in the Range Creek drainage, the Permittee needs to extend information on geology and hydrology, including cross-sections and maps, to include the Range Creek drainage 63

R645-301-623, -624.130, -724.500, -725.200, Resource maps and plans and site specific information are based on, among other sources, the old PAP for the Kaiser South Lease area. The Permittee has a copy of the Kaiser South Lease PAP. Relevant geologic information from the Kaiser South Lease PAP - such as data from the alluvial piezometers - should be incorporated into the Lila Extension PAP, be used in determining the PHC, and be available to the Division to use in preparing the TA and CHIA. 63

R645-301-624.100, As mining progresses down dip, localized fracture systems and faults may contain substantial water. This water is thought to be in place with little or no recharge (Page-41, Ch.6). The Permittee needs to explain the reasons this water is thought to be in place with little or no recharge. 61

R645-301-624.100, Subsurface water inflow associated with fault or fracture systems are possible, however, this potential is not expected to be significant in the Lila Canyon Extension(Page-40, Ch. 6). The Permittee needs to explain the reasons inflow from fractures is expected to be insignificant. 61

R645-301-624.100, 121.200, The Permittee needs to clarify or resolve inconsistent, contradictory, or unsubstantiated statements in the PAP concerning faults and the relationship

of faults to ground water. 61

R645-301-624.100, -722.100, The PAP states there are no observable discharge points, that there is no use or potential use, nor is the water elemental in preserving the hydrologic balance in the permit and adjacent areas and, for these reasons, there is no aquifer in the Mesa Verde Group (Ch. 7, Page-7). This and similar statements in the PAP need to be reevaluated because of the discovery of the seeps in the unnamed drainage in the southwestern corner of the permit area. The Permittee must evaluate whether or not the Sunnyside Seam and related saturated strata are an aquifer - meaning "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use;" and if they are an aquifer, whether it is regional, local, or intermediate in extent 81

R645-301-624.100, Much of the Horse Canyon Mine is below the potentiometric surface indicated by the IPA piezometers and the car-dump sump, but water entered the Horse Canyon Mine in large amounts only where the Sunnyside Fault was intercepted in deeper, down-dip areas. Observations of shale in the underlying rock is the explanation for dryness of the mine discussed in the PAP. The Permittee needs to more adequately discuss the reasons why water from the saturated strata did not enter the Horse Canyon Mine and why similar relatively dry conditions are anticipated in the Lila Canyon Extension..... 62

R645-301-624.100, The PAP states on page 26 of Chapter 6 that vertical displacements of faults range from 15 feet to more than 275 feet with displacement diminishing toward the east, and on page 27 that vertical displacements as long as 205 feet have been measured at the outcrop in these major faults: Plate 6-2 shows displacement of 295 feet on the Williams Draw fault at the outcrop. The PAP states on page 27 that the Entry Fault is offset 50 feet in the central part of the lease, but offset may disappear before reaching the outcrop: Plate 6-2 shows 50 feet of offset on this fault at the outcrop. The Permittee needs to clarify information on faults in the text and on the maps in the PAP. 61

R645-301-624.100, The Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings (in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine), and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation are not adequately discussed in relation to each other and to the proposed mine and are not shown together on a single map, drawing, or cross section. The Permittee needs to adequately discuss and show together on a single map, drawing, or cross-section, the relationship of the proposed mine to: the Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings (in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine), and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation..... 62

R645-301-624.310, Drill-logs in Appendix 6-1 note that pyrite was visible in many cutting or core samples; although these are not analyses, they are indicators of potential acid- and toxic-forming materials in the strata above and below the Sunnyside Seam. The PAP makes no

mention of these observations of pyrite: the Permittee needs to summarize the information on these logs on the occurrence of pyrite in strata above and beneath the Sunnyside Seam..... 63

R645-301-721, 724.200, (1)The Permittee must submit a surface monitoring plan to survey all streams and channels in and adjacent to the permit area. The Permittee must collect and evaluate quantitative and qualitative data for all surface water sources. The survey must establish baseline information and trends for each monitoring site. From the data, the Permittee must characterize the surface waters in or adjacent to the permit area as perennial, intermittent or ephemeral. Classification can be based on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present, or the established classification established in the definitions under R645-301-100. Descriptive adjustments based on the life of the mine should be made to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The Permittee must conduct monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. (2) The Permittee shall provide information in a table and illustrate on maps the area and extents of drainage basins in and adjacent to the mine permit area. The table shall identify the area of the drainage basin that flows in and through the permit area. (3) The Permittee must conduct a survey for springs and seeps in all the draws and washes of the Lila Canyon Extension and adjacent areas, particularly the lower reaches that are incised into the Price River Formation and underlying strata, and the potential for other discharge points in other areas, such as Range Creek, must be evaluated. 79

R645-301-722, (1) The Permittee must submit a hydrologic map identifying the drainage basins in and adjacent to the proposed permit area. The map must identify all drainage basins, stream channels ponds and water monitoring sites by name. (2) The Permittee must submit a map identifying and characterizing stream reaches, and showing where mining will take place within 100 feet (horizontally) of a stream channel. (3) The Permittee will submit maps showing the drainage relationships between the proposed permit area and the nearest perennial stream channels, specifically the Price River and Range Creek and its tributaries. (4) Maps and cross sections in the PAP include only a small portion of the Range Creek drainage. Resource maps and cross sections, including those showing geology, hydrology, and water rights, need to be extended at least as far as the channel of Range Creek to help evaluate potential impacts in the Range Creek drainage..... 90

R645-301-722, The Permittee must change the verbiage in the Modeling, Section 726 to the modeling that has been performed and will be done for support data in the PAP..... 82

R645-301-722.100, 724.300, It states on page 11 (Ch. 7) that field conductivity indicates springs occurring higher in the stratigraphic section have lower electric conductivity, indicating local flow systems, and refers to Table 7-1: Table 7-1 does not relate conductivity to geologic occurrence, and information explicitly relating springs to stratigraphy or lithology is not given anywhere in the PAP. The Permitee must add information substantiating that there is a relationship between position in the stratigraphic section and electric conductivity. It states on page 12 of Chapter 7 and on page 21 of Chapter 6 that there are no hydrology data for S-32. The Permittee needs to correct these pages - and anywhere else similar statements occur - because hydrology data for S-32, including water-quality data, are in Appendix 6-1. 80

R645-301-724, 725, 728, (1) Information from the Kaiser South Lease PAP on the crest-staff gauges and piezometers A-26, A-28, and A-31 in Little Park Wash must be included in the Lila Extension PAP to be used in determining the PHC and to be available to the Division to use in preparing the TA and CHIA. (2) Water-quality data for inflows to the Horse Canyon Mine are in the current Horse Canyon Mine MRP, but the Permittee has not discussed water quality of this saturated zone. The Permittee must include this information in the discussion of water quality in the saturated zone. (3) At least four water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP. The Permittee needs to visit the site of this water-monitoring well and determine if it is still usable. If it is usable, the Permittee needs to add it to the monitoring plan 80

R645-301-724, -731.200, The Permittee must clarify the nature of L-12-G and its relationship to L-6-G, H-18, H-18A, and H-18B. 156

R645-301-724, -731.200, The Permittee must add water-monitoring data from the monitoring program implemented in July 2000, including L-11-G and L-12-G, to the PAP. 156

R645-301-724, -731.200, The Permittee must update Table 7-3 to include L-11-G and L-12-G. 156

R645-301-724.100, (1) Baseline monitoring data for L-11-G and L-12-G, two springs shown on Plate 7-4 and discussed in Section 731.211 as ground-water monitoring points, must be added to the PAP. The Permittee must determine if the Horse Canyon Well is functional or useful as a well or piezometer and begin monitoring water quality and quantity if feasible. (2) The Permittee must adequately discuss the occurrence of water in the exploratory boreholes, as noted on driller's logs. (3) The Permittee must analyze and discuss information on water in the saturated zone as part of the ground-water baseline description. (4) The Permittee must sample and analyze water from the IPA piezometers for baseline water-quality data, or justify why it is not feasible 81

R645-301-724.410, The Permittee shall provide up-to-date climatological information. The Permittee shall indicate if the Sunnyside Weather Station is still functioning. If the weather station is not functioning at Sunnyside the Permittee should install a weather station at the Lila

Canyon Extension to verify precipitation amounts. 34

R645-301-724.410, The Permittee will discuss and characterize the type of precipitation events that are typical of the area and how the minesite and drainages are affected. 34

R645-301-724.420, The Permittee must commit to installation of a rain gauge at the site to comply with the reporting requirements of the Air Quality Approval Order dated August 27, 1999(page 5). 34

R645-301-731 (731.221) The Permittee shall identify and describe all water resources within the drainage basins and potential impacts to the resource and downstream users. The Permittee will discuss methods of mitigation to surface water resources and channels in the event subsidence should occur and water resources are impacted. The Permittee will describe access and feasibility of mitigation of subsidence impacts to perennial, intermittent or ephemeral stream channels and how channel restoration could be accomplished. 80

R645-301-731.211, The Permittee must more clearly or specifically describe how the monitoring information will be used to determine the impacts of mining on the hydrologic balance and what actions will be taken in case water monitoring indicates non-compliance with the permit. 156

R645-301-731.400, -765, The Permittee must discuss transfer and permanent casing and sealing of the Horse Canyon Well in Horse Canyon. 156

R645-301-751, -731.200, The Permittee must include a copy of the UPDES permit, which was issued in 1999, in the PAP. 156

R645-301-830.140, The Permittee must list every proposed structure in the bond calculations, and all revegetation costs. 197

R645-301-R645-301-121.200, The application must either correctly cite the location of the BLM's 1993 Environmental Assessment prepared for management of the Turtle Canyon Wilderness Study Area or remove the reference. 49

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

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

Minimum Regulatory Reference:

The operator of the coal mine and all owners and controllers of the operation must be identified by name and address. The Division with the Applicant/Violator System must crosscheck the information provided and other sources such as DOGM inspection and enforcement records, State corporation commission or tax records. If the Division identifies any errors in the ownership or control information, the applicant must be contacted to resolve the matter immediately. If the Division discovers that none of the persons identified in the application has had any previous mining experience, the applicant will be contacted to verify this fact.

The Applicant/Violator System will be updated with new information received by the Division.

Analysis:

The Permittee, UtahAmerican Energy Inc. (UEI), is a corporation organized and existing under the laws of the State of Utah. UEI is 100% owned by Coal Resources Inc., a subsidiary of Murray Energy. Information submitted under section 112 shows the resident agent as R. Jay Marshall. Abandoned Mine Fees will by paid by Robert Murray. The application indicates ownership and control information in Appendix 1-1 and contains surface and sub-surface ownership information.

Findings:

Information provided in the application meets the minimum Identification of Interests requirements of the Regulations.

VIOLATION INFORMATION

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

Minimum Regulatory Reference:

The application must inform the Division of any of the following:

(1) State or Federal permits suspension or revocation;
(2) Bond or other security forfeiture in the last five years;
(3) Any State or Federal violations received in the last three years by the applicant or any subsidiary, affiliate, or persons controlled by or under common control with the applicant. All outstanding violations (regardless of date) must also be disclosed.

The Division will review all available information and will not issue a permit if any operation owned or controlled by the applicant or linked to the applicant is in violation of SMCRA or the State Program or any State or Federal environmental law.

The Division will notify the applicant of the violation, suspension or forfeiture hindering their current application for permit and give the applicant an opportunity to rebut the findings. The Division will keep the Applicant Violator System updated.

Analysis:

A review of Appendix 1-3 Violation Information shows a list of violations from the Permittee and any subsidiary or affiliate of the Permittee. The date denoted on the bottom of the violation database is 08/28/98. Regulations require that at least three years of violation history from the time of submission must be present in the application. Current violation information as required by regulation is not present in the current application.

A review of the Applicant Violator System (AVS) shows that an affiliate of Coal Resources Inc.,Belmont Coal (OH permit D1020) has a state violation pending. This violation is coded "C" indicating a settlement, payment plan, or pending challenge. The Division requires further information on the pending settlement.

Findings:

Information provided in the application does not meet the minimum Violation Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-113.300, Appendix 1-3, Violation Information, needs to be updated for the period February 1999 to February 2002 to include at least three years of violation history for the Permittee and any subsidiary or affiliate of the Permittee.

R645-300-132.110, Evidence that the violation at Belmont Coal (OH permit D1020) has been corrected or is in the process of being corrected to the satisfaction of the agency that has jurisdiction over the violation must be provided to the Division

RIGHT OF ENTRY

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

Minimum Regulatory Reference:

Documents giving legal right to enter the permit area must be detailed in the application by date, type of document, land description and rights claimed. Any pending litigation over these legal rights must be disclosed.

The written consent of the landowner for the extraction of the coal by surface mining methods must also be included when the surface and mineral owners are different. Also a copy of the conveyance that grants the legal authority to extract the coal by surface methods will be included.

The Division does not have the authority to adjudicate property rights disputes.

Analysis:

The application contains the right of entry information required by regulations; however, the information requires a lot of review and correlation to clearly understand the difference between lease areas versus permit areas. The Permittee needs to provide clarification in the application to show lease areas versus permit areas and the difference in acreage between them.

This problem has been noted by other reviewers and is identified as a deficiency under the Environmental Resource Section, Permit Area heading.

The permit area for Horse Canyon (Part A) is located on page I-20 to I-22. The permit area for Lila Canyon Extension (Part B) is located in Appendix 1-5. The boundaries of the permit area for Horse Canyon (Part A) and Lila Canyon Extension (Part B) are shown on Plate 4-1 Surface Ownership of the Part B application. The different permit boundaries are distinguished by different colors of the specified line type. The Horse Canyon permit area A is described by using the Metes and Bounds system and the Lila Canyon Extension permit area B is described by using the Township Range system.

SUWA commented that the right-of-way is still in dispute before the Interior Board of Land Appeal. The Division recognizes that an appeal of the right-of-way has been filed, but the right-of-way is currently in effect. Should the right-of-way be overturned, the Division would reconsider this issue at such time.

Findings:

The Permittee needs to provide clarification in the application to show lease areas versus permit areas and the difference in acreage between them. This problem has been noted by other reviewers and has been addressed as a deficiency under the Environmental Resource Section, Permit Area heading.

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.

Minimum Regulatory Reference:

The application will describe and identify the lands (on a map) subject to coal mining over the life of the operation, including the size, sequence, and timing of the mining anticipated and permit boundaries. Coal mining and reclamation operations may only occur on the lands identified on the maps submitted and that are subject to the performance bond.

A public notice advertisement will contain a map or description of the precise location and boundaries of the proposed permit area. So that local residents can identify the area, the map must have a north arrow and may include local landmarks.

Analysis:

The proposed permit area is not within an area designated as unsuitable for mining. UtahAmerican Energy Inc. (UEI) will not conduct mining operations within 300 feet of a currently occupied building. UEI will conduct mining or mining related activities within 100 feet of a public road. UEI has received permission from Emery County to construct facilities and conduct mining activities within 100 feet of a public road. The letter of permission is located in Appendix 1-4.

Findings:

Information provided in the application meets the minimum Legal Description and Status of Unsuitability requirements of the Regulations.

PERMIT TERM

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

Minimum Regulatory Reference:

The application will describe and identify the lands (on a map) subject to coal mining over the life of the operation, including the size, sequence, and timing of the mining anticipated and permit boundaries. Coal mining and reclamation operations may only occur on the lands identified on the maps submitted and that are subject to the performance bond.

A public notice advertisement will contain a map or description of the precise location and boundaries of the proposed permit area. So that local residents can identify the area, the map must have a north arrow and may include local landmarks.

Analysis:

The application shows the anticipated starting and termination date of each phase of mining and reclamation operations in Chapter 1, Section 116. The dates indicated may vary since they indicate beginning in June 2002 and the application is still under review at the present time. The Permittee estimates that surface facilities could be constructed in 6 months and that the Lila Canyon Extension will operate for approximately 20 years once the permit is issued.

Findings:

Information provided in the application meets the minimum Permit Term requirements of the Regulations.

PUBLIC NOTICE AND COMMENT

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

Minimum Regulatory Reference

After the application has been determined "administratively complete," an advertisement must be placed in a local newspaper of general circulation in the locality of the proposed surface coal mining and reclamation operation at least once a week for four consecutive weeks. A copy of the advertisement as it will appear in the newspaper will be submitted to the regulatory authority.

At a minimum, the following will be included in the ad:

(1) The name and business address of the applicant.
(2) A map or description.
(3) The location where a copy of the application is available for public inspection.
(4) The name and address of the Division where written comments, objections, or requests for informal conferences on the application may be submitted.
(5) If an applicant seeks a permit to mine within 100 feet of the outside right-of-way of a public road or to relocate or close a public road, except where public notice and hearing have previously been provided for this particular part of the road; a concise statement describing the public road, the particular part to relocated or closed, and the approximate timing and duration of the relocation or closing.

(6) If the application includes a request for an experimental practice, a statement indicating that an experimental practice is requested and identifying the regulatory provisions for which a variance is requested.

The Division will notify in writing local governmental agencies and all Federal or State governmental agencies involved in or with an interest in the permit process.

Documentation of the public notice and comment period required for the Permit should be incorporated as part of the Permit.

Analysis:

The Bureau of Land Management (BLM) and the Office of Surface Mining (OSM) published an Environmental Assessment of the Lila Canyon Project (USDI, EA No UT-070-99-22) in July 2000. The Division received Part B, Lila Canyon Extension Permit Application Package (PAP) on February 11, 2002.

Public notice of the PAP was placed in the Emery County Progress on February 28, March 7, 14 and 21, 2002. A copy of the newspaper advertisement has been made part of the PAP in Appendix 1.5. In accordance with R645-300-121.100 *et seq*, the notice:

- identifies the name and business address of the Permittee;
- provides a map showing the Horse Canyon Mine permit area and the adjacent boundaries of the proposed Lila Canyon Extension permit area and identifies the boundaries using Township and Range and Section; and
- provides three locations for public inspection of the PAP; and gives the name and address of the Division.

Also included in the public notice is a concise statement describing the application as an extension to the existing Horse Canyon Mine to be known as Part B Lila Canyon Extension, to be processed as a new permit.

Written comments were received from six concerned citizens and three organizations within thirty days of the last publication date of the public notice. The three organizations providing comment were the State of Utah Resource Development Coordinating Committee (RDCC), Southeastern Utah Association of Local Governments (SUALG) and the Southern Utah Wilderness Alliance (SUWA).

An Informal Hearing was requested by SUWA and was held on May 21, 2002 at the Division Office in Salt Lake City. The comments made during the hearing are part of the public record and are referred to throughout this Technical Analysis of the mine permit application package (PAP).

SUWA commented on the adequacy of the public notice, in particular, questioning whether the application should have been treated as a new permit. The Division maintains that reviewing the application as a new permit, while naming it Horse Canyon Mine, Part B: Lila Canyon Extension follows the requirements of R645-303-222.

Notification of mining within 100 feet of the outside right-of-way a public road was not included in the public notice, but is required by R645-300-121.150.

Findings:

The Permittee has not met the requirements of the Regulations for Public Notice. Prior to approval and in accordance with,

R645-300-121.150, The Permittee must provide public notice of the intention to conduct mining within 100 feet of the outside right-of-way of the public roads and timing and duration of closure during installation of a culvert in the existing public road

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

A filing fee of $5.00 was submitted with the application.

Findings:

Information provided in the application meets the minimum filing fee requirements of the Regulations.

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

There is confusion in the Right of Entry information referenced above. The application needs to be clear and concise and filed in the format required by the Division. The requirements also specify that the information be current. Requirements for current information in the application will be addressed under the specific titles and their contents.

The PAP is for an extension to an existing permit, but is without adequate reference to the existing Horse Canyon MRP. There are baseline data and other information in the Horse Canyon Mine MRP that are relevant to the Lila Canyon Extension, but these are not adequately referenced. The Permittee needs to incorporate or reference all pertinent information from the existing MRP into the Lila Canyon Extension PAP.

Findings:

Information provided in the application does not meet the minimum Form and Format requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121.300, The Permittee needs to incorporate or reference all pertinent information from the existing MRP into the Lila Canyon Extension PAP.

REPORTING OF TECHNICAL DATA

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

Analysis:

SUWA expressed concerns relating to the qualifications of persons conducting surveys. Regulations require that the technical analysis be planned by or under the direction of a professional qualified in the subject to be analyzed.

Names and qualifications of those participating in Biological Resource data collection, inventory, and analysis are provided in Appendix 1-5. The names and organization of participants in the South Lease vegetation study must be provided. The names and qualifications of those participating in the Mexican spotted owl surveys must be provided. An Order I Soil Survey of the proposed Lila Canyon Extension disturbed area was conducted in August 1998 by Dan Larsen, Soil Scientist, Environmental Industrial Services, Inc. (EIS), Helper, Utah. Mr. Larsen should be acknowledged in Appendix 1-5 and his qualifications noted as well. The qualifications of all other professionals engaged in the collection and analysis of technical information for the permit application must be provided.

The Permittee is required to submit sufficient information and data of the permit and adjacent area to allow the Regulatory Authority to make a determination of impacts to the resources. Statements made in the PAP need to be substantiated with data.

Resource maps and plans and site specific information in the Lila Canyon Extension PAP are based on, among other sources, the old PAP for the Kaiser South Lease area. The Permittee has a copy of the Kaiser South Lease PAP. Relevant data from the Kaiser South Lease PAP should be incorporated into the Lila Extension PAP, be used in determining the PHC, and be available to the Division to use in preparing the TA and CHIA.

Findings:

Information provided in the application does not meet the minimum Technical Data Reporting requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-130, The PAP must contain the names, organizations and qualifications of all contributors to the application, including but not limited to the South Lease vegetation study, the Mexican spotted owl surveys, the soil survey, and consulting hydrologists, engineers and geologists.

R645-301-130 The Permittee shall reevaluate the PAP to identify sources of opinion, substantiate comments with specific, detailed information, or strike comments without basis.

MAPS AND PLANS

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

Analysis:

The maps submitted within the application meet the size requirements specified in the coal rules.

Plate 5-1, Previously Mined Areas, delineates the old works of the Horse Canyon Mine and the Book Cliffs Coal Company. Plate 5-1 does not delineate coal mining and reclamation operations that occurred prior to August 3, 1977 (Pre-SMCRA) and/or after August 3, 1977 (Post-SMCRA). This plate should be updated to show the areas of Pre-SMCRA and Post-SMCRA mining activities.

Findings:

Information provided in the application is not considered adequate to meet the minimum Maps and Plans requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-142, The Permittee should delineate coal mining and reclamation operations that occurred prior to August 3, 1977 (Pre-SMCRA) from those that occurred prior to August 3, 1977 but were continuously used, and those that occurred after August 3, 1977 (Post-SMCRA

COMPLETENESS

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

Analysis:

An application to conduct coal mining and reclamation activities has been submitted and was determined to be Administratively Complete on February 25, 2002 for the purposes of R645-300-121.100. The technical adequacy of the application is the subject of this Technical Analysis.

Findings:

The technical adequacy of the application is the subject of this Technical Analysis and completeness issues are discussed within each subsequent section heading of the 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.

Minimum Regulatory Requirements:

Include a description of the existing, pre-mining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed underground mining activities.

Analysis:

The Horse Canyon Mine is in the Book Cliffs coalfield in Emery County near East Carbon and Sunnyside, Utah. The topography of Horse Canyon and Lila Canyon are shown on the Cedar and Lila Point 7.5 Minute Quad maps, produced by the Geological Survey of the U.S. Department of the Interior, 1985.

In its location on the western slope of the vast and largely undeveloped Tavaputs Plateau, the proposed area of development includes some areas that are designated as Wilderness Study Areas and some designated as Wilderness Inventory Areas. The proposed Lila Canyon portal site lies just five miles from State Highway 6 and is immediately adjacent to an "unimproved" road (Plate 1-1).

The existing Mining and Reclamation Plan (MRP) for Horse Canyon is referred to as Part A and the application for Lila Canyon Extension is referred to as Part B. The permit area for Horse Canyon Part A is 1,328 acres and the proposed permit area for Lila Canyon Extension Part B is 4704acres. The combination of Horse Canyon Part A and Lila Canyon Extension Part B would bring the total new permit area to 6,032 acres.

The Lila Canyon Extension (Part B) site has a southwest aspect at the base of the Book Cliffs. The pediments are composed of sandstone over shale with a prevalence of cobbles, stones and boulders. It is an erosional environment. The soil receives protection from surface rocks, vegetation and biologic soil crusts.

Salt desert shrub and juniper are the predominant vegetative communities.

Findings:

Information provided in the application meets the General requirements of the Regulations.

PERMIT AREA

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

Minimum Regulatory Requirements:

Describe and identify the lands subject to surface coal mining operations over the estimated life of those operations and the size, sequence, and timing of the subareas for which it is anticipated that individual permits for mining will be sought.

Analysis:

The permit area is shown on Plate 1-1 and other maps. The permit boundaries are divided into Permit Area A, the Horse Canyon project and Permit Area B the Lila Canyon Extension. The Division considers Plate 1-1 to be the proposed official new permit boundary map and the information on Plate 1-1 supersedes all other maps.

Other maps also show the proposed new permit area. To avoid confusion the Permittee must state in the text and on Plate 1-1 that Plate 1-1 will be used to resolve any question about the permit boundaries.

The mine site is located in T.16S, R.14 E, Section 15, SE 1/4 SW 1/4. The proposed mine site is located upon an alluvial/colluvial bench at an elevation of 5,800 to 6,500 feet where the two forks of Lila Canyon converge. Page 15 of Chapter 1 says approximately **40.77 acres** will be disturbed. Page 90 of Section 542.200 also indicates **40.77 acres** will be disturbed. But page 1 of Appendix 5-8 indicates that **48.23 acres** will be disturbed. Chapter 2, page 11 indicates that only **25 acres** of topsoil will be salvaged. Plates 1-2, 5-1 and 5-2 show islands of "undisturbance." All sections of the PAP must be consistent in the description of the disturbed area boundary.

The Permit Area is reported on page 14 of the PAP as **6,032.07 acres** (for both A, Horse Canyon and B, Lila Canyon). This figure does not match the **5,544.01 acres** listed on page 11 and in Table 1-1 for federal acres within the permit area, because the 6.032.07 figure includes surface acreage within the permit area that is not federal leases. i.e. private and state acreage as shown on Table 4-2. The Permittee should explain this discrepancy within the PAP.

Table 4.2 of the PAP lists the total federal acres for A & B portions of the mine as **4,296 acres.** This figure does not match the federal acreage of **5,544.01 acres** on page 11 and in Table 1.1. The Permittee should explain this discrepancy within the PAP as well.

SUWA commented that the schedule in the application would be impossible for the Permittee to meet for several reasons including: gathering baseline data, the Division's technical review, and public comment. The schedule in the application is based on the Division approving the application within 60 days of receipt. The Division realizes that schedules in applications are approximate dates and will be adjusted as needed based on several factors, including permit

issuance. The Division considers many schedule dates in the application as approximate and/or moving dates.

The Division will monitor mining and reclamation activity to insure that construction does not occur during critical periods and that reclamation activities, such as seeding, occur during the proper seasons.

Findings:

Information provided in the application does not meet the minimum Permit Area requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-521.141 and R645-301-521.190, The Permittee must state in the PAP text and on Plate 1-1 that Plate 1-1 is the official permit boundary map and it will be used to clarify any questions about the permit boundaries

R645-301-116.100, The Permittee must clearly state the anticipated number of acres of surface disturbance to be affected during the life of the mine and statements of the number of disturbed acres must be consistent within the PAP.

R645-301-521, The Permittee must explain and clarify the discrepancy between the acreage given for permit area on page 11, 14, Table 1.1 and Table 4.2

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

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

Minimum Regulatory Requirements:

Describe and identify the nature of cultural historic and archeological resources listed or eligible for listing on the National Register of Historic Places and known archeological sites within the proposed permit and adjacent areas. The description shall be based on all available information, including, but not limited to, information from the State Historic Preservation Officer and local archeological, historical, and cultural preservation groups.

Identify and evaluate important historic and archeological resources that may be eligible for listing on the National Register of Historic Places, through the collection of additional information, conduct of field investigations, or other appropriate analyses.

Analysis:

The PAP states that Appendix 4-1 contains information from three cultural resource surveys, including one done specifically for the proposed facilities area. Only two of the three stated surveys could be found. The survey conducted by Rebecca Rauch could not be found. The Environmental Assessment (EA) conducted by the BLM (USDI EA No.UT-070-99-22)

states that additional surveys were also conducted by Miller in 1991 and another study by Montgomery in 1999 (the Montgomery 1998 study is included in Appendix 4-1). These surveys must be provided.

The EA also states that Site 42EM2517, a Fremont component rock shelter is adjacent to and visible from the Lila Canyon Road and the proposed mining facilities. However this site is not shown on Plate 4-3 or discussed in the PAP.

The EA states that seven sites are found in Little Park Wash of which only two are identified on Plate 4-3. All studies must be presented and all sites must be identified on Plate 4-3. No determination can be made at this point that the resource data is adequate until all studies that have been conducted are included in the PAP.

Plate 4-3 indicates areas that will be inventoried in spring 1998. These surveys must also be submitted and Plate 4-3 updated.

SUWA commented that cultural surveys must be performed for all areas subject to subsidence. R645-301-411 requires that all cultural and historic surveys conducted in the permit area are included in the PAP so this determination can be made.

The surveys found cultural resource sites in the vicinity, but only an isolated artifact was found in the proposed disturbed area.

In Horse Canyon is a tree inscribed by Sam Gilson, a prominent rancher and promoter of the uses of Gilsonite. According to the Division of State History, the application, and the text of the current mining and reclamation plan, this site is not listed on the National Register of Historic Places but is eligible for listing. A 1986 report from Don Southworth and Asa Nielson in the existing mining and reclamation plan indicates it is listed.

Maps and reports on archaeological resources have been marked confidential.

There are no cemeteries in or within 100 feet of the proposed addition to the permit area, and it contains no units of the National System of Trails or Wild and Scenic Rivers system.

Findings:

Information provided in the application is not adequate to meet the minimum Historic and Archeology Resources requirement of the Regulations. Prior to approval, in accordance with:

R645-301-411.140, The Permittee must provide the following: (1) The survey conducted by Rebecca Rauch, Miller in 1991 and Montgomery in 1999 must be included in the PAP, or reference removed from the PAP. (2) Site 42EM2517, a Fremont

component rock shelter, must be shown on Plate 4-3 and discussed in the PAP. (3) The EA states that seven sites are found in Little Park Wash, only two are identified on Plate 4-3. Copies of all historic resources studies conducted in the permit area must be provided and all sites identified on Plate 4-3. (4) Studies conducted in spring 1998 as shown on Plate 4-3 must be provided and the comment removed from the plate.

CLIMATOLOGICAL RESOURCE INFORMATION

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

Minimum Regulatory Requirements:

Provide a statement of the climatological factors that are representative of the proposed permit area, including: the average seasonal precipitation; the average direction and velocity of prevailing winds; and, seasonal temperature ranges. Additional data may be requested as deemed necessary to ensure compliance other regulatory requirements.

Analysis:

Precipitation provides recharge to streams and springs. The type of precipitation events that are typical of the mine site should be described. Climatological information is presented in the PAP that discusses average seasonal precipitation, average direction and velocity of winds, and seasonal temperature ranges.

The closest weather station to the Lila Canyon Lease is the Sunnyside, Utah National Weather Service station, located roughly 6 miles north of and at a similar altitude as the Horse – Lila area. Based on relatively close proximity and similar locations on the west exposure of the Book Cliffs, the Permittee will use data from this station to verify precipitation amounts and other weather conditions for the Lila Canyon Project. However, it is not clear if the station is still in operation since the period of record used ended in 1988. A rain gauge is recommended during operations for the purposes of complying with the Air Quality Approval Order, and for obtaining site-specific information.

The Permittee indicates an average annual precipitation as high as 13.69 inches: the information was downloaded from the Western Regional Climate Center and is shown in Table 7-1A in Section 724.413. Table 7-1A shows the average maximum and minimum temperatures by month over thirty years (1958 –88) for the Sunnyside area. Table 7-1A also includes average annual precipitation by month and annually (13.69 inches annually) and average snowfall by month and annually (36.5 inches annually). Appendix 5-8 indicates the proposed disturbed area is in a zone of 9" annual precipitation. Elevation of the proposed mine facility is from 5,800 to 6,500 feet. The Soil Survey (Section 3.2 of Appendix 2-3) indicates an average annual precipitation of 8-14 inches with the majority occurring in the fall, winter, and early spring. Prevailing winds as reported in Section 742.412 are from west to east at a speed of 2.7 knots or 3.1 mph (knots x 1.1 = mph).

Findings:

Information provided in the application is not adequate to meet the minimum Climatological Resource requirement of the Regulations. Prior to approval, in accordance with:

R645-301-724.420, The Permittee must commit to installation of a rain gauge at the site to comply with the reporting requirements of the Air Quality Approval Order dated August 27, 1999(page 5).

R645-301-724.410, The Permittee will discuss and characterize the type of precipitation events that are typical of the area and how the minesite and drainages are affected.

R645-301-724.410, The Permittee shall provide up-to-date climatological information. The Permittee shall indicate if the Sunnyside Weather Station is still functioning. If the weather station is not functioning at Sunnyside the Permittee should install a weather station at the Lila Canyon Extension to verify precipitation amounts.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Minimum Regulatory Requirements:

Provide a map that delineates existing vegetative types and a description of the plant communities within the area affected by surface operations and facilities and within any proposed reference area. The description shall include information adequate to predict the potential for reestablishing vegetation. The map or aerial photograph is required, sufficient adjacent areas shall be included to allow evaluation of vegetation as important habitat for fish and wildlife for those species of fish and wildlife as identified under the fish and wildlife resource information.

Analysis:

The PAP describes the vegetative resources of the permit and disturbed areas by referencing Appendices 3-1 and 3-2. These appendices include:

- Pages VIII-1 though VIII-8 of the approved Horse Canyon MRP (Appendix 3-1)
- Vegetation Study South Lease Area, Kaiser Steel, no authors provided (Appendix 3-2)
- Lila Canyon, Vegetation Inventory, prepared by EIS in 1998, 1999, and 2000. (Appendix 3-2)
- Attachment 3-2, Lila Canyon Veg Survey, conducted by EIS, November 2000 (Appendix 3-2).

The first two studies do not describe the current proposed permit and disturbed area. They discuss the Horse Canyon and South Lease areas. (An application to permit the South Lease, submitted by Kaiser Steel Corporation, was reviewed by the Division in the early 1980's.

A permit was never issued. The South Lease is south of the current application area and includes lands identified as "Potential Area of Future Mining" (Plate 3-2.).

SUWA commented about a lack of current data for the entire permit area. The PAP (section R645-301-320) infers that all vegetation resources of the entire Lila extension, except a 400 acre area have been described. The information presented does not support that statement; only the disturbed area has been described. The Permittee must clarify what areas have been described and describe how the 400-acre area not surveyed (south face of the "Bookcliff") is similar.

The vegetation map (Plate 3-2) locates 7 vegetative communities on the permit area. These communities are variations of sagebrush, Atriplex and Juniper. The PAP must include a brief description of each of these communities, characterizing the resources that occur in or near the permit area. The vegetation map does not show the location of the coniferous (likely Douglas Fir) communities found in the higher elevations and north facing sides of the drainages. The vegetation map does not show the shrub and grass community in the disturbed area and the tall shrub community of the lower drainages. The vegetation map does not show any plant communities that may be influenced by the springs or seeps. (SUWA commented that the PAP should identify important plant communities such as riparian areas.) The vegetation map (Plate 3-2) does not correlate with the "Transect Veg" map shown in Appendix 3-2 or community descriptions provided in the South Lease study.

The vegetation inventory (Appendix 3-2) for the site disturbance conducted by EIS was done:

- Beginning in May of 1998 through October 1998
- Summer 1999
- July 2000
- November 2000.

The Lila Canyon Vegetation Inventory report is confusing. Dates of studies must be clarified and the purpose of each study described. The headers on the report state that this is a 1999 vegetation inventory. The proposed disturbed area grass/shrub community and a corresponding reference area to the west of the proposed disturbed area was sampled some time between 1998 and 2000 for vegetative cover and shrub density. It is unclear when this sampling was done. The Inventory found the shrub and grass dominant species to include "Cheat Grass", Rabbitbush (Chrysothamnus viscidiflorus), and "Lichen". Interestingly, rabbitbrush (Chrysothamnus viscidiflorus), and "Lichen" were not encountered in the sampling of the disturbed area or reference area (data sheet, Appendix 3-2). Total vegetative cover of the proposed grass/shrub community is 43 percent. The raw data sheets should have been included in the appendix. The re-typed cover data sheets contain numerous misspellings and/or taxa not recognized. The Division is requesting this data be removed from the PAP and a new study be conducted.

Woody plant density for the grass/shrub, reference area, and "PJ" area was 5,006 plants per acre. Snakeweed was the dominant woody plant in these areas. Five samples from each type were taken. Sampling does not meet the minimum regulatory requirements; the Division's Vegetation Information Guidelines call for 15 samples from each community using this sampling technique.

On November 28, 2000, vegetation cover was measured in the proposed disturbed pinyon/juniper community. Only ten samples were taken and samples were 0.01 acres, a relatively large sample plot (6 times larger than recommended in the Division's Vegetation Information Guidelines). Large sample plots are difficult to accurately estimate vegetative cover. The Division's guidelines call for a minimum of 15 samples. The mean cover value for this community was 33.9%. The cover was dominated by Utah juniper; other species included Salina wildrye, fourwing saltbush, prickly pear cactus, snakeweed, and galleta.

Appendix 3-7 contains productivity estimates done by George Cook, formerly of the Natural Resources Conservation Service, for the area proposed to be disturbed and associated reference area. Both the grass/shrub proposed disturbed and reference areas had production of about 850 pounds per acre, and the pinyon/juniper community had production of about 250-300 pounds per acre.

Vascular plant cover, productivity, and woody plant density were the only parameters measured in the pinyon/juniper area. The Permittee did not measure cover from rock, litter, or biologic soil crusts. Regulation R645-301-321 requires a description of the plant communities in the proposed disturbed area adequate to predict the potential for reestablishing vegetation. The preamble to the federal coal regulations permanent program discusses the use of the word "vegetation" in the regulations. The following is an excerpt from the preamble:

> *In the context of the regulations, reference to vegetation normally means the higher forms of plants. It would not generally include lesser forms which do not provide cover or forage for wildlife, or contribute to erosion control, except those lesser plants which are threatened or endangered or are an essential component of a habitat critical to the survival of a threatened or endangered species (44 Fed. Reg. 14,902).*

Biologic soil crusts are an important component of erosion control for soils and must also be measured in areas to be disturbed and included in the baseline data. SUWA commented that biologic soil crusts are not addressed.

The information provided in the PAP is not adequate to use as a baseline revegetation success standard or to predict the potential for reestablishing vegetation. The following should be provided in the PAP:

- Plate 3-2 must provide greater detail of the existing plant communities.

- Provide a vegetation map of the disturbed and adjacent areas including all plant communities. This map must correlate with revised Plate 3-2.
- The disturbed area communities must be defined and sampled by a person qualified in the field of plant taxonomy and quantitative ecology and according to the Division's Vegetation Information Guidelines.
- Biologic soil crusts must be included in the vegetation sampling.
- Vegetation sampling must be performed during a time of greatest species diversity, preferably in late spring.
- Raw data sheets from field sampling must be provided.
- Prior to sampling, the proposed location of the reference area must be reviewed with the Division.

Findings:

Information provided in the application is not considered adequate to meet the minimum Vegetation Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301- 121.200, The PAP (section R6450301-320) infers that all vegetation resources of the entire Lila extension, except a 400-acre area have been described. The information presented does not support that statement. The Permittee must clarify what areas have been described and describe how the 400-acre area not surveyed (south face of the "Bookcliff") is similar.

R645-301-323.400, The vegetation maps of the permit and disturbed area must be corrected to include greater detail, adjacent areas, and correlate to each other. The plant communities found within the permit area must be described, including any associated with seeps, springs or other water sources.

R645-301-321.100, The disturbed area communities must be defined and sampled by a person qualified in the field of plant taxonomy and quantitative ecology and according to the Division's Vegetation Information Guidelines. Biologic soil crusts must be included in the vegetation sampling. Vegetation sampling must be performed during a time of greatest species diversity, preferably in late spring. Raw data sheets must be provided.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Minimum Regulatory Reference:

The application shall include fish and wildlife resource information for the permit area and adjacent area. The scope and

level of detail for such information shall be determined by the Division in consultation with State and Federal agencies with responsibilities for fish and wildlife and shall be sufficient to design the protection and enhancement plan required under the operation and reclamation plan.

Site-specific resource information necessary to address the respective species or habitats shall be required when the permit area or adjacent area is likely to include:

(1) Listed or proposed endangered or threatened species of plants or animals or their critical habitats listed by the Secretary under the endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), or those species or habitats protected by similar State statutes;
(2) Habitats of unusually high value for fish and wildlife such as important streams, wetlands, riparian areas, cliffs supporting raptors, areas offering special shelter or protection, migration routes, or reproduction and wintering areas; or
(2) Other species or habitats identified through agency consultation as requiring special protection under State or Federal law.

Analysis:

Table 3-1 and Section 322.210 in the PAP must be updated. The peregrine falcon is not a threatened species.

Wildlife habitat is discussed in Section 322.220 and shown on Plate 3-1. The disturbed area contains habitat for Rocky Mountain bighorn sheep and mule deer, and pronghorns (Plate 3-1). Raptors nest in the cliffs surrounding the proposed disturbed area. The permit area includes areas of critical habitat for elk and deer.

Raptor surveys were conducted in the area in 1990, 1998, 1999, 2000, 2001 and 2002. Plate 3-1 shows locations of five nests within about one mile of the proposed surface facilities. Appendix 3-5 contains the results of the 2000 raptor survey and a lot of unnecessary and unrelated information. The map in Appendix 3-5 has a mis-labeled nest; nest 946 is labeled as 820. Section 322.220 says the entire permit area plus an area within 1 mile of the proposed surface facilities were surveyed for raptor nests. However, the ARC/GIS file obtained from Division of Wildlife Resources (DWR) shows the flight line for the 2001 survey and the entire permit area was not surveyed. The entire area that may be affected and adjacent area must be surveyed. The southwest section of the permit area appears as suitable cliff habitat. This area is outside the subsidence buffer zone but within the permit area and immediately adjacent to the buffer zone. This area must be included in the raptor surveys. Other rock outcrops areas within the permit area require surveys. The 2001 raptor helicopter survey is summarized in the table below.

Nest ID	Species	Status
947	Golden Eagle	Inactive
456	Golden Eagle	Inactive
946	Golden Eagle	Dilapidated
719	Golden Eagle	Dilapidated
455	Golden Eagle	Dilapidated

The Permittee commits to conduct raptor surveys one year prior to all proposed new construction or potentially disruptive mining activity. This should be done in all suitable habitats

within a one mile radius of these activities and includes the main facilities area.

The PAP indicates the Permittee has consulted with the United States Fish and Wildlife Service (USFWS), the DWR, and the BLM concerning raptor nests in the vicinity of the mine. They determined there is a high probability golden eagle nests near the surface facilities will be abandoned.

SUWA commented that the Permittee failed to inventory species dependent on seeps and springs, especially amphibians. The application only addresses amphibian occurrences or potential occurrences through reference to the DWR publication "Fauna of Southeastern Utah and Life Requisites Regarding their Ecosystems." The application must describe the vegetation surrounding each spring and address the potential for amphibian occurrences especially those on the state sensitive species list.

The application does not address amphibian occurrences or potential occurrences, except by reference through "Fauna of Southeastern Utah and Life Requisites Regarding their Ecosystems." The application must describe the vegetation surrounding each spring and address the potential for amphibian occurrences especially those on the state sensitive species list.

A meeting was held on June 6, 2002 to satisfy the requirements of R645-301-322.100. BLM, DWR and DOGM were in attendance. The purpose of the meeting was to discuss the level of detail required for wildlife information. The following are highlights of the meeting.

- No additional information regarding the big horn sheep numbers or use is needed.
- During raptor monitoring in late May, 2002, 12 big horn sheep were found in Lila Canyon and 25 ewes and lambs were found in the unnamed canyon located in the southwest corner of the permit area.
- The water source, if found, in the south canyon must be monitored for wildlife use.
- Bat surveys are not needed; bats are not likely affected by these activities.
- Merriam's Kangaroo Rat and Ringtail are two Utah sensitive mammal species likely to occur within the permit area. No studies required.
- UEI should describe vegetation at all springs and report the presence of any amphibians, however no formal surveys or monitoring were requested.
- No additional reptile surveys were determined to be necessary.
- Snakes likely do not occur in high densities on the permit area because it is dry and there is little prey base.

SUWA commented that the PAP does not contain site-specific resource information, fails to address high value wildlife habitats, and the information provided is not sufficient to design the protection plan. This meeting was held to identify what if any additional information was required concerning wildlife species. The Permittee is being asked to do additional seep and spring surveys, amphibian observations and riparian habitat identification.

On June 12, 2002 Division staff and DWR visited the unnamed south canyon and found four seeps. The entire canyon showed evidence of big horn sheep use. These seeps appear to be a significant water source for the ewes and lambs. No water was found in the lower one mile of Lila Canyon. A survey should be conducted for other water sources along the face of the Book Cliff. Since the seeps in the south canyon are significant to these sheep they should be monitored quarterly for baseline data and throughout mining.

Threatened and Endangered Species

Table 3-1 lists threatened or endangered (animal) species that potentially occur in Emery County. Appendix 3-3 contains an outdated letter (February 4, 1998) from the USFWS to EIS, consultants to the BLM, during development of the Environmental Assessment.

The Division initiated Section 7 consultation with the USFWS on May 9, 2002. They responded with a list of endangered (E), threatened (T), and candidate (C) species that may occur in the area of influence. The T & E species are listed below and each species is evaluated for permit adequacy.

Common Name		Habitat	PAP
Barneby Reed-mustard	E	Occurs on the Chinle Formation	Appendix 3-4, Addressed in BLM Biological Assessment, no suitable habitat.
Jones Cycladenia	T	Gypsiferous saline soils on the Chinle, Cutler, and Summerville Formations.	Appendix 3-4, BLM Biological Assessment, no habitat within permit area.
Last Chance Townsendia	T	Salt desert shrub and PJ on clay or clay silt soils of Arapien and Mancos Shale.	Appendix 3-4, Addressed in BLM Biological Assessment, no suitable habitat.
Maguire Daisy	T	Occurs on sands from Wingate, Chinle, and Navajo Sandstone Formations.	Appendix 3-4, Addressed in BLM Biological Assessment, no suitable habitat.
San Rafael Cactus	E	Occurs in PJ limestone gravels.	Appendix 3-4, Addressed in BLM Biological Assessment, 1998 (1999) Survey.
Winkler Cactus	T	Salt desert shrub communities.	Appendix 3-4, Addressed in BLM Biological Assessment, no survey.
Wright Fishhook Cactus	E	Salt desert shrub to Juniper on the Mancos Shale.	Appendix 3-4, Addressed in BLM Biological Assessment, 1998 (1999) Survey.
Bonytail Chub	E	Endangered fish of the Colorado River.	Section 322.220 (pg. 11), BLM Biological Assessment, impact assessment inadequate.

Colorado Pikeminnow	E	Endangered fish of the Colorado River.	Section 322.220 (pg. 11), BLM Biological Assessment, impact assessment inadequate.
Humpback Chub	E	Endangered fish of the Colorado River.	Section 322.220 (pg. 11), BLM Biological Assessment, impact assessment inadequate.
Razorback Sucker	E	Endangered fish of the Colorado River.	Section 322.220 (pg. 11), BLM Biological Assessment, impact assessment inadequate.
Bald Eagle	T	Nests in tall trees such as Cottonwoods.	Section 322.220, BLM Biological Assessment, Occurrence assessment inadequate.
Mexican Spotted Owl	T	Nests in areas with >40% slope.	Appendix 3-4, Surveys will be conducted. Results must be submitted to DOGM. DOGM will consult with other agencies.
Western Yellow-billed Cuckoo	C	Occurs in riparian areas at least 30 feet wide.	Table 3-1, Appendix 3-4, BLM Biological Assessment, no habitat within permit area.
Black-footed Ferret	E	Historically within range.	Appendix 3-4, BLM Biological Assessment, No prairie dog towns in disturbed area. Extirpated from Emery County.

The USFWS did not identify the southwestern willow flycatcher as a species that may occur in the area of influence. The PAP (section 322.210) discusses the potential occurrence of the southwestern willow flycatcher on the permit area. No large riparian area exists to support the southwestern willow flycatcher on the permit area. SUWA commented that this species should be addressed because of the influence of mining on Range Creek Information on the affects of this mining operation on Range Creek are requested in the hydrology section of this Technical Analysis. If mining is determined to affect Range Creek then this issue will be addressed.

SUWA commented that sensitive, threatened and endangered species surveys need to be updated. The USFWS stated (e-mail from Laura Romyn to Susan White, 4/22/02) that areas to be disturbed should be re-checked annually if construction has not started. Prior to the Division continuing with Section 7 consultation the following must be provided.

- Surveys and/or habitat assessment must be provided for the bald eagle, San Rafael cactus, Winkler cactus, and Wright fishhook cactus.
- Additional impact assessment provided for the bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker.

A sweetvetch was observed in the drainages adjacent to the disturbed area but identification was not possible due to the plants early phenology. Previous surveys did not locate the Creutzfeldt flower, a BLM sensitive species; however, the area was determined to have suitable habitat. The area must be resurveyed for this plant and the results provided in the PAP prior to construction. An inventory must be conducted for the Book Cliffs blazing star, a BLM sensitive species, in August, and the results of that survey provided in the PAP.

The *Summary of Mexican Spotted Owl Habitat Survey Within the Lila Canyon Coal Lease Area* (Appendix 3-4) provides a plan for surveying owl habitat. The plan commits to an overview of the areas deemed suitable, based on the 1997 model, during the Spring 2002 raptor survey with a ground follow up in the fall. Suitable habitat will only be surveyed if impacts from subsidence are expected. The surveys will be submitted to DWR and USFWS for comments. The following problems with this plan must be addressed.

- Only a portion of the area was surveyed during the Spring 2002 raptor survey. The PAP must be modified to address the areas not observed during the 2002 raptor survey.
- The process requires that DOGM must consult with DWR and USFWS. The statement that EIS will consult with these agencies is confusing to the public and must be changed to reflect the permitting process.
- All areas identified in the 1997 model within a half mile radius of the mine site must be surveyed for the Mexican spotted owl.

Findings:

Information provided in the application does not meet the minimum Fish and Wildlife Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121.100, Table 3-1 and Section 322.210 in the PAP must be updated. The peregrine falcon is not a threatened species. The map in Appendix 3-5 has a mislabeled nest; nest 946 is labeled as 820.

R645-301-322, The PAP must be changed to state the actual areas surveyed for raptors.

R645-301-322, The Mexican spotted owl survey (Appendix 3-4) must be corrected to reflect the actual survey and a new plan must be submitted to survey all areas shown in the 1997 Mexican spotted owl habitat model.

R645-301-322, The entire area that may be affected and adjacent areas must be surveyed for raptors. The southwest section of the permit area appears as suitable cliff habitat. This area is outside the subsidence buffer zone but within the permit area and immediately adjacent to the buffer zone. Other rock outcrops are within the permit area and require surveys.

R645-301-322, The application must describe the vegetation surrounding each spring and address amphibian occurrence.

R645-301-322.230, A survey should be conducted for water sources along the face of the Book Cliffs. The seeps in the southwest canyon are significant to Rocky Mountain bighorn sheep and a commitment to monitoring throughout mining must be made.

R645-301-322.210, Surveys and/or habitat assessment must be provided for the bald eagle, San Rafael cactus, Winkler cactus, Wright fishhook cactus, Book Cliffs blazing star, and Creutzfeldt flower. Additional impact assessment must be provided for the bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker.

R645-301-121.200 and R645-301-322.100, The process requires that DOGM must consult with DWR and USFWS. The statement that EIS will consult with these agencies is confusing to the public and must be changed to reflect the permitting process.

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.

Minimum Regulatory Requirements:

Provide adequate soil survey information on those portions of the permit area to be affected by surface operations or facilities consisting of a map delineating different soils, soil identification, soil description, and present and potential productivity of existing soils.

Where selected overburden materials are proposed as a supplement or substitute for topsoil, provide results of the analysis, trials and tests required. Results of physical and chemical analyses of overburden and topsoil must be provided to demonstrate that the resulting soil medium is equal to or more suitable for sustaining revegetation than the available topsoil, provided that trials and tests are certified by an approved laboratory. These data may be obtained from any one or a combination of the following sources: U.S. Department of Agriculture Soil Conservation Service published data based on established soil series; U.S. Department of Agriculture Soil Conservation Service Technical Guides; State agricultural agency, university, Tennessee Valley Authority, Bureau of Land Management or U.S. Department of Agriculture Forest Service published data based on soil series properties and behavior; or, results of physical and chemical analyses, field site trials, or greenhouse tests of the topsoil and overburden materials (soil series) from the permit area. If the permittee demonstrates through soil survey or other data that the topsoil and unconsolidated material are insufficient and substitute materials will be used, only the substitute materials must be analyzed.

Analysis:

Elevation of the proposed mine facility is from 5,800 to 6,500 feet. The Soil Survey (Section 3.2 of Appendix 2-3) indicates an average annual precipitation of 8-14 inches with the majority of the precipitation coming in Fall, Winter and early Spring. The soil resources within the Lila Canyon Extension are discussed in Chapter 2, Sections 210 through 224 of the PAP.

Mr. Daniel Larsen, Professional Soil Scientist with Environmental Industrial Services conducted an Order I soil survey of the disturbed area in August of 1998. His report is located in Appendix 2-3. (An addendum attached to Appendix 2-3 is for the proposed fan portal site soils.) The survey contains soil descriptions, soil pedon descriptions, soil salvage suitability analysis, laboratory soil testing data, field soil profile descriptions, soil and landscape photographs, a soils map, and a salvageable-soils map. All mapping and soil survey work were performed according to the standards of the NRCS's National Cooperative Soil Survey.

Soil Identification and Description and Productivity

The predominant soil classification was Strych fine sandy loam, loamy-skeletal, mixed mesic Ustic Haplocalcid (formerly classified as Ustollic Calciorthids in the 1988 Carbon County Soil Survey).

Order: Aridisol (formed in desert climate)
Suborder: Calcid (accumulation of calcium carbonate)
Great Group: Haplocalcid (other calcids)
Subgroup: Ustic Haplocalcid
(moisture control section is dry less than ¾ of the time when the temperature is above 5 C and aridic soil moisture regime bordering on ustic)
Family: loamy-skeletal, mixed mesic (soil temperature)
Series: Strych fine-sandy loam
Phases: bouldery, very bouldery, extremely bouldery

Also found at the site were two soils with little pedogenesis and little horizonization, classified as Gerst silt loam, loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents

Order: Entisol (young soil, little pedogenesis)
Suborder: Orthent (lack of clay accumulation)
Great Group: Torriorthent (aridic moisture regime)
Subgroup: Ustic Torriorthent
(moisture control section is dry less than ¾ of the time when the temperature is above 5 C and aridic soil moisture regime bordering on ustic)
Family: loamy, mixed (calcareous), mesic
Series: Gerst silt loam
Phase: shallow

and Travessilla fine sandy loam, loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents.

Order: Entisol
Suborder: Orthent
Great Group: Torriorthent
Subgroup: Lithic Ustic Torriorthent (lithic contact within 50 cm)

Family: loamy, mixed (calcareous), mesic
Series: Atchee Series (formerly Travessilla series)
Phase: none given

The soils were mapped using the following designations:

DSH = Strych fine sandy loam variant, 3 to 8% slopes
SBG = Strych bouldery fine sandy loam, 5 to 15% slopes
VBJ = Strych very bouldery fine sandy loam, 5 to 15% slopes
XBS = Strych extremely bouldery sandy loam, 10 – 45% slopes
RBL = Rubbleland- Strych-Gerst complex, 20 – 70% slopes
RBT = Rock outcrop – Travessilla family complex, Atchee Series

From the soil description sheets in Appendix 2-3 and Plate 2-2 Detailed Soils Map of the Mine Facilities Site, the Division notes that the canyon bench holds deep soils, stabilized from wind erosion by a surface layer of biological soil crusts, dried plant litter, boulders and live plant cover. The A horizon layer varies due to position on the slope from three inches (at sample site LC 1 through 3) to 26 inches deep (at sample site LC 4). The B horizon stretches from 31 – 60 inches in the profile and is the zone of accumulation of carbonates. The deepest soils are pockets of colluvium from the cliffs above. The soils are underlain by sandstone bedrock, except at the location of the fan portal where shale and burned coal cover the sandstone rock layer. Shale was also encountered at LC 3 and LC 5 (see discussion of SAR and EC below).

Soils are subject to extremes of temperature. On August 6, 1998 at 11:30 a.m., the temperature of the bare soil at location LC4 was 130 F. At a depth of 20 inches, the temperature was 65 F. These soils are in a mesic soil temperature regime. That means that the mean annual soil temperature at 50 cm is less than 59 F as estimated from the mean annual air temperature of 46 F, reported in Section 220. Mr. Larsen has judged the soil moisture regime to be aridic, bordering on ustic, which is to say that at a depth of 20 inches (50 cm), there is a difference in soil temperature greater than 9 F between summer and winter and the soil moisture control section from 12 – 35 inches deep for sandy soil is dry for 90 or more cumulative days in most years, but it is not dry in all parts for more than half the time that the soil temperature is above 9 F at a depth of 50 cm. (Soil Survey Staff. 1990. Keys to Soil Taxonomy, fourth edition. SMSS technical monograph no.6. Blacksburg, Virginia. pp 33 –35.)

The disturbed area vegetation is primarily pinyon-juniper and grass-shrub communities (see Figure 1, Appendix 3-2). On good years the grass-shrub can be expected to produce 600 – 800 lbs/acre and the pinyon-juniper can be expected to produce 250 - 300 lbs/ac (see Appendix 3-7).

Soil Characterization

Soil pedon descriptions were recorded on standard NRCS forms and are provided in Appendix D within Appendix 2-3. The soil horizons were sampled and analyzed according to DOGM guidelines for topsoil and overburden. (Leatherwood, J. and Dan Duce. 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.) Soil texture, rock fragment content (percent by volume), and Munsell color were determined in the field. Generalized soil properties, including percent surface stones and boulders, are summarized in Table 3.21, Properties of Soil Map Units, on page 9 of Appendix 2-3. Soil sampling locations are shown on Plate 2-2, Detailed Soils Map of the Mine Facilities Site.

Soil samples were sent to InterMountain Laboratories, Inc. for analysis. Appendix C of Appendix 2-3 contains the laboratory data sheets for all analysis on the 22 samples and duplicate analysis. Overall, soil laboratory test results show a good rating for soil chemistry and fair rating for soil water holding capacity after correction for coarse fragments (Appendix B of Appendix 2-3), except as noted below:

LC1 was rated poor for water holding capacity below 10 inches (after coarse fragment correction)

LC3 was rated poor at depth of 24 – 48 inches for pH = 8.6

LC3 was rated unacceptable at depth of 48 – 53 inches for Sodium Adsorption Ratio (SAR) = 18 and Exchangeable Sodium Percentage (ESP) = 22%

LC5 was rated poor below three inches for water holding capacity and unacceptable for coarse textured soils at depth 40 – 58 inches for SAR = 15, Electrical Conductivity (EC) = 8.89 mmhos/cm, and pH 8.2.

LC10 was rated fair at 0 – 4 inch depth for an EC = 2.58

LC 11 and LC 12 entire profiles were rated poor for water holding capacity after correction for coarse fragments.

The percent rock content within the proposed facilities area is the main deterrent for soil salvage suitability based on the current Division guidelines (citation previously noted). However, Appendix 2-3 indicates that native soils, with a higher rock content than the current guidelines allow, can and should be salvaged.

Organic matter content is relatively low in these soils. Generally, the surface soils ranged between 1.0 to 1.5% organic matter and the subsoils were about 0.5 percent. Total nitrogen and available phosphorus were not analyzed. A measure of total nitrogen and available phosphorus

is required by the Division for baseline information so that fertilization of the reclaimed site can attempt to mimic the natural conditions.

A calcic horizon was verified in soil pedons LC1, LC5 and LC6 with calcium carbonate ranging between 20 to 21%. Pedons LC3 and LC4 have some calcium carbonate accumulation in the subsoil but it is less than the 15% needed to be classified as a calcic horizon. Below the calcic horizon, at depths of 30 inches, the soluble calcium decreases and magnesium increases with depth. Usually, the reverse is the case where calcium exceeds magnesium in the soil solution, because calcium is retained much more readily than magnesium on soil colloid exchange sites. But in this case, calcium is being removed from the soil solution by calcium carbonate precipitation in the calcic layer. As a result, soluble magnesium exceeds soluble calcium in the lower soil horizons.

In accordance with R645-301-232.200, since the A horizon is less than six inches deep, the topsoil recovered will be a mix of both the A and B horizon soils. Depths of salvage range from 6 to 18 inches over the site (see Available Soil Resources table in Section 232.100). Large stones, 36 inches or less, are considered part of the soil layer and are included in the topsoil volume estimates.

Findings:

The information did not provide baseline soil nitrogen or phosphorus as required by the Utah Guidelines for topsoil and overburden. Prior to approval and in accordance with

R645-301-222.400, The Permittee should provide baseline soils analyses of total nitrogen and available phosphorus for the six soil map units.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Minimum Regulatory Requirements:

Provide a statement of the condition; capability, and productivity of the land that will be affected by surface operations and facilities within the proposed permit area.

Provide a map and supporting narrative of the uses of the land existing at the time of the filing of the application. If the premining use of the land was changed within 5 years before the anticipated date of beginning the proposed operations, the historic use of the land shall also be described.

The narrative of land capability and productivity must include the capability of the land before any mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and the hydrology of the area proposed to be affected by surface operations or facilities.

Describe the productivity of the area proposed to be affected by surface operations and facilities before mining, expressed as average yield of food, fiber, forage, or wood products from such lands obtained under high levels of management. The productivity shall be determined by yield data or estimates for similar sites based on current data from the U.S. Department of Agriculture, State agricultural universities, or appropriate State natural resources or agricultural agencies.

The application must state whether the proposed permit area has been previously mined. If so, provide the following information, if available: the type of mining method used; the coal seams or other mineral strata mined; the extent of coal or other minerals removed; the approximate dates of past mining; and, the uses of the land preceding mining.

The application shall provide a description of the existing land uses and land-use classifications under local law, if any, of the proposed permit and adjacent areas.

Analysis:

Premining land uses of the proposed extension to the permit area include grazing, wildlife habitat, coal mining, and limited recreation (Appendix 4-2). Grazing allotment boundaries are shown on Plate 4-2, and wildlife habitat is shown on Plate 3-1. Production in the grazing allotments in terms of animal unit months is shown in Table 4-3. Portions of the permit area fall within the boundaries of the Turtle Canyon Wilderness Study Area, the Desolation Canyon Inventory Unit #8, and Turtle Canyon Inventory Unit #4 (Plate 4-4).

Lila Canyon is within an area identified by the BLM as the Range Valley Mountain Habitat Management Plan Area (Vol. 4, page 3). A habitat management plan was adopted in 1991 to provide management of wildlife and for access management.

The PAP states that the proposed extension to the permit area does not support a wide variety of land uses because of the limited access and remote location, rugged topography, limited soils, and lack of rainfall and surface water. Water rights are discussed in Chapter 7, and water uses include stock watering and various uses for coal mining.

The land is zoned by Emery County for mining and grazing. A small portion of the proposed permit area extension overlaps with the Turtle Canyon Wilderness Study Area. The application states that a copy of the BLM's 1993 environmental assessment prepared for management of the Turtle Canyon Wilderness Study Area is found in Appendix 4-1. Appendix 4-1 is the cultural resource information.

Boundaries of the Desolation Canyon Inventory Unit have been changed by the BLM (January 2002). Plate 4-4 should reflect that the proposed disturbed area no longer falls within the Desolation Canyon Inventory Unit. Almost all of the permit area is in a wilderness inventory unit or study area, only the Little Park Wash road and the mine site have been excluded. Lease readjustment for U-0126942 restricts surface occupancy in the Turtle Canyon Wilderness Study Area. The lease readjustment can be modified if it interferes with the lessee's right to explore, access and extract the coal resource, because the lease is a valid existing right.

The BLM's 1999 Utah Wilderness Inventory identifies areas with wilderness character in addition to the previously identified wilderness study areas. Two of these areas overlap the proposed extension to the permit area including the proposed disturbed area. The application includes copies of two memoranda from the BLM. One of these says, "While the planning process is being completed on lands found to have wilderness characteristics in the 1999 Wilderness Inventory, the management prescriptions of existing land management plans do not

change." Therefore, it appears the BLM will be managing these lands as in the past until further assessment has been completed.

There has been some previous mining activity in Lila Canyon. The road at the bottom of Lila Canyon was built in the 1950's to provide access for coal exploration. The PAP discusses a coal prospect in the canyon. Two sealed breakouts are located in the left fork of the canyon where the Sunnyside Coal Seam was exposed. Coal was transported back through the Horse Canyon Mine. It is not clear if the coal prospect and the breakouts are the same. It is believed the breakout was opened during the 1950's. This breakout was utilized post-1977 and therefore, the current Coal Regulatory Program has jurisdiction over this disturbance and it is included in the permit area. The narrative and maps of the PAP should be changed to reflect the correct information.

Findings

Information provided in the application is not considered adequate to meet the minimum Land Use Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121.100, Plate 4-4 must be updated to reflect recent changes made by the BLM (January 2002) in the boundary of the Desolation Canyon Inventory Unit.

R645-301-R645-301-121.200, The application must either correctly cite the location of the BLM's 1993 Environmental Assessment prepared for management of the Turtle Canyon Wilderness Study Area or remove the reference.

R645-301-120, The PAP discusses a coal prospect in Lila Canyon. The PAP must be changed to provide the correct information concerning coal mining in Lila Canyon.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320

Minimum Regulatory Requirements:

This section applies to surface coal mining and reclamation operations on areas or adjacent to areas including alluvial valley floors in the arid and semiarid areas west of the 100th meridian.

Alluvial valley floor determination

Permit applicants who propose to conduct surface coal mining and reclamation operations within a valley holding a stream or in a location where the permit area or adjacent area includes any stream, in the arid and semiarid regions of the United States, as an initial step in the permit process, may request the Division to make an alluvial valley floor determination with respect to that valley floor. The applicant shall demonstrate and the Division shall determine, based on either available data or field studies submitted by the applicant, or a combination of available data and field studies, the presence or absence of an alluvial valley floor. Studies shall include sufficiently detailed geologic, hydrologic, land use, soils, and vegetation data and analysis to demonstrate the probable

existence of an alluvial valley floor in the area. The Division may require additional data collection and analysis or other supporting documents, maps, and illustrations in order to make the determination.

The Division shall make a written determination as to the extent of any alluvial valley floors within the area. The Division shall determine that an alluvial valley floor exists if it finds that unconsolidated streamlaid deposits holding streams are present; and there is sufficient water available to support agricultural activities as evidenced by the existence of current flood irrigation in the area in question; the capability of an area to be flood irrigated, based on evaluations of streamflow, water quality, soils, and topography; or, subirrigation of the lands in question derived from the ground-water system of the valley floor.

If the Division determines in writing that an alluvial valley does not exist pursuant to the requirements of this section, no further consideration of this section is required.

Applicability of statutory exclusions

If an alluvial valley floor is identified and the proposed surface coal mining operation may affect this alluvial valley floor or waters that supply the alluvial valley floor, the applicant may request the Division, as a preliminary step in the permit application process, to separately determine the applicability of the statutory exclusions set forth in this section. The Division may make such a determination based on the available data, may require additional data collection and analysis in order to make the determination, or may require the applicant to submit a complete permit application and not make the determination until after the complete application is evaluated.

An applicant need not submit the information required and the Division is not required to make the findings required of this section when the Division determines that one of the following circumstances, heretofore called statutory exclusions, exist:

1. The premining land use is undeveloped rangeland that is not significant to farming;

2. Any farming on the alluvial valley floor that would be affected by the surface coal mining operation is of such small acreage as to be of negligible impact on the farm's agricultural production. Negligible impact of the proposed operation on farming will be based on the relative importance of the affected farmland areas of the alluvial valley floor area to the farm's total agricultural production over the life of the mine; or,

3. The circumstances set forth in Section 822.12(b)(3) or (4) of this Chapter exist.

For the purpose of this section, a farm is one or more land units on which farming is conducted. A farm is generally considered to be the combination of land units with acreage and boundaries in existence prior to August 3, 1977, or if established after August 3, 1977, with those boundaries based on enhancement of the farm's agricultural productivity and not related to surface coal operations.

(c) Summary denial. If the Division determines that the statutory exclusions are not applicable and that any of the required findings of Paragraph (e)(2) of this section cannot be made, the Division may, at the request of the applicant:

(1) Determine that mining is precluded on the proposed permit area and deny the permit without the applicant filing any additional information required by this section; or

(2) Prohibit surface coal mining and reclamation operations in all or parts of the area to be affected by mining.

(d) Application contents for operations affecting designated alluvial valley floors. (1) If land within the permit area or adjacent area is identified as an alluvial valley floor and the proposed surface coal mining operation may affect an alluvial valley floor or waters supplied to an alluvial valley floor, the applicant shall submit a complete application for the proposed surface coal mining and reclamation operations to be used by the Division together with other relevant information as a basis for approval or denial of the permit. If an exclusion of Paragraph (b)(2) of this section applies, then the applicant need not submit the information required in Paragraphs (d)(2)(ii) and (iii) of this section.

(2) The complete application shall include detailed surveys and baseline data required by the Division for a determination of--

(i) The essential hydrologic functions of the alluvial valley floor which might be affected by the mining and reclamation process. The information required by this subparagraph shall evaluate those factors which contribute to the collecting, storing, regulating and making the natural flow of water available for agricultural activities on the alluvial valley floor and shall include, but are not limited to:

(A) Factors contributing to the function of collecting water, such as amount, rate and frequency of rainfall and runoff, surface roughness, slope and vegetative cover, infiltration, and evapotranspiration, relief, slope and density of drainage channels;

(B) Factors contributing to the function of storing water, such as permeability, infiltration, porosity, depth and direction of ground water flow, and water holding capacity;

(C) Factors contributing to the function of regulating the flow of surface and ground water, such as the longitudinal profile and slope of the valley and channels, the sinuosity and cross-sections of the channels, interchange of water between streams and associated alluvial and bedrock aquifers, and rates and amount of water supplied by these aquifers; and

(D) Factors contributing to water availability, such as the presence of flood plains and terraces suitable for agricultural activities.

(ii) Whether the operation will avoid during mining and reclamation the interruption, discontinuance, or preclusion of

farming on the alluvial valley floor;

(iii) Whether the operation will cause material damage to the quantity or quality of surface or ground waters supplied to the alluvial valley floor;

(iv) Whether the reclamation plan is in compliance with requirements of the Act, this Chapter, and regulatory program; and

(v) Whether the proposed monitoring system will provide sufficient information to measure compliance with Part 822 of this Chapter during and after mining and reclamation operations.

(e) Findings. (1) The findings of Paragraphs (e)(2)(i) and (ii) of this section are not required with regard to alluvial valley floors to which are applicable any of the exclusions of Paragraph (b)(2) of this section.

(2) No permit or permit revision application for surface coal mining and reclamation operations on lands located west of the 100th meridian west longitude shall be approved by the Division unless the application demonstrates and the Division finds in writing, on the basis of information set forth in the application, that

(i) The proposed operations will not interrupt, discontinue, or preclude farming on an alluvial valley floor;

(ii) The proposed operations will not materially damage the quantity or quality of water in surface and underground water systems that supply alluvial valley floors; and

(iii) The proposed operations will comply with Part 822 of this Chapter and the other applicable requirements of the Act and the regulatory program.

Analysis:

Alluvial Valley Floor Determination

This section summarizes the land use, soil, plants, geology, surface- and ground-water information reviewed by the Division in making the findings required under R645-302-320.

The Lila Canyon Extension is situated in the western Book Cliffs escarpment. Steeply dipping joints transmit ground water from the surface (6.5.3.5) as illustrated in Figure VI-5. Water inflow associated with fault or fracture systems are possible, but not expected to be significant (Section 6.6.1). The surface expressions of the faulting are grabens and draws. Numerous small seeps and springs exist within and adjacent to the permit area (Section 731.220). Appendix 7-3 Probable Hydrologic Consequences (PHC) of mining concludes that the proposed mine is not expected to cause "contamination, diminution or interruption" of underground or surface sources of water.

The Sunnyside Sandstone contains the two seams of interest: Upper Sunnyside and Lower Sunnyside Seams. "The Sunnyside Sandstone is known to transmit groundwater in the Sunnyside area and that portion of the sandstone which underlies the Lower Sunnyside seam is occasionally considered to be a potential aquifer" (Section 6.4.1). Geneva Mine (now known as the Horse Canyon Mine) records indicate that the mine was dry until the Sunnyside Fault was intercepted. This suggests that as mining progresses down dip, "substantial" water may be encountered, but this water will be isolated from the surface recharge zone (Section 6.6.3.1).

The Mancos Shale forms the slopes below the base of the Book Cliffs, overlain in places by pediment deposits (Section 6.4.1 and Plate 6-1). In the permit area, drainages flow in response to snow melt and precipitation events (Section 731.220 and Plate 7-1). Coleman Wash receives the Lila Canyon drainage. Grassy Wash and Marsh Flat Wash collect the flow from the Mancos slopes further south. Little Park Wash channels the flow on the plateau above. There is no valley holding a perennial stream in the permit area (Section 724.700).

Order III soil survey (Plate 2-1) of the mine permit area soils indicates that the soils on the plateau in Little Park Wash are Neto Fine Sandy Loam (Section 220.200). No further information on this soil is available in the PAP. This soil is comparable to the Glenberg soil described in the published Carbon County Soil Survey, according to Mr. Leland Sasser (telephone conversation between Priscilla Burton of DOGM and Mr. Leland Sasser, Soil Scientist and Survey Project Leader with the NRCS, Price Field Office, Utah on 06/05/01).

Plate 3-2, Vegetation indicates that the dominant species growing on the plateau in the vicinity of Little Park Wash are Atriplex, Artemesia and Elymus, none of which are wetland species, according to Cooper. (Cooper, David J. 1989. A Handbook of Wetland Plants of the Rocky Mountain Region. EPA Region VIII.) Little Park Wash falls within the Little Park grazing allotment (Plate 4-2). The land use is unimproved rangeland and wildlife habitat.

There is no farming activity upstream or downstream of the permit area, therefore, the proposed operations will not interrupt, discontinue, or preclude farming on an alluvial valley floor. Based on the information provided in the plan, in accordance with R645-302-321.100, the Division determines that there is no probable existence of an alluvial valley floor. A final determination will be made after all requested resource information has been received.

Findings:

A final determination regarding the existence of an alluvial valley floor will be made after all requested resource information has been received.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Minimum Regulatory Requirements:

The U.S. Soil Conservation Service within each State shall establish specifications for prime farmland soil removal, storage, replacement, and reconstruction. The Division shall use the soil-reconstruction specifications to carry out its responsibilities under this section.

The requirements of this part shall not apply to:

Note: This section is suspended "insofar as it excludes from the requirements of Prime Farmlands those coal preparation plants, support facilities, and roads that are surface mining activities".

(1) Coal preparation plants, support facilities, and roads of surface and underground mines that are actively used over extended periods of time and where such uses affect a minimal amount of land.

(2) Disposal areas containing coal mine waste resulting from underground mines that is not technologically and economically feasible to store in underground mines or on non-prime farmland. The operator shall minimize the area of prime farmland used for such purposes.

(3) Prime farmland that has been excluded in accordance with any valid existing rights as indicated below.

This section applies to any person who conducts or intends to conduct surface coal mining and reclamation operations on

prime farmland historically used for cropland. This section does not apply to:

(1) Lands on which surface coal mining and reclamation operations are conducted pursuant to any permit issued prior to August 3, 1977; or
(2) Lands on which surface coal mining and reclamation operations are conducted pursuant to any renewal or revision of a permit issued prior to August 3, 1977; or
(3) Lands included in any existing surface coal mining operations for which a permit was issued for all or any part thereof prior to August 3, 1977, provided that: such lands are part of a single continuous surface coal mining operation begun under a permit issued before August 3, 1977; and the permittee had a legal right to mine the lands prior to August 3, 1977, through ownership, contract, or lease but not including an option to buy, lease, or contract; and the lands contain part of a continuous recoverable coal seam that was being mined in a single continuous mining pit (or multiple pits if the lands are proven to be part of a single continuous surface coal mining operation) begun under a permit issued prior to August 3, 1977.

For purposes of this section, renewal of a permit means a decision by the Division to extend the time by which the permittee may complete mining within the boundaries of the original permit, and revision of the permit means a decision by the Division to allow changes in the method of mining operations within the original permit area, or the decision of the Division to allow incidental boundary changes to the original permit. A pit shall be deemed to be a single continuous mining pit even if portions of the pit are crossed by a road, pipeline, railroad, or power line or similar crossing. A single continuous surface coal mining operation is presumed to consist only of a single continuous mining pit under a permit issued prior to August 3, 1977, but may include non-contiguous parcels if the operator can prove by clear and convincing evidence that, prior to August 3, 1977, the non-contiguous parcels were part of a single permitted operation. For the purposes of this paragraph, clear and convincing evidence includes, but is not limited to, contracts, leases, deeds or other properly executed legal documents (not including options) that specifically treat physically separate parcels as one surface coal mining operation.

All permit applications, whether or not prime farmland is present, shall include the results of a reconnaissance inspection of the proposed permit area to indicate whether prime farmland exists. The Division in consultation with the U.S. Soil Conservation Service shall determine the nature and extent of the required reconnaissance inspection.

If the reconnaissance inspection establishes that no land within the proposed permit area is prime farmland historically used for cropland, the applicant shall submit a statement that no prime farmland is present. The statement shall identify the basis upon which such a conclusion was reached.

If the reconnaissance inspection indicates that land within the proposed permit area may be prime farmland historically used for croplands, the applicant shall determine if a soil survey exists for those lands and whether soil mapping units in the permit area have been designated as prime farmland. If no soil survey exists, the applicant shall have a soil survey made of the lands within the permit area which the reconnaissance inspection indicates could be prime farmland. Soil surveys of the detail used by the U.S. Soil Conservation Service for operational conservation planning shall be used to identify and locate prime farmland soils.

If the soil survey indicates that no prime farmland soils are present within the proposed permit area, the plan shall include the results of a reconnaissance inspection of the proposed permit area to indicate whether prime farmland exists.

Analysis:

The Natural Resources Conservation Service (NRCS) determined in 1998 that there are no Prime Farmlands at the site (see Appendix 2-1).

Findings:

The Division concurs with the NRCS determination made in 1998 that there are no Prime Farmlands at the site.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Minimum Regulatory Requirements:

Each application shall include geologic information in sufficient detail to assist in: determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary; determining all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined; determining whether reclamation can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area; and, preparing the subsidence control plan.

Geologic information shall include, at a minimum, a description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. This description shall include the areal and structural geology of the permit and adjacent areas, and other parameters which influence the required reclamation and it shall also show how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water. It shall be based on maps and plans required as resource information for the plan, detailed site specific information as required below, and, geologic literature and practices.

For any portion of a permit area in which the strata down to the coal seam to be mined will be removed or are already exposed, samples shall be collected and analyzed from test borings; drill cores; or fresh, unweathered, uncontaminated samples from rock outcrops down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining. The analyses shall result in the following:

(1) Logs showing the lithologic characteristics including physical properties and thickness of each stratum and location of ground water where occurring;
(2) Chemical analyses identifying those strata that may contain acid- or toxic-forming, or alkalinity-producing materials and to determine their content, except that the Division may find that the analysis for alkalinity-producing material is unnecessary; and
(3) Chemical analysis of the coal seam for acid- or toxic-forming materials, including the total sulfur and pyritic sulfur, except that the Division may find that the analysis of pyritic sulfur content is unnecessary.

For lands within the permit and adjacent areas where the strata above the coal seam to be mined will not be removed, samples shall be collected and analyzed from test borings or drill cores to provide the following data:

(1) Logs of drill holes showing the lithologic characteristics, including physical properties and thickness of each stratum that may be impacted, and location of ground water where occurring;
(2) Chemical analyses for acid- or toxic-forming or alkalinity-producing materials and their content in the strata immediately above and below the coal seam to be mined;
(3) Chemical analyses of the coal seam for acid- or toxic-forming materials, including the total sulfur and pyritic sulfur, except that the Division may find that the analysis of pyrite sulfur content is unnecessary; and
(4) For standard room-and-pillar mining operations, the thickness and engineering properties of clays or soft rock such as clay shale, if any, in the stratum immediately above and below each coal seam to be mined.

If determined to be necessary to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards, the Division may require the collection, analysis, and description of additional geologic information.

An applicant may request the Division to waive in whole or in part the requirements of the borehole information or analysis required of this section. The waiver may be granted only if the Division finds in writing that the collection and analysis of such data are unnecessary because other information having equal value or effect is available to the Division in a satisfactory form.

Analysis:

The Permittee makes reference to the Lila Canyon Extension Permit Area (LMPA) throughout Chapter 6. The Division understands this action to be an extension to the Horse Canyon Mine permit, not a separate permit. The Permittee needs to use clear and consistent language in describing this submittal.

Geologic information includes a description of the geology of the proposed permit and adjacent areas down to and including the stratum immediately below the lowest coal seam to be mined. The coal seams and adjacent strata include a saturated zone that will almost undoubtedly

be intercepted by mining. Geology influences the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water.

Local, perched bedrock and alluvial aquifers in Little Park Wash and along Patmos Ridge are separated from the saturated zone by a thick section of low permeability strata. These aquifers support small discharges from seeps and springs scattered across ground-water emergence zones and located mostly in the bottoms of various small drainages.

The plan includes geologic information in sufficient detail to assist in determining the PHC of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary, and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Resource maps and plans and site specific information are based on published geologic information, permit plans of the adjacent Sunnyside and South Lease areas, and exploration and drilling records of Kaiser Steel, U. S. Steel Corporation, and Intermountain Power Agency (IPA).

SUWA has raised concerns that there is not sufficient resource information to allow determination of the PHC. In the informal conference, SUWA expressed particular concern that there is not sufficient resource information for the Range Creek drainage.

The Division has determined that it is reasonable not to include the Range Creek drainage in the PHC determination because adverse impacts to resources in Range Creek drainage are not reasonably expected. However, information and discussion providing a foundation for this position are not explicit in the PAP. To clarify to the public why Range Creek drainage will not be adversely impacted, the Division is requiring that the Permittee augment geologic and other resource information in the PAP to include the Range Creek drainage and include a discussion of potential adverse impacts to the Range Creek drainage in the determination of the PHC.

Seeps have recently been found in a deeply incised canyon located at the southwest corner of the Lila Canyon Extension. Geologic information for this area appears adequate, even though additional information on hydrologic and other resources in this and other incised canyons along the Book Cliffs escarpment might be needed to determine the PHC.

Boreholes S-1 through S-23 were drilled between 1948 and 1975. S-24 through S-32 were drilled in 1980 and 1981. In 1993 and 1994, IPA-1, IPA-2, and IPA-3 were drilled. IPA-1, IPA-2, and IPA-3 were completed as piezometers in 1994. Copies of bore-hole logs for IPA-1, IPA-2, IPA-3, S-14, S-27, and S-32 are in Appendix 6-1: logs for the other boreholes are confidential and not available to the public. The bore-hole logs show lithologic characteristics, including physical properties and thickness of each stratum that may be impacted. In addition to the boreholes, coal seams and adjacent strata were measured at seventeen outcrop locations in 1974 and 1975. Lithology and thickness of the coal seams and adjacent strata, based on the boreholes and measured out-crop sections, are shown on Plate 6-5. Locations of the boreholes

and outcrop measurements are on Plate 6-2.

Acid/Toxic

SUWA has raised concerns that analyses for acid- and toxic-forming materials in the strata above and below the coal seam to be mined have not been done. Strata immediately above and below the Sunnyside Seam were sampled in boreholes S-24 and S-25, and results of analyses for potentially acid- or toxic-forming materials are in Appendix 6-2. These samples are adjacent to the permit area, however the coal and overlying/underlying strata have fairly uniform characteristics. Drill-logs in Appendix 6-1 note that pyrite was visible in many cutting or core samples, indicating potential acid- and toxic-forming materials in the strata above and below the Sunnyside Seam. The PAP makes no mention of these observations of pyrite: a summary of the information on these logs on the occurrence of pyrite in strata above and beneath the Sunnyside Seam is needed.

Mining will leave a roof and floor of coal, so results of proximate and ash analyses of floor and roof material from IPA-1, IPA-2 (roof only), and IPA-3 (Appendix 6-2) are pertinent to the acid- toxic-forming analysis. There are also proximate, ultimate, sulphur (total and pyritic), ash, and several other analyses for "middle" coal samples from the three IPA boreholes. Pyritic sulfur (dry basis) ranged from 0.10% to 0.48% (Appendix 6-2).

A letter from UEI, dated April 22, 2002, requesting exemption from R645-301-624.320 has been sent to the Division, and a copy is included in Appendix 6-2. The requested exemption is based on the following:

- a statement from the BLM's Environmental Analysis for lease U-32083 that there is no history of problems with acid- or toxic-forming materials at the nearby Sunnyside Mine, which operated for over 80 years;
- analyses from boreholes S-24 and S-25 located two miles south of the Lila Canyon Extension permit area provide the required information on the strata that will be encountered during construction and operation of the Horse - Lila Canyon Extension;
- all material brought from the mine during construction and operation will be treated by burial as though it is acid- or toxic-forming; and
- coal-mine waste brought to the surface by mine construction and operation, including slope-rock material, will be tested for acid- or toxic-forming potential before burial.

Although it is true that there have been no problems with acid- or toxic-forming materials at the nearby Sunnyside Mine, acidic water from slurry ponds carrying iron and other minerals has seeped from the base of a refuse pile. The environment in the receiving channel raised the pH and reduced the mineral load. Although there were no offsite problems or impacts because of the buffering environment, the potential for acid and toxic mine drainage clearly exists in

coals and waste materials in the Book Cliffs Coal Field. The Lila Canyon Extension refuse pile is designed to handle and bury coal mine waste so as to minimize infiltration of water into the pile, to minimize the formation of acid or toxic drainage, and to minimize acid, toxic, or other harmful infiltration to ground-water and drainage or discharge to surface-water. Based on the design of the refuse pile; the reclamation plan; and the geology, hydrology and climate of the area, the Division has found that the probability of acid- or toxic-impacts from the materials to be placed in the refuse pile is small.

Nevertheless, the Permittee has committed to periodic sampling of the materials to be placed in the refuse pile as a further precaution. Samples will be collected and analyzed five times during construction of the rock-slope tunnels and from every 6,000 tons of waste rock placed on the refuse pile during mine operation: parameters are in Table 2 of Appendix 5-7. The reclamation plan specifies 4 feet of subsoil and topsoil will be placed over the refuse pile. The slope-rock underground development waste used to build the pads will be left in place for final reclamation and buried with 4 feet of subsoil and topsoil (Chapters 2, 5, and 7, and Appendix 5-7). Because the Permittee uses the Sunnyside Mine as an example of why there is no need to perform further analysis of samples from test borings or cores for acid- and toxic-forming materials, the PAP needs to better explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid acid- and toxic-drainage such as occurred at the base of the Sunnyside Mine refuse pile.

As mining proceeds, materials overlying and underlying the coal seam can be exposed underground to water and oxygen and there is some potential to generate acid or toxic water products. Rocks of the Mesaverde Group are carbonaceous, so persistence of acids and related toxins in water in the mine and adjacent strata is unlikely: the analyses from boreholes S-24 and S-25 show acid-base potentials from all analyzed zones is greater than –5 tons CaCO3/1,000 tons material. The mine is designed so there will be no natural discharge or drainage from the portals. Discharge pumped from the mine will be subject to federal and state water-quality standards under the UPDES permit, and the discharge will be more thoroughly analyzed quarterly under the proposed operational monitoring plan in the PAP. Adverse impacts, and particularly material damage, from formation of acid and toxic water within the mine are not expected.

As authorized under R645-301-626, the Division is waiving further analyses of samples from test borings or cores for acid – and toxic-forming materials in the strata immediately above and below the coal seam, although some additional discussion is being required to clarify the record in the PAP.

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Engineering Properties

Engineering properties of the strata immediately above and below the coal seam to be mined are listed in Table 6-6. Data are based on core samples from boreholes S-18 and S-22.

Boreholes

S-32 was drilled in 1981 in SE1/4SW1/4 Sec. 6, T. 17 S., R. 15 E., south of the Lila Extension, and completed as a piezometer in the lower Grassy Member and Upper Sunnyside Seam of the Blackhawk Formation. The Permittee has included the drill-log, a Chronology of Development, and Water Pump Tests and Samples in Appendix 6-1. At least four water level measurements and one suite of water-quality analyses were done at S-32 in 1981 and 1982, but there is no information on the current condition of S-32 in the PAP.

IPA-1, IPA-2, and IPA-3 were completed as piezometers in 1994. Water levels were measured from 1994 through 1996, and the Permittee resumed measurements in 2000.

The unnamed boring that the Permittee intends to use as a water-supply well (identified by the Division as the Horse Canyon Well), and the Minerals Development Corporation (MDC) Well (Plate 7-1) were bored in Horse Canyon to monitor water in the alluvium (Section 6.5.1). Kaiser Steel installed three piezometers, A-26, A-28, and A-31, which are no longer accessible, in the alluvium of Little Park Wash. The PAP briefly mentions A-26 and A-31 on page 12 (Ch. 7), but there are no hydrologic or geologic data from these piezometers in the PAP. The Kaiser South Lease PAP should be checked for further information on these piezometers.

Fluid levels were reported for several boreholes. In some cases, the fluid reported in boreholes appears to have been drilling fluid rather than ground water: bore-hole S-26 was completed as a piezometer in August 1980 but was dry within a month of completion and was subsequently cemented to the surface.

Stratigraphy

Stratigraphy of the Blackhawk Formation is described on pages 9 – 11 of Chapter 6. The Sunnyside Member, which is dominantly sandstone, includes the Upper and Lower Sunnyside Coal Seams, with the Grassy Sandstone above the coals and the Sunnyside Sandstone beneath them. The Horse Canyon Mine operated in the Lower Sunnyside Seam, which is also the seam that is planned to be mined in the Lila Canyon Extension.

A large section of the Horse Canyon Mine, including the Geneva exploration tunnel and the rotary dump, are below the water level indicated in the IPA piezometers. The PAP reports that, generally, underground flows from rock slopes and gob areas into the Horse Canyon Mine were small. Only when the mine intercepted the Sunnyside Fault in deeper, down-dip areas was significant water encountered. Prior to suspending operations, the mine pumped water from the workings near the Sunnyside Fault to keep them from flooding. Some of the water was used for mine operations, the rest was discharged intermittently to the surface.

The PHC in Appendix 7-3 refers to data published by Balsley in 1981 that indicate the Sunnyside Sandstone beneath the coal is capable of transmitting water. The PAP states on page

11 (Ch. 6) that the Sunnyside Sandstone is known to transmit groundwater in the Sunnyside area. It also states that the portion which underlies the Lower Seam is "occasionally considered to be a potential aquifer"; the basis of this consideration appears to be the ability of this unit to transmit ground water in the Sunnyside area, but this is not clear. The statement itself is unclear and confusing, in particular the meaning of "occasionally considered to be a potential aquifer" in this context. The permeability values of Balsley that are referred to in the PHC should be incorporated into the PAP.

Much of the Horse Canyon Mine is below the potentiometric surface indicated by the IPA piezometers and the car-dump sump, but water entered the Horse Canyon Mine in large amounts only where the Sunnyside Fault was intercepted in deeper, down-dip areas. The PAP states that no ground water entered the Geneva – Horse Canyon Mine from the underlying sandstones, and the floor under the Sunnyside Seam in the Horse Canyon Mine is described as containing both sandstone and shale (Page-11, Ch. 6), with the implication that the shale could have impeded ground-water flow. There are other possible explanations for the dryness of the Horse Canyon Mine that are not discussed in the PAP, such as, but by no means limited to:

- the Sunnyside Sandstone was not saturated or lacked sufficient hydraulic conductivity to transmit water;
- most of the mine simply was not deep enough to encounter a saturated zone but there was unreported leakage where the mine was deep enough; or
- the east-west faults isolated the mine from saturated zones.

Minor water inflows from the exploration entries is anticipated (Page-40, Ch. 6); this reference to exploration entries is unclear and confusing because there are no exploration entries mentioned in the Lila Canyon Extension PAP. The PHC states that the Geneva exploration tunnel is flooded, that it will be intercepted by mining operations in the Lila Canyon Extension, and the water will need to be pumped from the mine; the source of the information on the exploration tunnel and the water in it is not given in the PAP and is not discussed with resource information

The Permittee needs to more adequately discuss the reasons why water from the saturated strata did not enter the Horse Canyon Mine and why similar, relatively dry conditions are anticipated in the Lila Canyon Extension.

Saturated strata in the lower Blackhawk Formation are separated from the perched zones in the upper Wasatch Group by upper Blackhawk, Price River and undifferentiated North Horn-Flagstaff Formations, strata that contain approximately 80 percent clays, shales, siltstones, and mudstones (Ch. 7, Page-7). Plastic or swelling clays that can seal faults and fractures and inhibit lateral and vertical flow of ground water are abundant (Ch. 7, Page-8). The PAP does not identify the sources of the information on percentage of fine-grained sediments in the stratigraphic column and on swelling clays.

Structure

The Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings – in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine, and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation are not adequately discussed in relation to each other and the proposed Lila Canyon Extension mine and are not shown together on a single map, drawing, plan, or cross section.

The coal seam crops out at an elevation of approximately 6,500 feet in the vicinity of the rock-slope tunnels. The plan indicates the tunnels will intercept the coal seam at approximately 6,300 feet (Appendix 8-2 - Figure 7-1).

Underground mining always has a potential for impacting surface water, ground water, and other surface resources. The Permittee states in Section 721 that subsidence effects are expected to be minimal due to the amount of cover and massive rock strata between the mining and the surface. Coal-seam elevations determined from boreholes are on Plate 6-4 - Cover and Structure Map. Geologic information is sufficient to assist in preparing the subsidence control plan.

Faults

Fault locations on Plates 6-1 and 6-2 are based on previous mapping, exposures at the outcrop, fault interceptions in the Horse Canyon Mine and Geneva exploration tunnel, and information from drilling. The PAP contains inconsistent, contradictory, or unsubstantiated statements concerning faults and the relationship of faults to ground water. The PAP states on Page-26 of Chapter 6 that vertical displacements of faults range from 15 feet to more than 275 feet with displacement diminishing toward the east, and on Page-27 that vertical displacements as long as 205 feet have been measured at the outcrop in these major faults: Plate 6-2 shows displacement of 295 feet on the Williams Draw fault at the outcrop. The PAP states on Page-27 that the Entry Fault is offset 50 feet in the central part of the lease, but offset may disappear before reaching the outcrop: Plate 6-2 shows 50 feet of offset on this fault at the outcrop. Information on faults needs to be clarified in the PAP.

Faults may affect flow, direction, and magnitude of both lateral and vertical flows (Page 8, Ch. 7). Subsurface water inflow associated with fault or fracture systems are possible; however, this potential is not expected to be significant in the Lila Canyon Extension (Page-40, Ch. 6). The reasons inflow from fractures is expected to be insignificant needs to be explained.

As mining progresses down dip, localized fracture systems and faults may contain substantial water. This water is thought to be in place with little or no recharge (Page-41, Geology). The reasons this water is thought to be in place with little or no recharge need to be explained. The statement on page 40 that the water inflow from fractures is expected to be insignificant and the statement on page 41 that faults may contain substantial water are

contradictory.

SUWA has raised concerns that the effect of faults on movement of ground water is ignored, especially in the regional aquifer. The PAP contains a description of regional geology and hydrology, including faults and their interaction with ground water. The PAP states small faults in the Horse Canyon Mine had little effect on ground water. The Sunnyside fault is not anticipated in the Lila Extension.

En-echelon faulting or fracturing near the major displacements is common in the Geneva Mine, particularly in the transverse fault systems. Roof falls have been abnormally high in these areas, even though the strata indicate competent roof rock. These failures may be aggravated by water accumulation known to exist in the faults (Page-28, Ch. 6). The sources for this information are not identified.

Findings:

Information provided in the application is not considered adequate to meet the minimum Geologic Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-624.100, 121.200, The Permittee needs to clarify or resolve inconsistent, contradictory, or unsubstantiated statements in the PAP concerning faults and the relationship of faults to ground water.

R645-301-624.100, The PAP states on page 26 of Chapter 6 that vertical displacements of faults range from 15 feet to more than 275 feet with displacement diminishing toward the east, and on page 27 that vertical displacements as long as 205 feet have been measured at the outcrop in these major faults: Plate 6-2 shows displacement of 295 feet on the Williams Draw fault at the outcrop. The PAP states on page 27 that the Entry Fault is offset 50 feet in the central part of the lease, but offset may disappear before reaching the outcrop: Plate 6-2 shows 50 feet of offset on this fault at the outcrop. The Permittee needs to clarify information on faults in the text and on the maps in the PAP.

R645-301-624.100, Subsurface water inflow associated with fault or fracture systems are possible, however, this potential is not expected to be significant in the Lila Canyon Extension(Page-40, Ch. 6). The Permittee needs to explain the reasons inflow from fractures is expected to be insignificant.

R645-301-624.100, As mining progresses down dip, localized fracture systems and faults may contain substantial water. This water is thought to be in place with little or no recharge (Page-41, Ch.6). The Permittee needs to explain the reasons this water is thought to be in place with little or no recharge.

R645-301-121.200, The Permittee needs to reconcile the contradictory statements on Page 40 that water inflow from fractures is expected to be insignificant and on Page 41 that faults may contain substantial water.

R645-301-624.100, Much of the Horse Canyon Mine is below the potentiometric surface indicated by the IPA piezometers and the car-dump sump, but water entered the Horse Canyon Mine in large amounts only where the Sunnyside Fault was intercepted in deeper, down-dip areas. Observations of shale in the underlying rock is the explanation for dryness of the mine discussed in the PAP. The Permittee needs to more adequately discuss the reasons why water from the saturated strata did not enter the Horse Canyon Mine and why similar relatively dry conditions are anticipated in the Lila Canyon Extension.

R645-301-624.100, The Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings (in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine), and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation are not adequately discussed in relation to each other and to the proposed mine and are not shown together on a single map, drawing, or cross section. The Permittee needs to adequately discuss and show together on a single map, drawing, or cross-section, the relationship of the proposed mine to: the Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings (in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine), and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation.

R645-301-121.200, -624.100, Minor water inflows from the exploration entries is anticipated (Page-40, Ch. 6); this reference to exploration entries is unclear and confusing because there are no anticipated exploration entries identified in the Lila Canyon Extension. The Permittee needs to clarify whether this refers to the Geneva tunnel or other exploration entries.

R645-301-121.200, The Permittee makes reference to the Lila Canyon Extension Permit Area (LMPA) throughout Chapter 6. The Division understands this submittal is an extension to the Horse Canyon Mine permit. The Permittee needs to use clear and consistent language in identifying this submittal.

R645-301-121.200, 624.100, 130, Saturated strata in the lower Blackhawk Formation are separated from the perched zones in the upper Wasatch Group by upper Blackhawk, Price River and undifferentiated North Horn-Flagstaff Formations

Strata that contain approximately 80 percent clays, shales, siltstones, and mudstones (Ch. 7, Page-7). The PAP needs to identify the sources of the information on percentage of fine-grained sediments in the stratigraphic column and on swelling clays.

R645-301-624.310, Drill-logs in Appendix 6-1 note that pyrite was visible in many cutting or core samples; although these are not analyses, they are indicators of potential acid- and toxic-forming materials in the strata above and below the Sunnyside Seam. The PAP makes no mention of these observations of pyrite: the Permittee needs to summarize the information on these logs on the occurrence of pyrite in strata above and beneath the Sunnyside Seam.

R645-301-121.200, 731.111, 731.121, Because the PAP uses the Sunnyside Mine as an example of why there is no need to perform further analysis for acid- and toxic-forming materials, the PAP needs to better explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid acid- and toxic-drainage, such as that evident at the Sunnyside Mine refuse pile.

R645-301-121.200, -624.100, The PAP states on page 11 (Ch. 6) that the portion of the Sunnyside Sandstone which underlies the Lower Seam is "occasionally considered to be a potential aquifer"; the basis or source of this consideration appears to be the ability of this unit to transmit ground water in the Sunnyside area, but this is not clear. The statement itself is unclear and confusing, in particular the meaning of "occasionally considered to be a potential aquifer" in this context. The Permittee needs to clarify and substantiate these statements.

R645-301-121.200, -624.100, The Permittee needs to incorporate permeability values for the Sunnyside Sandstone, that were published by Balsley in 1981 and that are referred to in the PHC, into the PAP.

R645-301-623, -624.130, -724.500, -725.200, Resource maps and plans and site specific information are based on, among other sources, the old PAP for the Kaiser South Lease area. The Permittee has a copy of the Kaiser South Lease PAP. Relevant geologic information from the Kaiser South Lease PAP - such as data from the alluvial piezometers - should be incorporated into the Lila Extension PAP, be used in determining the PHC, and be available to the Division to use in preparing the TA and CHIA.

R645-301-622, -624, -722, -724, To help evaluate potential impacts in the Range Creek drainage, the Permittee needs to extend information on geology and hydrology, including cross-sections and maps, to include the Range Creek drainage.

HYDROLOGIC RESOURCE INFORMATION

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

Minimum Regulatory Requirements:

Sampling and Analysis.

All water-quality analyses performed to meet the requirements of this section shall be conducted according to the methodology in the 15th edition of "Standard Methods for the Examination of Water and Wastewater," which is incorporated by reference, or the methodology in 40 CFR Parts 136 and 434. Water-quality sampling shall be conducted according to either methodology listed above when feasible. This incorporation by reference was approved by the Director of the Federal Register on October 26, 1983. This document is incorporated as it exists on the date of the approval, and a notice of any change in it will be published in the Federal Register.

Baseline information.

The application shall include the following baseline hydrologic information, and any additional information required by the Division.

(1) Ground-water information. The location and ownership for the permit and adjacent areas of existing wells, springs, and other ground-water resources, seasonal quality and quantity of ground water, and usage. Water-quality descriptions shall include, at a minimum, total dissolved solids or specific conductance corrected to 25 C, pH, total iron, and total manganese. Ground-water quantity descriptions shall include, at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam.
(2) Surface-water information. The name, location, ownership, and description of all surface-water bodies such as streams, lakes, and impoundments, the location of any discharge into any surface-water body in the proposed permit and adjacent areas, and information on surface-water quality and quantity sufficient to demonstrate seasonal variation and water usage. Water-quality descriptions shall include, at a minimum, baseline information on total suspended solids, total dissolved solids or specific conductance corrected to 25 C, pH, total iron, and total manganese. Baseline acidity and alkalinity information shall be provided if there is a potential for acid drainage from the proposed mining operation. Water-quantity descriptions shall include, at a minimum, baseline information on seasonal flow rates.
(3) Supplemental information. If the determination of the probable hydrologic consequences (PHC) indicates that adverse impacts on or off the proposed permit area may occur to the hydrologic balance, or that acid-forming or toxic-forming material is present that may result in the contamination of ground-water or surface-water supplies, then supplemental information shall be provided to evaluate such probable hydrologic consequences and to plan remedial and reclamation activities. Such supplemental information may be based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, or analysis of other water-quality or quantity characteristics.

Baseline cumulative impact area information.

(1) Hydrologic and geologic information for the cumulative impact area necessary to assess the probable cumulative hydrologic impacts of the proposed operation and all anticipated mining on surface- and ground-water systems shall be provided if available from appropriate Federal or State agencies.
(2) If this information is not available from such agencies, then the applicant may gather and submit this information as part of the permit application.
(3) The permit shall not be approved until the necessary hydrologic and geologic information is available.

Modeling.

The use of modeling techniques, interpolation, or statistical techniques may be included as part of the permit application, but actual surface- and ground-water information may be required for each site even when such techniques are used.

Probable hydrologic consequences determination.

1.) The application shall contain a determination of the probable hydrologic consequences (PHC) of the proposed operation based upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas.
2.) The PHC determination shall be based on baseline hydrologic, geologic, and other information collected for the permit application and may include data statistically representative of the site.

3.) The PHC determination shall include findings on: whether adverse impacts may occur to the hydrologic balance; whether acid-forming or toxic-forming materials are present that could result in the contamination of surface or ground water supplies; and, what impact the proposed operation will have on sediment yield from the disturbed area; acidity, total suspended and dissolved solids, and other important water quality parameters of local impact; flooding or streamflow alteration; ground water and surface water availability; and other characteristics as required.

4.) An application for a permit revision shall be reviewed by the Division to determine whether a new or updated PHC shall be required.

Ground-water monitoring plan.

1.) The application shall include a ground-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan shall provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance. It shall identify the quantity and quality parameters to be monitored, sampling frequency, and site locations. It shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. At a minimum, total dissolved solids or specific conductance corrected to 25 C, pH, total iron, total manganese, and water levels shall be monitored and data submitted to the Division at least every 3 months for each monitoring location. The Division may require additional monitoring.

2.) If an applicant can demonstrate by the use of the PHC determination and other available information that a particular water-bearing stratum in the proposed permit and adjacent areas is not one which serves as an aquifer which significantly ensures the hydrologic balance within the cumulative impact area, then monitoring of that stratum may be waived by the Division.

Surface-water monitoring plan.

1.) The application shall include a surface-water monitoring plan based upon the PHC determination and the analysis of all baseline hydrologic, geologic, and other information in the permit application. The plan shall provide for the monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance, as well as the effluent limitations found at 40 CFR Part 434.

2.) The plan shall identify the surface-water quantity and quality parameters to be monitored, sampling frequency, and site locations. It shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. At all monitoring locations in streams, lakes, and impoundments that are potentially impacted or into which water will be discharged and at upstream monitoring locations, the total dissolved solids or specific conductance corrected to 25 C, total suspended solids, pH, total iron, total manganese, and flow shall be monitored. For point-source discharges, monitoring shall be conducted in accordance with 40 CFR Parts 122, 123, and 434 and as required by the National Pollutant Discharge Elimination System permitting authority.

3.) The monitoring reports shall be submitted to the Division every 3 months. The Division may require additional monitoring.

Analysis:

General Information

Surface water information is presented in Chapter 7 for undisturbed and disturbed drainage areas. Springs are generally considered groundwater, because they maintain the water quality characteristics of the underground resources. As spring water flows down channel, away from the source, the quality and flow can change. After some distance the flow is considered surface flow. The surface water flow type is taken from the Utah Coal Mining Rules, R645-301-100 for perennial, intermittent and ephemeral.

"**Ephemeral Stream**" means a stream which flows only in direct response to precipitation in the immediate watershed, or in response to the melting of a cover of snow and ice, and which has a channel bottom that is always above the local water table.

"**Intermittent Stream**" means (a) a stream, or reach of a stream, that drains a watershed of at least one square mile,

or (b) a stream, or reach of a stream, that is below the local water table for at least some part of the year and obtains its flow from both surface runoff and groundwater discharge.

"**Perennial Stream**" means a stream or part of a stream that flows continuously during all of the calendar year as a result of groundwater discharge or surface runoff. The term does not include intermittent stream or ephemeral stream.

Sampling and Analysis

The applicant has established some surface monitoring site locations on the proposed permit area. Additional surface water monitoring sites need to be established to characterize hydrologic sources. Each site should be identified by site name, location designation, description, ownership and use, and monitored for quality and quantity. Seasonal variation and flow characterization need to be established to provide the Division with sufficient information to characterize possible adverse impacts to the resource.

The applicant has established monitoring site L-1-S, in Lila Canyon Wash; L-2-S in the Right Fork of Lila Canyon; L-3-S, below the disturbed area in Lila Canyon Wash. These sites are identified on Plate 7-1. The applicant provides monitoring information in Appendix 7-1 for these sites.

There has been no specific site number assigned to some of the other stream or channel sites monitored by the Permittee. Data is presented in Appendix 7-1 for Little Park Wash, Williams Draw and the wash below L-12-G. There is no monitoring information or site location for the unnamed drainage in Sections 14 and 23, T.16S., R.14E.

The characterization of stream and channel need to be supported by water-monitoring and survey data. Characterization of the flow type is required to assess the degree of possible adverse impacts from mining. Mining cannot be allowed beneath perennial or intermittent streams unless it is proven that no adverse impacts will occur to the resource. Intermittent stream channels are defined in two ways. The applicant needs to make a characterization of stream channel type based on area, or by analyzing the flow and/water level (water table) in the channel, vegetation types and resource use. Characterization of the channel is necessary to assess the amount of water available to meet the resource requirements, determine impacts from mining and identify the feasibility of mitigation and reclamation. The applicant has not provided sufficient information to characterize all of the stream channels on and adjacent to the permit area.

SUWA has expressed concerns that surface water quality and quantity information has not been met to demonstrate seasonal variation. The applicant needs to submit a surface monitoring plan to survey all streams and channels in and adjacent to the permit area. The applicant needs to collect and evaluate quantitative and qualitative data for all surface water sources. The survey should establish baseline information and trends for each monitoring site. From the data, the applicant will characterize the surface waters on and adjacent to the permit

area as perennial, intermittent or ephemeral. Classification can be based on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present, or the established classification established in the definitions under R645-301-100. Descriptive adjustments based on the life of the mine should be made to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The applicant will conduct monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the applicant on Page.36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The applicant should conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to by the applicant on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The applicant needs to conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to by the applicant on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines

SUWA expressed concerns that there is no baseline data for the surface water-monitoring plan. R645-301-731.221 requires a monitoring plan based on PHC determination.

Monitoring information is presented monthly from July 2000 to March 2002 for sites L-1-S, L-2-S, L-3-S. Lila Canyon Wash, Little Park Wash, the unnamed wash in Sections 14 and 23 (T.16S., R.14E.) are (at least) intermittent by definition based on area, rather than flow. The Right Fork of Lila Canyon Wash (Coleman Wash) is defined as ephemeral by the Permittee.

Division water-monitoring guidelines for intermittent stream channels suggest monthly monitoring during periods of flow. According to the guidelines, only one year of monitoring is needed before the PAP can be submitted. A second year is needed to establish trends in flow patterns.

The UPDES Permit was obtained by the Permittee on October 1, 1999. Sites L-4-S, the sedimentation pond discharge and L-5-G, a potential mine water discharge site, are UPDES sites and are currently non-functional. Appendix 7-5 shows the application paperwork, but does not show the approved UPDES Permit. The UPDES Permit should be submitted in the PAP.

The Permittee has not supplied the following required information for all surface water monitoring sites to address the PHC:

- Identification of all surface water resources,
- determination of the possible adverse impacts to those resources from mining,
- description of the mitigation potential of those impacts, and
- design of a monitoring plan to assess possible adverse impacts.

The Permittee needs to supply this information.

The Permittee commits that all water-quality analyses performed to meet the requirements of R645-301-723 through -724.300, -724.500, -725 through - 731, and -731.210 through -731.223 will be conducted according to the methodology in the current edition of

"Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. Water-quality sampling will be conducted according to either methodology listed above when feasible (Section 723).

Ground-Water Information

Ground-Water Occurrence

Fluid levels were reported in a number of boreholes. In several cases, the fluid reported in the bore-hole appears to have been drilling fluid rather than ground water: bore-hole S-26 was completed as a piezometer in August 1980 but was dry within a month of completion and was subsequently cemented to the surface. The occurrence of water in the exploratory borings is not adequately discussed in the PAP.

S-32 was drilled in 1981 in SE1/4SW1/4 Sec. 6, T. 17 S., R. 15 E., south of the Lila Canyon Permit Extension, and completed as a piezometer in the Grassy Member of the Blackhawk Formation. The Permittee has included the drill-log, a Chronology of Development, and Water Pump Tests and Samples in Appendix 6-1 (Section 6.5.1). At least 4 water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP.

IPA-1, IPA-2, and IPA-3 were drilled in 1993 and completed as piezometers in 1994. Water levels were measured from 1994 through 1996, and the Permittee resumed measurements in 2000.

An unsuccessful attempt was made to convert exploratory boreholes S-26, S-28, and S-31, located south of the Williams Draw Fault, to ground-water observation wells or piezometers. Offsetting shallow piezometers were then bored. A-28, the offset to S-28, also was unsuccessful (Table VI-3). Table VI-3 does not indicate that A-26 and A-31 have been plugged and abandoned; however, the Permittee has no data on them (Section 6.5.1, p. 21) and considers them unusable for ground-water monitoring (Section 724.100).

Regional Aquifer

SUWA has raised concerns about ground water issues:

- that there is a regional aquifer,
- that it is not described,
- that there is no information on the discharge area and discharge rates for the regional aquifer, and
- that UEI has not established that the saturated zone is not an aquifer.

The July 2000 Environmental Assessment (EA) of the Lila Canyon Project prepared by

the BLM labels the "coal formation" of the Blackhawk Formation as a regional aquifer, and mentions springs issuing from the Blackhawk at lower elevations within the canyons; however, the 1986 survey of the Horse Canyon area by JBR and the 1993 - 1995 survey of the area around Lila Canyon by EarthFax did not identify any seeps or springs issuing from strata below the upper Price River Formation.

Previously unknown seeps have been discovered recently (June, 2002) in an unnamed canyon in the southwest corner of the permit area. The Permittee is initiating baseline monitoring there. This intermittent drainage, located mainly in Secs. 14, 23, and 26 of T.16S., R.14E. (east and south of Coleman Wash), had been identified by Utah DWR as an area where bighorn ewes and lambs congregate, their presence indicating a water supply. The Permittee needs to conduct a survey for springs and seeps in all the draws and washes of the Lila Canyon Extension and adjacent areas, particularly the lower reaches that are incised into the Price River Formation and underlying strata, and the potential for other discharge points in other areas, such as Range Creek, needs to be evaluated.

The coal seams and adjacent strata of the Blackhawk Formation are saturated, at least in the vicinity of the IPA piezometers. The PAP asserts there are no observable discharge points, that there is no use or potential use, nor is the water elemental in preserving the hydrologic balance in the permit and adjacent areas. For these reasons, there is no aquifer in the Mesa Verde Group, which includes the Sunnyside Seam and adjacent strata of the Blackhawk Formation (Ch. 7, Page-7). This and similar statements in the PAP need to be reevaluated because of the recent discovery of the seeps in the southwest corner of the permit area. The Permittee needs to evaluate whether or not the Sunnyside Seam and related saturated strata are an aquifer - meaning a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use; and if there is an aquifer, whether it is regional, intermediate, or local in extent.

Lines' Model For Range Creek

SUWA has raised concerns that the cross section in Lines, G. C., 1985, "The ground-water system and possible effects of underground coal mining in the Trail Mountain area, central Utah", USGS Water-Supply Paper 2259 (Lines) is a model for Range Creek and that it clearly supports discharge to Range Creek from a regional aquifer. The study by Lines provides valuable insight into ground-water systems in the Wasatch Plateau, specifically to the Trail Mountain area. Much of the information can be applied to the Book Cliffs coal field also. However, the situation presented diagrammatically in Lines' cross-section differs from the reality of the hydrogeologic environment at Lila Canyon and Range Creek in at least three important aspects: 1). Along its entire course, Range Creek has not eroded deeper than the upper Price River Formation, so a thick section of low-permeability rock isolates the creek from the projected saturated zone; 2). In the reaches nearest Lila Canyon, Range Creek is significantly higher in elevation than the water in the saturated strata; and 3). The cross-section in Lines has no scale, but proximity of the stream and saturated coal seam is implied – the closest

that the mine workings at Lila Canyon will be to Range Creek is approximately five miles. Other coal mine operators have directly challenged Lines' assertion that there is a regional aquifer based on data from their own coal mine operations.

Mine Inflow

Except for water that flowed into the Horse Canyon Mine and was used as part of the coal-mining operation, there has been no diversion of this water for beneficial use (water rights were filed on this in-mine water by IPA: water encountered by mining and used underground is not subject to appropriation through water-rights; water encountered by mining that is brought to the surface for beneficial use is subject to appropriation through water rights). The PAP states that underground water from the saturated zone will probably be encountered and used during development and operation of the mine in the Lila Canyon Extension.

Information on inflow to the Horse Canyon Mine is sparse, but it states that generally, underground flows from rock slopes and gob areas into the Horse Canyon Mine were small. Only when the mine intercepted the Sunnyside Fault in deeper, down-dip areas was significant water encountered. Prior to suspending operations, the Horse Canyon Mine pumped water from the workings near the Sunnyside Fault to keep them from flooding. Some of the water was used for mine operations; the rest was discharged intermittently to the surface in Horse Canyon. According to sources referenced in Chapter 7, the estimated average discharge rate was 0.2 cfs, but there was no estimate of in-mine consumption.

A large section of the Horse Canyon Mine, including the Geneva exploration tunnel and the rotary dump, is below the potentiometric surface that is indicated on Plate 7-1. It states in the PHC that the Geneva exploration tunnel is flooded, but the source of the information is not given.

Minor water inflow from the exploration entries is anticipated (Page-40, Ch. 6). The PHC (Page 3) states that the exploration tunnel is flooded, that it will be intercepted by mining operations in the Lila Canyon Extension, and the water will need to be pumped from the mine. The Geneva exploration tunnel and the water in it are not discussed with resource information and the source of the information is not given in the PAP. Presuming the tunnel or entries mentioned on Page-40 and in the PHC are the same, the PAP states water inflows will be minor. The PHC states pumping will be needed: the source of the information on the Geneva exploration tunnel, and the amount of water known to be in the entries and the amount that will be pumped need clarification and discussion in the PAP.

In-mine flows within the Horse Canyon mine were monitored for quantity and quality at several locations that are shown on Plate 7-1. There are also data from S-32, located to the south of the Lila permit area (Appendix 6-1). This information on water in the saturated zone needs to be analyzed and discussed as part of the ground-water baseline description.

The statement about recharge areas and drainage divides on page 8 (Ch. 7) is very unclear. The Permittee has interpreted a ground-water divide in the deep-saturated zone between Horse Canyon and Range Creek and extending between Lila and Little Park drainages; this is not shown on Plate 7-1. If such a divide exists, it indicates movement of ground water in different directions in the deep saturated zone. The basis for the interpretation of the existence of this divide and the implications for the potentiometric surface and the hydrologic balance need to be clarified in the PAP.

SUWA has raised concerns that UEI has not described seasonal variation in groundwater – especially with maps or cross sections. The Permittee needs to portray seasonal variations of head on maps or cross-sections.

Baseline Data Adequacy

SUWA has raised concerns that the PAP contains numerous water samples from the mined area of the Horse Canyon Mine that do not represent pre-mining conditions. The Division considers these as valid pre-disturbance, pre-mining baseline in relation to the Lila Canyon Extension and as an important part of the required description of the existing, premining hydrologic resources.

SUWA has raised concerns that there are no baseline data on the groundwater monitoring springs for comparison, and that IPA data are sporadic – not adequate baseline. The Division believes the information is sufficient for a PAP submittal under the guidelines in Directive Tech 004. In addition to data collected in 1993, 1994, and 1995 for the springs and 1994, 1995, and 1996 for the piezometers, the PAP contains at least one year of current quarterly baseline data from the springs and piezometers.

SUWA has raised concerns that extrapolation of the potentiometric surface ignored faults, ignored the car dump, ignores the most recent data, and covers an unacceptably large area for three close data points. The Division notes that it also ignored the postulated ground-water divide described on Page-8 (Ch. 7). In spite of these shortcomings, the potentiometric surface and projected water – coal contact on Plate 7-1 give a reasonable approximation of the depth to water in the coal seam and in water-bearing strata above and potentially impacted strata below the coal seam, and the information is sufficient to meet the requirements of R645-301-724.100. Additional information will be evaluated as it is received.

The first page of the 1989 Water Monitoring Data in Appendix 7-2 is illegible. A legible copy is requested.

SUWA has raised concerns that IPA-1 –2, and –3 are the only potential source of information on water quality in the regional aquifer. There is considerable information on ground-water quality and quantity in the analyses of in-mine flows at the Horse Canyon Mine.

There are also data from S-32, located to the south. The Permittee needs to include this information as part of the ground-water baseline discussion. The Permittee needs to consider sampling the IPA piezometers for water-quality analyses.

Two borings described as wells are located in the alluvium of lower Horse Canyon. The one identified as the MDC Well has to the best of the Permittee's knowledge been sealed. The MDC Well is associated with water right 91-185 in Table 7-2. The Horse Canyon Well, nearer the old Horse Canyon Mine surface facilities, is planned to be used by the Permittee during mining and reclamation activities, but it is not clearly associated with a water right and it might merely be a piezometer. Because Horse Canyon is an intermittent drainage with apparently ephemeral flow, water level and water-quality information from this boring could be valuable in describing the hydrologic balance of the area. The Permittee is proposing to use the Horse Canyon Well as a water-supply well, but knows nothing of the water quality or quantity, or of the availability of water for use. The Permittee needs to determine if the Horse Canyon Well is functional or useful as a well or piezometer and begin monitoring water quality and quantity.

There are no baseline monitoring data in the PAP for L-11-G and L-12-G, two springs shown on Plate 7-4 and discussed in Section 731.211 as ground-water monitoring points. Data are also needed for the seeps recently discovered in the unnamed canyon in the southwest corner of the permit area.

It states on page 32 (Ch. 7) that there have been no ground-water data collected since 1995. This is incorrect. Data have been collected at designated locations since July 2000. It states on pages 8 and 9 (Ch. 7) that the IPA piezometers have not been monitored since 1996, but monitoring will commence in 2000: this statement needs to be made current.

The statement on pages 10-11 (Ch. 7) that there is no discharge from strata above the North Horn is erroneous: the Colton Formation or alluvium on Colton produces the largest number of springs, according to the geology and spring location maps in the PAP.

It states on page 11 (Ch. 7) that field conductivity indicates that springs occurring higher in the stratigraphic section have lower conductivity, indicating local flow systems, and refers to Table 7-1; Table 7-1 does not relate electric conductivity to geologic occurrence, and information explicitly relating springs to stratigraphy or lithology is not given anywhere in the PAP.

SUWA has raised concerns that L-6-G is adjacent to the Horse Canyon Mine and is not a useful monitoring point. L-6-G is providing pre-disturbance, pre-mining baseline in relation to the Lila Canyon Extension and contributes to the required description of the existing, pre-mining hydrologic resources for the permit and adjacent areas. Because L-6-G has been frequently dry recently, L-11-G, located approximately 100 yards upstream of L-6-G, has been added to the monitoring plan.

Monitoring – Inside vs. Outside Permit Boundary

SUWA has raised concerns that fourteen EarthFax data points are within the Lila Canyon Extension permit area, but data were collected for only one. During the EarthFax survey in 1993 – 1995, data were collected for all fourteen seeps and springs located inside the permit boundary, which is why their existence is documented in Appendix 7-1. Not every site had flow sufficient to obtain valid water-quality samples: many of the fourteen locations SUWA refers to were no more than wet spots some years, and were dry other years. Where flow was sufficient and consistent, water-quality analyses were done for sites representative of water rights and ground-water discharge zones.

The number of springs monitored on one side or the other of the permit area boundary is not relevant: the permit and adjacent areas are to be monitored, and impacts are to be minimized both inside and outside the permit boundary.

SUWA has raised concerns that five seeps and springs are not sufficient, and that four of them are outside the permit, and that one spring in the permit area is not sufficient baseline. Determination of the permit area is not based on hydrologic systems. The Coal Mining Rules require protection of resources both within and outside the permit area and baseline and operational monitoring of both the permit area and adjacent areas. The Division notes that expanding the permit area to include more springs would actually lower the performance standard for protection of the added springs from; "minimize impact" and "prevent material damage", to simply "minimize impact".

Ground –Water Emergence Zones – Groups of Seeps and Springs

SUWA has raised concerns that baseline data need to be collected at all springs and seeps, starting immediately. The Coal Mining Rules require a description of the ground-water hydrologic resources: location; extent; ownership; seasonal quantity and quality; discharge, depth, or usage; and additional information deemed necessary and required by the Division. Baseline data for these springs sufficient to make this description are in the PAP. Additional, detailed investigation of every aspect of every component of the hydrologic resources is not needed to describe the resources and minimize impacts.

Water-quality analyses done by EarthFax (1993-1995) were representative of the groups of springs and seeps in the ground-water discharge zones. Springs selected by the Permittee for operational monitoring typically have baseline water-quantity and -quality data from the EarthFax survey, have been developed for use by the water right holder, and have the greatest or most consistent flow of the group. At sites that have been selected for operational monitoring, monitoring was resumed in 2001 to establish a continuous record from pre-mining into operational conditions.

SUWA is asserting additional baseline data are needed for every site, irrespective of use, location, flow, and other existing information about the site and the potential for impacts to the site. Additional baseline monitoring of every point source would provide, at best, marginal information to further describe or define the hydrologic resources of the Lila Canyon Extension. The EarthFax survey was done during a three year period during which the Palmer Hydrologic Drought Index (PHDI) for the region around the Lila Canyon Extension went from wet (1993) to drought (1994) and back to wet (1995). The area is currently in the third year of a drought, so, particularly at this time, repeating baseline monitoring for all the sites that have already been monitored for baseline data would be unlikely to produce additional, useful information.

SUWA has raised concerns that seeps and springs cannot be treated as systems or groups – each source is a separate resource as regards hydrology, wildlife, and vegetation. The survey results from 1993, 1994, and 1995 in Appendix 7-5 document the seasonal, ephemeral nature of individual discharge locations within a ground-water discharge zone or area: discharge appeared at new, previously dry locations and diminished at some older sites during the three years the EarthFax survey was in progress. This is a typical pattern and has been documented throughout the Book Cliffs and Wasatch Plateau coalfields and many other locations. Some monitored sites have been developed by water-right holders to concentrate flow or maintain more consistent flow. The springs selected by the Permittee for monitoring have had relatively consistent flow.

Surface-Water Information

Surface-water flow for the permit area can be divided into disturbed and undisturbed drainage.

Undisturbed Drainage

The undisturbed drainages originate in the canyons high above the escarpment.

The Permittee describes the regional surface water-flow pattern of the permit and adjacent area under 724.200 of the PAP. The locations of known seeps, springs, and watering ponds are shown on Plate 7-1. Page 13, Volume 6 indicates that there are three main drainages within the permit area. They are: Horse Canyon Creek, an intermittent stream; Little Park Wash, an intermittent stream and Lila Canyon Creek, an intermittent stream. This information is partially correct but does not describe the proposed permit area completely. There are actually four drainages that are important to assessing the surface hydrologic regime in the proposed permit area. They are: Lila Canyon Wash, Little Park Wash, Range Creek and an unnamed wash in the southwest corner of the permit area.

All drainages in the proposed permit area eventually flow to the Price River drainage. The Horse Canyon Creek drainage is adjacent to the proposed permit area, however the portion of Horse Canyon that lies closest to the proposed permit area has been undermined and would

not likely be impacted by the proposed mine. Much of the area above Lila Canyon Wash has also been undermined.

SUWA has expressed concerns that baseline data has not been submitted for Little Park Wash or Lila Canyon Wash. Technical Directive 004 calls for 1 year of baseline data prior to submittal of the PAP, and 1 more year prior to mining.

The Permittee has collected some surface water information on Lila Canyon Wash and Little Park Wash, Appendix 7-1. On Page 9, Vol. 6 the Permittee states that the Lila Canyon drainage is normally dry, flowing only in response to precipitation runoff or snowmelt.

The Permittee describes surface water again in Section 722.200 of the PAP. The statement, "There are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas," indicates that the area is dry and void of perennial or intermittent surface flows. A review of the surface water data in Appendix 7-1 substantiates that some areas are dry, but the USGS quad maps show two ponds that have never been monitored. A recent review of the PAP identified that the Permittee had not assessed or collected data from the unnamed wash in the southwest corner of the permit area. This drainage is over one square mile in area and by definition is at least an intermittent stream channel that has to be monitored monthly during periods of flow. Without data it cannot be determined what characteristics this channel exhibits. Recent information has been produced that shows seeps in the lower part of the canyon used by wildlife. These are drought years and it is not know what type of stream flow could occur from these springs, especially without monitoring data.

Disturbed Drainage

The Permittee proposes to control disturbed area drainage by diverting undisturbed runoff to a sedimentation pond. The Permittee also proposes in the PAP to use silt fencing, culverts, and ditches to contain and control sediment in the disturbed area.

SUWA has expressed concerns that receiving channels have not been characterized. Potential discharge from the UPDES sites, especially from mine-water discharge, has not been quantified. If the discharges occur in high quantities, downstream impact to the channel could result.

A mine-water discharge model needs to be developed to identify potential impacts to stream channels and the nearest perennial stream from mine water discharges. The model should assess the flow, water level in the channel, amount of mine discharge it would take either intermittently or continually to reach the nearest perennial stream that contains aquatic life. This study should provide sufficient qualitative and quantitative information to determine impacts to the channel receiving discharge from the UPDES site. This information, along with stream-channel morphology studies should identify impacts from mine discharges.

SUWA has raised concerns that remote samplers and crest-staff gauges should be used to monitor the intermittent channels. Kaiser installed crest-staff gauges in Little Park (Page 21, Ch. 6). Relevant data from the Kaiser South Lease PAP, such as that from the crest-staff gauges, should be included in the Lila Extension PAP to be used in determining the PHC and to be available to the Division to use in preparing the TA and CHIA.

The channels in the Horse - Lila Canyon area are intermittent by definition, but observations indicate flow is ephemeral. The PAP does not mention biological communities, or a lack of biological communities, in the stream beds that would indicate ephemeral flow.

Channels that drain more than one square mile but have ephemeral flow are included in the intermittent stream definition because the potential flood volumes necessitate application of stream-channel diversion criteria of the Coal Mining Rules. Classification is to be made at the time of permit application, based on collected data and probable conditions (Preamble to the Federal Rules; Coalex State Inquiry-97; June 23, 1988).

Baseline Cumulative Impact Area Information

SUWA has raised concerns that there are insufficient data to prepare the CHIA. Information needed to meet the regulatory requirements of R645-301-725 is available from federal, state, and a number of sources. The Permittee is not required to provide data specifically for the CHIA determination unless none is available from other sources. The Division is not limited to information in the PAP in preparing the CHIA; however, the Division anticipates that data in the PAP will undoubtedly be used along with other information in preparation of the CHIA.

Modeling

The Permittee states on Page 19, Section 726, Vol. 6, that no modeling is proposed. The Permittee should change this paragraph in the PAP.

Runoff flows from some disturbed area drainage areas were calculated using Storm Version 6.20, a program used to calculate runoff flows from disturbed areas based on the SCS-TR55 Method for Type II storms.

A mine-water discharge model is also requested to identify potential adverse impacts to receiving streams.

Alternative Water Source Information

The Permittee states that a water rights search was conducted for one mile outside the proposed permit area. The locations of those water rights are shown on Plate 7-3, and are in

Table 7-2. The Permittee indicates that UEI own the rights to approximately 1.5 cfs in the area and if any adverse effects on water resources result from the operation resulting in a loss of water sources, UEI would replace lost water using their rights.

The Division requests further information on how this will actually be accomplished, especially if the water losses occur in a different area than the water supply.

Probable Hydrologic Consequences Determination

SUWA has raised several concerns that relate to the PHC. Regulation R645-301-728.300 requires that the PHC contain specific findings.

Section 728 of the PAP refers to Appendix 7-3 for many of the findings; however, the PHC in Appendix 7-3 is written as a narrative that mostly discusses old data and information from the Horse Canyon Mine, and many of the findings are unclear, ambiguous, or very general with no reference to the Lila Canyon Extension. Overall, the PHC is inadequate on many points and a new PHC is needed to include the following information:

- The PHC does not contain descriptive information that characterizes the types of surface water resources and potential adverse impacts. It needs to be updated with descriptive information to describe potential adverse impacts from subsidence.

- The PHC does not describe the stream morphology of the stream channels on or adjacent to the permit area, or any impacts to those channels from mine water and disturbed surface discharges.

- The PHC does not include surface water information describing the relationship of the permit and mined area with Range Creek or potential adverse impacts to Range Creek.

- SUWA has raised concerns that there are inadequate baseline data to prepare the PHC. Additional information for Range Creek needs to be added to clarify for the public why adverse impacts to the Range Creek drainage are not expected. Additional hydrology information is needed for the canyons incised into the Book Cliffs escarpment.

- SUWA has raised concerns that a finding on acid and toxic materials is needed in the PHC. The PHC determination does not include findings on whether acid-forming or toxic-forming materials are present that could result in the contamination of appropriated surface- or ground-water supplies. This finding needs to be added to the PHC in accordance with R645-301-728.320.

- The Permittee states that downstream effects from the discharging of water from the mine will be similar to those experienced at the Horse Canyon Mine. A description or quantification of the effects at the Horse Canyon Mine should be included in the PHC in accordance with R645-301-728.330,331.

- Data from the Horse Canyon Mine indicate the main effect of the mine discharge on water quality in the receiving Horse Canyon channel was a decrease in TSS and an increase in TDS. It is not clear what hydrologic resources might be impacted. The PHC needs to include a discussion of the PHC to Lila and Coleman Washes in accordance with R645-301-726.332.

- The springs and stream channels being monitored in the Lila Canyon Extension must be discussed in the PHC. Current baseline data must be evaluated in determining the PHC.

- The possible adverse impacts to water quality and water quantity must be evaluated with respect to water right users and wildlife R645-301-728.332).

- SUWA has raised concerns that there is no baseline characterization of the receiving channel for mine water discharge, against which to compare impacts of discharging to this channel; sedimentation, erosion, and morphology. The PAP contains a commitment to evaluate the channel before water is discharged (Section 728.333). The Permittee needs to determine pre-mine, pre- discharge characteristics of Lila and Coleman Washes in accordance with R645-301-728.333.

- The springs and stream channels being monitored in the Lila Canyon Extension area must be discussed in the PHC.

- Current baseline data must be evaluated in determining the PHC.

- The probable impacts to water-quality and water quantity must be evaluated with respect to water right users and wildlife (R645-301-728.334).

- SUWA has raised concerns that the impacts of increased salinity from the solution of salts from the Mancos Shale are not evaluated. The PHC should address the probability of increasing salinity in the Colorado River from the discharging of water from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River. This should include a determination of the probability of mine discharge reaching the Price River.

Climatological information on average seasonal precipitation, average direction and

velocity of winds, and seasonal temperature ranges that is representative of the permit and adjacent areas is presented in the PAP. The hydrologic regime and hydrologic balance of the Horse - Lila Canyon area are not perfectly understood and never will be; however, the PHC determination has not made use of current baseline data collected since 2000 and submitted with the PAP.

Potential adverse impacts identified are: increased sediment loading, diminution or interruption of water supplies on water rights, discharge of contaminated ground water by pumping, erosion and streamflow alteration, and deterioration of water quality (Page-24, Ch. 7).

Water will be held in sumps as long as possible to promote the settling of sediments and sampled prior to discharge to ensure compliance with UPDES standards (Page 26, Ch. 7).

Findings:

R645-301-721, 724.200, (1)The Permittee must submit a surface monitoring plan to survey all streams and channels in and adjacent to the permit area. The Permittee must collect and evaluate quantitative and qualitative data for all surface water sources. The survey must establish baseline information and trends for each monitoring site. From the data, the Permittee must characterize the surface waters in or adjacent to the permit area as perennial, intermittent or ephemeral. Classification can be based on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present, or the established classification established in the definitions under R645-301-100. Descriptive adjustments based on the life of the mine should be made to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The Permittee must conduct monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee must conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to in the application on Page 36, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. (2) The Permittee shall provide information in a table and illustrate on maps the area and extents of drainage basins in and adjacent to the mine permit area. The table shall identify the area of the drainage basin that flows in and through the permit area. (3) The Permittee must conduct a survey for springs and seeps in all the draws and washes of the Lila Canyon Extension and adjacent areas, particularly the lower reaches that are incised into the Price River Formation and underlying strata, and the potential for other discharge points in other areas, such as Range Creek, must be evaluated.

R645-301-731 (731.221) The Permittee shall identify and describe all water resources within the drainage basins and potential impacts to the resource and downstream users. The Permittee will discuss methods of mitigation to surface water resources and channels in the event subsidence should occur and water resources are impacted. The Permittee will describe access and feasibility of mitigation of subsidence impacts to perennial, intermittent or ephemeral stream channels and how channel restoration could be accomplished.

R645-301-724, 725, 728, (1) Information from the Kaiser South Lease PAP on the crest-staff gauges and piezometers A-26, A-28, and A-31 in Little Park Wash must be included in the Lila Extension PAP to be used in determining the PHC and to be available to the Division to use in preparing the TA and CHIA. (2) Water-quality data for inflows to the Horse Canyon Mine are in the current Horse Canyon Mine MRP, but the Permittee has not discussed water quality of this saturated zone. The Permittee must include this information in the discussion of water quality in the saturated zone. (3) At least four water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP. The Permittee needs to visit the site of this water-monitoring well and determine if it is still usable. If it is usable, the Permittee needs to add it to the monitoring plan

R645-301-722.100, 724.300, It states on page 11 (Ch. 7) that field conductivity indicates springs occurring higher in the stratigraphic section have lower electric conductivity, indicating local flow systems, and refers to Table 7-1: Table 7-1 does not relate conductivity to geologic occurrence, and information explicitly relating springs to stratigraphy or lithology is not given anywhere in the PAP. The Permitee must add information substantiating that there is a relationship between position in the stratigraphic section and electric conductivity. It states on page 12 of Chapter 7 and on page 21 of Chapter 6 that there are no hydrology data for S-32. The Permittee needs to correct these pages - and anywhere else similar statements occur - because hydrology data for S-32, including water-quality data, are in Appendix 6-1.

R645-301-724.100, (1) Baseline monitoring data for L-11-G and L-12-G, two springs shown on Plate 7-4 and discussed in Section 731.211 as ground-water monitoring points, must be added to the PAP. The Permittee must determine if the Horse Canyon Well is functional or useful as a well or piezometer and begin monitoring water quality and quantity if feasible. (2) The Permittee must adequately discuss the occurrence of water in the exploratory boreholes, as noted on driller's logs. (3) The Permittee must analyze and discuss information on water in the saturated zone as part of the ground-water baseline description. (4) The Permittee must sample and analyze water from the IPA piezometers for baseline water-quality

data, or justify why it is not feasible

R645-301-121.200, (1)The Permittee must provide a legible copy of the first page of the 1989 Water Monitoring Data in Appendix 7-2. (2) The Permittee must clarify the basis for the interpretation of the existence of a ground-water divide in the saturated zone and the implications for the hydrologic balance. (3) The Permittee must clarify and discuss the source of the information on the Geneva exploration tunnel, and the amount of water known to be in the entries and the amount that will be pumped when the Lila Canyon Extension intercepts the tunnel.

R645-301-624.100, -722.100, The PAP states there are no observable discharge points, that there is no use or potential use, nor is the water elemental in preserving the hydrologic balance in the permit and adjacent areas and, for these reasons, there is no aquifer in the Mesa Verde Group (Ch. 7, Page-7). This and similar statements in the PAP need to be reevaluated because of the discovery of the seeps in the unnamed drainage in the southwestern corner of the permit area. The Permittee must evaluate whether or not the Sunnyside Seam and related saturated strata are an aquifer - meaning "a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use;" and if they are an aquifer, whether it is regional, local, or intermediate in extent

R645-301-130, (1) It states in the PHC that the Geneva exploration tunnel is flooded, but the source of the information is not given. The Permittee must provide the source of this information. (2) On Page-12 (Ch. 7), "(personal communication, 1990)" is given as a reference, but the individual is not identified. The Permittee must provide the name of the individual who provided this information.

R645-301-121.200, -728, The PHC must contain the following findings: (1) The Permittee must include an assessment of the probable hydrologic consequences to the Range Creek drainage in the determination of the PHC. (2) The PHC determination does not include findings on whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies. The Permittee needs to add this finding to the PHC. (3) The Permittee states that downstream effects from discharging water from the mine will be similar to those experienced at the Horse Canyon Mine. The Permittee needs to discuss, describe, or quantify what the impacts were at the Horse Canyon Mine. (4) It is not clear what hydrologic resources might be impacted. The Permittee needs to determine the PHC to Lila, Coleman, and other intermittent washes. (5) The Permittee needs to determine pre-mine, pre- discharge characteristics of Lila Wash. (6) The Permittee needs to discuss in the PHC the springs and stream channels being monitored in the Lila Canyon Extension area. (7) The Permittee needs to evaluate current baseline data in determining the PHC. (8) The Permittee needs to evaluate probable impacts to water quality and water

quantity with respect to water-right users and wildlife in determining the PHC. (9) In the PHC, the Permittee needs to address the issue that has been raised concerning increasing salinity in the Colorado River by discharging water from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River. This should include a determination of the probability of mine discharge reaching Grassy Trail Creek and the Price River. (10) The Permittee must characterize the channels and flow patterns within each drainage basin, describe all water uses associated with those basins, potential impacts to those uses and describe the total hydrologic impacts to surface water resources on and adjacent to the permit area based on sampling, monitoring, characterization and studies. (11) The Permittee must use this information to summarize the potential for mitigation and hydrologic impacts on and off the permit area in the PHC. (12) The PHC must describe all probable hydrologic consequences from subsidence, discharges to stream channels, impacts to channels, sediment loading, salt loading and impacts to aquatic wildlife. (13) The Permittee must survey and describe the surface water resources and drainage of Range Creek and address probable impacts from mining in the PHC. (14) The Permittee must provide adequate data, including water rights, to make a determination of the probable hydrologic consequences to the Range Creek drainage. (15) The Permittee states that downstream effects from the discharging of water from the mine will be similar to those experienced at the Horse Canyon Mine. The Permittee must provide discussion, description, or quantification of what the effects were at the Horse Canyon Mine. (16) The Permittee must address the probability of increasing salinity in the Colorado River from water discharged from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River. This should include a determination of the probability of mine discharge reaching the Price River. (17) The Permittee must determine pre-mine, pre- discharge characteristics of Lila Wash.

R645-301-722, The Permittee must change the verbiage in the Modeling, Section 726 to the modeling that has been performed and will be done for support data in the PAP.

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.

Minimum Regulatory Requirements:

The permit application must include as part of the Resource Information, the following maps, plans and cross sections:

Affected area boundary maps

The boundaries of all areas proposed to be affected over the estimated total life of the underground mining activities, with

a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought.

Archeological site maps

Known archeological sites within the permit or adjacent areas. Note - Information on the nature and location of archeological resources on public land and Indian land as required under the Archeological Resources Protection Act of 1979 must be submitted separately from the application, and marked and held as confidential.

Coal resource and geologic information maps

Nature, depth, and thickness of the coal seams to be mined, any coal or rider seams above the seam to be mined, each stratum of the overburden, and the stratum immediately below the lowest coal seam to be mined. All coal crop lines and the strike and dip of the coal to be mined within the proposed permit area.

Cultural resource maps

The boundaries of any public park and locations of any cultural and historical resources listed or eligible for listing in the National Register of Historic Places. Each cemetery that is located in or within 100 feet of the proposed permit area. Any land within the proposed permit area which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System, including study rivers designated under Section 5(a) of the Wild and Scenic Rivers Act. Any other relevant information required by the Division.

Existing structures and facilities maps

Location and dimensions of existing areas of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area.

Existing surface configuration maps

Sufficient slope measurements to adequately represent the existing land surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the premining configuration of the land; and, slope measurements shall take into account natural variations in slope, to provide accurate representation of the range of natural slopes and reflect geomorphic differences of the area to be disturbed.

Mine workings maps

Location and extent of know workings of active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Location and extent of existing or previously surface-mined areas within the proposed permit area.

Monitoring and sampling location maps

Elevations and locations of test borings and core samplings. Elevations and locations of monitoring stations used to gather data on water quality and quantity, fish and wildlife, and air quality, if required, in preparation of the application

Permit area boundary maps

The boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin underground mining activities.

Subsurface water resource maps

Location and extent of subsurface water, if encountered, within the proposed permit or adjacent areas, including, but not limited to, areal and vertical distribution of aquifers, and portrayal of seasonal differences of head in different aquifers on cross sections and contour maps.

Surface and subsurface manmade features maps

The location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings. The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, and agricultural drainage tile fields. Each public

road located in or within 100 feet of the proposed permit area.

Surface and subsurface ownership maps

All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the permit area.

Surface water resource maps

The locations of water-supply intakes for current users of surface waters flowing into, out of, and within a hydrologic area defined by the Division, and those surface waters which will receive discharges from affected areas in the proposed permit area. Location of surface water bodies such as streams, lakes, ponds, springs, constructed or natural drains, and irrigation ditches within the proposed permit and adjacent areas.

Vegetation reference area maps

The location and boundaries of any proposed reference areas for determining the success of revegetation.

Well maps

Location, and depth if available, of gas and oil wells within the proposed permit area and water wells in the permit area and adjacent areas.

Cross sections, maps, and plans included in a permit application as required by this section shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional, land surveyor, with assistance from experts in related fields such as landscape architecture, and shall be updated periodically as required by the Division.

Analysis:

Affected Area Boundary Maps

The affected area for the Horse Canyon Mine is scheduled to be the same as the permit area. Plate 1-1, Permit Area Map, shows the permit area for the entire Horse Canyon Mine. The permit area is divided into the Horse Canyon project, the Lila Canyon Extension and areas of potential future mining. Plate 1-1 was prepared and certified by a registered professional engineer

The Permittee submits hydrologic resource information on maps in Chapter 7 that illustrate locations of surface water sources and their flow routes. Plates 7-1, 7-3 and 7-4 show the mine permit and adjacent areas. They are scaled at 1 inch = 2000 feet. The Permittee states that all surface water bodies are identified on Plate 7-1. Not all drainages and stream channels in and adjacent to the permit area are named, which leads to some confusion. The Permittee should identify all drainages by some name and label all maps with those names to eliminate confusion of sites.

The Permittee will identify all perennial, intermittent and ephemeral stream channels on the permit and adjacent areas. The Permittee proposes to mine within 100 feet of an intermittent stream channel (Little Park Wash and the unnamed drainage in the southwest corner of the permit area). The Permittee will provide a map showing where mining will occur within 100 feet (horizontally) of a perennial or intermittent stream channel.

Coal Resource and Geologic Information Maps

Depth to the Sunnyside Seam, the seam to be mined, is shown on the Cover and Structure Map on Plate 6-4. Thickness of the Sunnyside Seam is shown on the Coal Thickness Isopach map on Plate 6-3. Thickness and nature of the Sunnyside Seam, of coal or rider seams above the Sunnyside Seam, and of the stratum immediately below the Sunnyside Seam are shown on the Coal Sections on Plate 6-5. The cross section on Figure 7-1 shows the rock tunnels, the dip of the strata, stratigraphy, and expected ground-water elevation.

Figures VI-1 and VI-2 portray the general stratigraphy of the permit and adjacent areas. Plate 6-1 shows surface geology, including coal crop lines, and the strike and dip of the Sunnyside Seam within the proposed permit area.

Elevation contours on the Sunnyside Seam, as determined from the outcrop and boreholes, are on Plates 6-2, 6-3, and 6-4. The plates indicate that the coal seam crops out at approximately 6,500 feet in the vicinity of the rock-slope tunnels. The tunnels will intercept the coal seam at approximately 6,300 feet (Appendix 8-2 - Figure 7-1).

Depth of cover ranges from approximately 500 feet near the escarpment, to 2,300 feet (Section 525.120, Plate 5-5). Overburden is, for the most part, around 1,500 feet. Because of the flat topography of Little Park Wash, the deeper coal is generally to the east and north (Section 6.3.)

Fault locations and offsets are shown on Plate 6-1 and discussed in the text. Fault traces are not always visible at the surface, and fault locations on Plates 6-1 and 6-2 are also based on exposures at the outcrop and information from drilling (Ch. 6, Page 27). Interpretations of fault alignments on the geology map in the current Horse Canyon Mine MRP, which are based on detailed mapping by Kaiser Corporation consultants, differ from those mapped by the USGS (Ch. 6, Page 13), and locations of faults on Plates 6-1 and 6-2 are slightly different from those on the geology map in the Horse Canyon Mine MRP and mapped by the USGS. Aside from differences in detail, these sources of information generally agree on location, extent, and magnitude of the faults; however, as discussed in the Geologic Resource Information section, there is information on faults that needs to be clarified in the PAP.

The Sunnyside Fault, shown on Plates 6-1 and 6-2 of the Lila Canyon PAP and Plate II-2 of the current MRP, limited mining to the east in the Horse Canyon Mine but is not expected to extend into the Lila Canyon area, so is not expected to limit coal recovery at the Lila Canyon Extension.

Maps and cross sections in the PAP extend as far as Patmos Ridge but include only a small portion of the Range Creek drainage. Geologic maps and cross sections need to extend from the Book Cliffs to the Range Creek drainage, at least as far as the channel of Range Creek, to help evaluate potential impacts in the Range Creek

Existing Structures and Facilities Maps

Within the permit area for the Lila Canyon Extension, there are several public roads. Those roads are shown on several maps including Plate 4-4. The roads on Plate 4-4 are shown but not clearly labeled. To avoid confusion, the Permittee must label the public roads in the Lila Canyon Extension area. The Permittee must also include a brief description of the roads in the PAP. This deficiency will be listed in the existing structures section of the TA.

Within the Lila Canyon disturbed area there are two existing structures, which are a 36-inch culvert and a small portion of the Emery County road above the culvert. The county plans to upgrade the county road. During road construction, the culvert will be removed and replaced with a larger culvert. Both of the existing structures are shown on Plate 5-1A, Pre-Mining Contours. A description of the existing culvert is given in Sections 526.110 of the PAP.

In Section 521.123 of the PAP, the Permittee refers to a proposed county road, which is located within 100 feet of the proposed permit area and the road is shown on Plate 5-2. The County road shown on Plate 5-2 is an existing road. A short section of that county road will be in the permit and disturbed area boundaries.

Plate 4-4 and Plate 5-1A were prepared and certified by a registered professional engineer.

Existing Surface Configuration Maps

The existing surface configuration for the Lila Canyon disturbed area is shown on Plate 5-1A. The map is at a scale of 1-inch equals 100 feet. The contour lines are on 5-foot intervals for the flat areas and on 25-foot intervals for the steeper areas. The contour lines extend more than 100 feet beyond the disturbed area boundaries. Plate 5-1A was prepared and certified by a registered professional engineer.

Plate 5-3, Subsidence Control Map, shows the existing topography of the Lila Canyon Extension. The contour lines appear to be taken off a USGS topographic map. The Division considers the contours on Plate 5-3 to be adequate to show the premining topography in the Lila Canyon Extension.

Mine Workings Maps

The location of the known mine workings in the Horse Canyon permit area are shown on Plate 5-1, Previously Mined Areas. The old mine workings include the Horse Canyon project and the old Book Cliffs Mine. Plate 5-1 was prepared and certified by a registered professional engineer. See Plate II-2 in the Horse Canyon section of the mine plan for a detailed mine map of the Horse Canyon project. Dates of this mining should be indicated on the map, see the

deficiency in this TA under General Contents; Maps and Plans.

Monitoring Sampling Location Maps

Elevations and locations of test borings are on Plates 6-2, 6-3, and 6-4. Elevations of core samples are tabulated in Tables VI-1 and VI-3. Piezometers IPA-1, IPA-2, and IPA 3 are shown on Plates 7-1 and 7-4. Elevations and locations of springs monitored by JBR in 1989 and EarthFax in 1993-1995 are on Plate 7-1.

Horse Canyon Mine UPDES discharge points UT022926 - 001, - 002, and - 003 (monitored from 1979 to 1991) are on Plates 7-1 and 7-4. Currently monitored UPDES discharge points, UT040013- 001A and - 002A are also shown. Proposed UPDES points L-4-S and L-5-G are on Plate 7-4.

Locations for surface-water monitoring points HCSW-1 (HSW-1, HC-1), HCSW-2, HCSW-3, B-1 (HC-2), and RF-1 are shown on Plate 7-1. Locations for L-1-S, L-2-S, and L-3-S are on Plate 7-4. Locations of the springs in the southwest corner of the permit area must be shown on Plates 7-1 and 7-4.

Permit Area Boundary Maps

The permit area is shown on Plate 1-1 and other maps. The permit boundaries are divided into Permit Area A, the Horse Canyon project, and Permit Area B, the Lila Canyon Extension. The Division considers Plate 1-1 to be the official proposed permit boundary map and the information on Plate 1-1 supersedes all other maps.

As mentioned in the permit boundary section of the TA the Permittee must state in the PAP text and on Plate 1-1 that Plate 1-1 will be used to resolve any questions about the permit boundaries. This deficiency will be addressed in the Permit Area section of the TA.

Plate 4-4 identifies the areas on and adjacent to the Horse Canyon Mine and proposed significant revision area that are designated Wilderness Inventory Units or Wilderness Inventory Units currently being evaluated by the BLM for wilderness potential. Plate 1-1, Plate 4-1, Plate 4-4 and Plate 5-1 were prepared and certified by a registered professional engineer.

Surface and Subsurface Ownership Maps

Plate 4-1, Surface Ownership, identifies the surface landowners in and adjacent to the Horse Canyon mine. The landowners are identified by name and their properties are identified by color and hatch marks.

Plate 5-4, Coal Ownership, shows the coal ownership in and around the Horse Canyon mine. The lease number or owner of the fee coal identifies coal ownership. In addition, the

acreage for each coal property is listed on the map.

Plate 4-1 and Plate 5-4 were prepared and certified by a registered professional engineer.

Surface and Subsurface Manmade Features Maps

Surface and subsurface features and facilities are shown on Plates 5-2 and 4-4. These maps show that there are no buildings in or within 1,000 feet of the Lila Canyon Extension. No major electric transmission lines, pipelines or agricultural drainage tile fields existing within the Lila Canyon Extension area. There are no spoil piles, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the Lila Canyon Extension area.

Part of an existing county road and an old culvert exist in the Lila Canyon disturbed area. Plate 5-2 shows the location of the county road and culvert.

Plate 4-4 shows the location of the existing utility corridors adjacent to the Horse Canyon permit area. Those utilities include a 460K-volt transmission line and existing and proposed roads.

A registered professional engineer certified plate 5-2 and Plate 4-4.

Subsurface Water Resource Maps

Wells, piezometers and water-level elevation contours are shown on Plate 7-1, but there are no cross sections and contour maps showing seasonal differences of head. Subsurface water resource maps and cross sections, including those showing water rights, need to be extended at least as far as the channel of Range Creek.

S-26 and S-31, located south of the Williams Draw Fault, were offset with shallow piezometers A-26 and A-31 to observe ground water in the alluvium (Table 6-3). These piezometers have been plugged and abandoned. These piezometers are not shown on Plate 7-1.

Water rights are listed in Table 7-2. The list includes Redden Spring, plus springs identified as Mont, Leslie, Cottonwood, Williams, Kenna, and Pine. In addition, there are eleven unnamed springs listed, plus a well. Locations are on Plate 7-3.

Surface Water Resource Maps

Locations of streams and seeps and springs are shown on Plate 7-1. The Permittee needs to provide the names of drainages on the maps.

The Permittee states in Section 722.200 that there are no known perennial streams, lakes

or ponds within the permit and adjacent areas, but USGS quad maps show two ponds that have never been monitored. Plate 7-1 shows the location of Horse Canyon Creek and Lila Canyon drainage and Little Park Wash.

Maps and cross sections showing surface water resources need to be extended to include the channel of Range Creek.

The Permittee should show the drainages from the permit area to the Price River. The Permittee should also provide a map showing the surface relationship of Range Creek to the permit area.

Well Maps

One oil exploration hole was drilled south of the proposed Lila Canyon permit area, in Section 25, T. 16 S., R 14 E., by Forest Oil Company. The location of the hole is shown on Plate 6-2. According to the Division's records, the well was completed in October 1959. No oil, gas, or water was reported. The well was drilled to a depth of 12,602 feet. It spudded in the Price River Formation and was in that formation to a depth of 370 feet then passed through the Blackhawk Formation from 370 feet to 906 feet, a thickness of 536 feet.

Contour Maps

The pre-mining contour maps for the disturbed area are shown on Plate 5-1A. Contour maps for the entire Lila Canyon area are shown on several maps including Plate 5-3. The contours for Plate 5-3 are based on contours from USGS topographic maps and accurately represent the pre-mining contours for the Lila Canyon Extension.

Plate 5-1A and Plate 5-3 were prepared by, or under the direction of, and certified by a qualified, registered, professional engineer.

Findings:

The information is this section of the PAP is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-722, (1) The Permittee must submit a hydrologic map identifying the drainage basins in and adjacent to the proposed permit area. The map must identify all drainage basins, stream channels ponds and water monitoring sites by name. (2) The Permittee must submit a map identifying and characterizing stream reaches, and showing where mining will take place within 100 feet (horizontally) of a stream channel. (3) The Permittee will submit maps showing the drainage relationships between the proposed permit area and the nearest

perennial stream channels, specifically the Price River and Range Creek and its tributaries. (4) Maps and cross sections in the PAP include only a small portion of the Range Creek drainage. Resource maps and cross sections, including those showing geology, hydrology, and water rights, need to be extended at least as far as the channel of Range Creek to help evaluate potential impacts in the Range Creek drainage.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Minimum Regulatory Requirements:

The objectives of this section is to ensure that the Division is provided with comprehensive and reliable information on proposed underground mining activities, and to ensure that those activities are allowed to be conducted only in compliance with the regulatory program.

Provide a general description of the mining operations proposed to be conducted during the life of the mine within the proposed permit area, including, at a minimum, the following: a narrative description of the type and method of coal mining procedures and proposed engineering techniques, anticipated annual and total production of coal, by tonnage, and the major equipment to be used for all aspects of those operations; and, a narrative explaining the construction, modification, use, maintenance, and removal of the following facilities (unless retention of such facility is necessary for postmining land use is specified.) The following facilities must be described: dams, embankments, and other impoundments; overburden and topsoil handling and storage areas and structures; coal removal, handling, storage, cleaning, and transportation areas and structures; spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation, and disposal areas and structures; mine facilities; and, water pollution control facilities.

Analysis:

General

The Permittee proposes to develop surface facilities and mine portals near Lila Canyon. The Lila Canyon surface facilities will be used to access coal reserves in the southern area of the permit. The surface facilities are located in the S1/2 of Section 15, T. 16 S., R.14 E. See Plate 5-5 for the Lila Canyon Extension workings.

The average gradient of the Lila Canyon Extension site is 10%. Access to the lower Sunnyside seam at this location requires tunneling from the base of the cliffs upwards at a 12% slope through a sandstone rock slope for a distance of approximately 1,200 feet. The rock material from two of these tunnels and the portal face-ups will be utilized to create a pad for surface facilities. Other cut/fill pads will be constructed from subsoils.

The ventilation portal will be driven from underground workings to the surface. See Plate 5-2 for the locations. Initial mining will be conducted by room-and-pillar methods in the Lower Sunnyside Coal Seam. Production in the first year is estimated to be 200,000 tons, the second to fifth year 1,000,000 to 1,500,000 tons per year. If demand increases, the Permittee will install longwall equipment and production could peak at 4,500,000 tons per year.

The PAP proposes mine portal access, ventilation portal, elevated conveyor, coal storage pile and reclaim system, crusher, truck loop and truck loadout, warehouse and storage yard, office, parking and bathhouse facilities, substation, water storage and water treatment facilities (leach field), topsoil storage pile and sediment pond to be developed (Section 520 and Plate 5-2).

SUWA raised the question of why new portals are needed for access to the new leases. Although the topic was discussed in the Environmental Assessment (USDI, EA No.UT-070-99-22, 2000), a description of the environmental, safety, technical/engineering and economic reasons for development of a new portal site should be included in the PAP.

To support the new center of activity, Emery County will upgrade the existing County Road #126 from State Highway 6 to a corral and from this point will upgrade unimproved roadway RS 2477 from the corral to the Lila Canyon Extension surface facilities (Appendix 1-4).

Type and Method of Mining Operations

Coal mining will begin in Section 15, T16S, R14E, in the Lower Sunnyside Coal Seam. Development of the Lower Sunnyside Coal Seam will be in a down dip direction toward the east. The coal seam will be accessed by two 1,200-foot tunnels. The tunnels will be driven up at a 12% grade from the cliffs. The ventilation fan portal will be driven from underground workings to the surface. See Plate 5-2 for the location of the portals and Plate 5-5 for the mine workings.

Initial mining will be conducted by room-and-pillar method in the Lower Sunnyside Coal Seam. Production in the first year is estimated to be 200,000 tons, the second to fifth year 1,000,000 to 1,500,000 tons per year. In Appendix 4-3, Air Quality, the Permittee stated in a letter dated August 27, 1999 to the Division of Air Quality that a maximum of 1,500,000 tons would be produced every year.

If demand increases, the Permittee will install longwall equipment and production could peak at 4,500,000 tons per year. The estimated life-of-mine is 20 years.

Mine development will start with tunnel construction. Once the coal is encountered, development will continue using continuous miners and various types of haulage equipment.

Ventilation of the mine will be by an exhaust type system. The Permittee estimates that 900,000 cfm will be required at full production. Tunnels and entries from the surface will supply intake air.

Dust suppression will be accomplished by the use of water sprays on all underground equipment as required. Sprays will also be used along sections of the conveyors and some transfer points.

The workings are expected to produce some water with more water being produced as the depth of mining increases. Some of this water will be used for dust suppression. The remainder will be collected in sumps and pumped to mined out sections of the mine or to the surface and treated when necessary.

In Section 523, the Permittee listed the major mining equipment that will be used. The equipment is consistent with a major underground coal mining operation.

Facilities and Structures

The new support facilities are described in Section 520, shown on Plate 5-2 and Plate 5-8, described in the appendixes in Chapter 5 or listed in the bond calculations. Appendix 5-4, New Facility Design, shows the design for the roads and sewage system. Appendix 5-7 has the designs for the refuse pile. The new structures and facilities listed include:

Buildings
- Office/Bathhouse
- Shop Warehouse
- Security Shack

Utilities
- Mine Substation
- Power Lines
- Power Poles
- Water Treatment Plant
- Potable Water Tank
- Process Water Tank
- Sewer Tank & Drain Field

Mine Facilities
- Ventilation Fan
- 60-inch Conveyor from tunnels to Coal Stockpile
- Run of Mine (ROM) Underground Belt from Stockpile to Crusher
- 48-inch Conveyor from Crusher to Loadout Bin
- 48-inch Conveyor from Loadout Bin to Truck Loadout
- Reclaim Tunnel, Escape Tunnel, Fan and Fan House
- ROM Storage Pile
- Crusher Screen Plant
- Truck Scale and Loadout
- Coal Loadout Storage Bin
- Coal Stacking Tube
- Culverts (Note: names, diameter and length must be included)
- Guardrails
- Underground Pipes
- Chain Link Fence

Support Facilities
- Non-Coal Waste Area

Equipment & Supplies Storage Area
Topsoil Pile
Refuse Pile
Sediment Pond
Slope Access Road
Rock Slopes
Mine Facilities Road
Truck Loadout Road
Portal Access Road
Office/Bathhouse/Warehouse Asphalt Parking Area
Mine Parking
Fuel Tanks
Rock Dust Bins
Explosive Magazines

The Permittee did not include a complete list of facilities and structures in any section of the PAP. Since the information is scattered throughout the PAP the reader would have a difficult time locating the information. To avoid confusion the Permittee must list all of the structures and facilities in at least one section of the PAP. The Division recommends that the Permittee list the facilities and structures in section 520 of the PAP.

The buildings, support structures and mine facilities will be constructed using standard building materials such as steel, wood and concrete. Construction and demolition of the facilities will be done by standard construction techniques. Reclamation of the surface facilities will be accomplished by removing the structures. When possible, machinery and steel building components will be salvaged. Building debris with the exception of concrete will be shipped off site.

The Division received a comment from SUWA that support structures and mine facilities should not be built on lands with wilderness characteristics, and that if such facilities are built, that they use camouflage, noise control, light control and limit nighttime operations to avoid disruption of the wilderness character. Management of the land to maintain its wilderness characteristics is the responsibility of the surface management agency, in this case the BLM. The word wilderness is not used in any of the engineering regulations nor is there any engineering regulation that relates to lands with wilderness characteristics. This has been addressed in the EA by the BLM as a landowner.

With the exception of the exhaust fan, all of the mine facilities within the Desolation Canyon Inventory Unit Number 8 are located below the cliffs.

Findings:

The information provided does not adequately explain the need for new facilities at the Horse Canyon Mine. Prior to approval and in accordance with:

R645-301-521.190, The Permittee must explain the environmental, safety, technical/engineering and economic reasons for building new portals and facilities.

R645-301-532.100, the Permittee must explain why Horse Canyon facilities are not being reclaimed concurrently with the development of the Lila Canyon Extension.

R645-301-121.200 and R645-301-521.180, The Permittee must give a complete list of all facilities and structures in the Lila Canyon disturbed area in section 520 of the PAP and on Plate 5-2. Items not listed include but are not limited to: power poles, potable water tank, process water tank, sewer tank and drain field, ventilation fan, truck scale, truck loadout, underground pipes, chain link fence, asphalt parking lot, fuel tanks, rock dust bins, culverts, and explosive magazines.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Minimum Regulatory Requirements:

"Existing Structure" means a structure or facility used in connection with or to facilitate coal mining and reclamation operations for which construction began prior to January 21, 1981.

Provide a description of each existing structure proposed to be used in connection with or to facilitate the surface coal mining and reclamation operation. The description shall include: the location; plans of the structure which describe its current condition; approximate dates on which construction of the existing structure was begun and completed; and, a showing, including relevant monitoring data or other evidence, whether the structure meets the permanent program performance standards or, if the structure does not meet the permanent program performance standards, a showing whether the structure meets the interim program performance standards.

Provide a compliance plan for each existing structure proposed to be modified or reconstructed for use in connection with or to facilitate the surface coal mining and reclamation operation. The compliance plan shall include: design specifications for the modification or reconstruction of the structure to meet the permanent program design and performance standards; a construction schedule which shows dates for beginning and completing interim steps and final reconstruction; provisions for monitoring the structure during and after modification or reconstruction to ensure that the permanent program performance standards are met; and, a showing that the risk of harm to the environment or to public health or safety is not significant during the period of modification or reconstruction.

Analysis:

Within the permit area, there are several dirt roads or vehicle ways that the Permittee could use for monitoring and sampling programs, including the road that separates the Desolation Canyon Inventory Unit number 8 from the Turtle Canyon Inventory Unit number 4.

The Permittee needs to mention existing dirt roads in the existing structures section of the PAP. Specific information could be stated in the roads section of the PAP and a reference made.

A specific requirement of the existing structures regulations (R645-301-526.115) is that the Permittee describe how each existing structure in the permit area will be modified or reconstructed for use in connection with coal mining and reclamation. The existing structure that will be modified or reconstructed within the permit area is the County road. Since the modification of the County road is beyond that of the Permittee, the Division will only require that the Permittee give a brief statement that the County road and the culvert within the disturbed area boundary will be modified or reconstructed by the County.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-526.110 and R645-301-526.115, The Permittee must describe the existing structures within the permit area that will be used for coal mining and reclamation in the existing structures section of the PAP. Those structures include public, and possibly private, dirt roads and vehicle ways that will be used for monitoring and sampling programs and the existing county road and culvert within the disturbed area boundary that will be upgraded.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR 784.17; R645-301-411.

Minimum Regulatory Requirements:

For any publicly owned parks or any places listed on the National Register of Historic Places that may be adversely affected by the proposed operation, each plan shall describe the measures to be used to prevent adverse impacts, or if valid existing rights exist or joint agency approval is to be obtained, to minimize impacts.

The Division may require the applicant to protect historic and archeological properties listed on or eligible for listing on the National Register of Historic Places through appropriate mitigation and treatment measures. Appropriate mitigation and treatment measures may be required to be taken after permit issuance provided that the required measures are completed before the properties are affected by any mining operation.

Analysis:

A determination of the existence of known cultural resources listed or eligible for listing in the National Register of Historic Places, public parks, or units of the National System of Trails or the Wild and Scenic Rivers system within the proposed permit extension cannot be made until all cultural resources information is provided.

The Turtle Canyon Wilderness Study Area overlaps with the proposed addition to the permit area in the following locations:

Township 16 South, Range 14 East
Section 13, E½ NW¼, NE¼
Section 24, NE¼ NW¼, N½ NE¼

Township 16 South, Range 14 East
Section 19, SE¼ SW¼, Lots 3 and 4
Section 30, SW¼ NE¼

The EA addresses wilderness study areas and the anticipated effects of subsidence in these areas.

In January 2002 the BLM published a document titled *Revisions to the 1999 Utah Wilderness Inventory.* In this document the BLM addresses questions and concerns raised during the initial scoping project that began in March of 1999. The BLM received public comments concerning the Turtle Canyon and Desolation Canyon Inventory Units. Many of these comments questioned the wilderness character determinations made in the *1999 Utah Wilderness Inventory*, for instance, questions concerning: impact from surface structures due to past mining; access for water monitoring; areas degraded due to coal mining activities and drill stem pipes. The BLM found that the impact associated with past mining activity was found to be substantially unnoticeable. Access for water monitoring sites were determined to be a vehicle way and not roads because they are not maintained and do not receive regular use. The area associated with the Lila Canyon Extension facilities has been removed by the BLM from the inventory.

Findings:

Information provided in the application is not sufficient to meet the minimum Protection of Public Parks and Historic Places requirement of the regulations. Refer to the deficiency in the Historic and Archaeological Resource Information section of this TA.

RELOCATION OR USE OF PUBLIC ROADS

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

Minimum Regulatory Requirements:

Describe, with appropriate maps and cross sections, the measures to be used to ensure that the interests of the public and landowners affected are protected if, the applicant seeks to have the Division approve conducting the proposed underground mining activities within 100 feet of the right-of-way line of any public road, except where mine access or haul roads join that right-of-way, or relocating a public road.

Analysis:

The PAP proposes new portal, loadout and office facilities to be developed near Lila Canyon. Currently the road to the site is unimproved as shown on Plate 1-1. To support the new center of activity, Emery County will upgrade and pave the existing County Road #126 (2.63 miles) and RS2477 roadway from State Highway 6 to the Lila Canyon Extension surface facilities (Agreement between Emery County and UEI dated October 19, 1999).

The permitting status of the road was questioned by the Division recently when an article entitled " Utah DOGM Office Clears Way to Process Lila Canyon Permit," was published in the Sun Advocate, Thursday February 28, 2002. The press release stated that UEI planned to build a 4.7 mile road from the mine site to a Union Pacific rail line. A public notice placed in both the Sun Advocate and the Emery County Progress in April 2002, subsequently clarified that Emery County will construct and improve the 4.7 mile road from the mine site to U.S. Highway 6.

Further documentation was not included in the PAP to provide background on usage and ownership of three existing unimproved roads:

- from Horse Canyon to the mine site,
- County Road #126 from Highway 6 to the mine site, and
- unimproved road RS2477 south of the mine site.

The PAP states in Section 521.133 that UEI does not propose relocation of the public road. The county road will fall partly within the permit area (Section 521.123 and Plate 5-2), and a culvert will be replaced beneath the county road (Section 521.170).

Appendix 1-4 of the application contains a copy of a letter from the Emery County Road Department dated January 10, 2001. The letter states the following:

> "Said approval authorizes mining activities to be conducted within 100 feet of the public road with the provision that, to provide for public safety, a 6 foot chain link fence shall be constructed adjacent to the road right-of-way in the vicinity of the surface facilities area.
>
> "Additionally, the location of the fence must not restrict continued public use of the road."

Plate 5-2 shows that the chain link fence will border the road.

The Permittee will either construct culverts under the county road within the disturbed area, or contract with the county to construct culverts under the county road. The culverts will be used to pass water from the undisturbed drainages and for spillways for the sediment pond. The Permittee needs to describe how the public will be protected during installation of the culverts.

Findings:

The information provided in the PAP does not adequately describe the relocation of the public road. Prior to approval and in accordance with:

R645-301-521.190, The Permittee must provide documentation on usage and ownership for the unimproved road from Horse Canyon to the mine site, County Road #126 from Highway 6 to the Lila Canyon Extension, and RS2477 south of the mine site.

R645-301-526.116, The Permittee must describe how public will be protected when the undisturbed drainage culvert and sediment pond spillways are installed within the disturbed area under the county road.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244.

Minimum Regulatory Requirements:

For all surface operations associated with mining activities, the application shall contain an air pollution control plan which includes the following: an air quality monitoring program, if required by the Division, to provide sufficient data to evaluate the effectiveness of the fugitive dust control practices to comply with applicable Federal and State air quality standards; and, a plan for fugitive dust control practices such that all exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion.

Analysis:

First year production from the mine is estimated to be 200,000 tons, increasing in the second through fifth year to between 1,000,000 and 1,500,000 tons. Long wall mining could be utilized to generate as much as 4,500,000 tons a year (Section 523).

Appendix 4-3 contains correspondence between UEI and the Department of Environmental Quality, Division of Air Quality (DAQ). In the cover letter for the Notice of Intent dated December 22, 1998, UEI requested approval for a Minor Source of up to 2,000,000 tons/year. An Approval Order (DAQE-702-99) was issued August 27, 1999.

The Approval Order (AO) indicates public comments were considered in developing the requirements of the AO for this new source. The DAQ received five public comments on degradation of the environment in general and one comment referring to air quality degradation in particular.

The AO is predicated on UEI operating according to the Notice of Intent submitted to the DAQ on December 24, 1998, and additional information submitted to the DAQ on February 19, 1999 and May 11, 1999.

The following equipment was approved with the AO:

- One enclosed crusher rated at 500 tons/hr equipped with dust suppression spray at its exhaust.
- One truck loading facility with enclosed 450 tons surge bin and sprays as needed
- One stacking tube with associated coal stockpile
- One reclaim system conveyor
- Associated conveyors equipped with dust suppression sprays at all transfer points.
- Mobile diesel equipment.
- 0.68 miles of paved road, posted speed limit 25 mph.

The requirements of the AO include:

- annual training of employees;
- control of disturbed or stripped areas through treatment;
- maintenance of 4.0% moisture content of fines;
- watering storage piles;
- limitations on the silt-size coal fines in stored coal and haul roads;
- visible emissions limits;
- maintaining the surface material in a damp/moist condition;
- a production **limit of 1,500,000 tons of coal** per rolling 12 month period;
- **a consumption limit of 63,000 gallons of diesel fuel** per rolling 12 month period;
- use of #2 fuel oil only; and
- sulfur content of fuel oil or diesel is not to exceed 0.5% by weight

The AO from the DAQ ensures that particulates and pollutants will be controlled through very specific dust suppression requirements, pollution control equipment, limited fuel consumption and proper equipment maintenance, limited production, employee training and record keeping. The Division finds that the Permittee has obtained the required DAQ permit and is in compliance with that permit.

Findings:

The information provided meets the minimum regulatory requirements of the Air Pollution Control Plan section of the Rules.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Minimum Regulatory Requirements:

Underground mining activities shall be conducted so as to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity, so that re-affecting the land in the future through surface coal mining operations is minimized.

Analysis:

As part of the federal mine plan approval and to meet the requirements of the federal leases, the Permittee is required to submit a resource recovery and protection plan (R2P2) to the BLM. The BLM staff analyzed the R2P2 for maximum economic recovery and found that the Permittee met that requirement.

The Division staff reviewed the mine plan and found no significant coal reserves within the permit area that were not being recovered. The Division bases their findings on several factors including technical analysis from other agencies, such as the BLM, for maximum coal recovery.

Coal will be recovered using a continuous miner. Section 522 discusses the use of barrier pillars to isolate the Horse Canyon Mine from the new Lila Canyon Extension, to ventilate, to provide independent escape routes, to protect escarpments, and to possibly retain large quantities of mine water.

The first year production is estimated to be 200,000 tons, increasing in the second through fifth year to between 1,000,000 and 1,500,000 tons. Plans project the utilization of longwall mining to generate as much as 4,500,000 tons a year (Section 523). An increase of this size would require modification of the MRP.

Federal leases cover 5,544 acres of coal reserves (Table 1.1 and page 11 of Chapter 1), but the coal recovery will be from 4,296 federal acres according to Table 4.2.

Findings:

The information provided is adequate to describe the complete recovery of coal.

SUBSIDENCE CONTROL PLAN

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

Minimum Regulatory Requirements:

Renewable resources survey

Include a survey, which shall show whether structures or renewable resource lands exist within the proposed permit area and adjacent area and whether subsidence, if it occurred, could cause material damage or diminution of reasonably foreseeable use of such structures or renewable resource lands. If the survey shows that no such structures or renewable resource lands exist, or no such material damage or diminution could be caused in the event of mine subsidence, and if the Division agrees with such conclusion, no further information need be provided in the application under this section.

Subsidence control plan

In the event the survey shows that such structures or renewable resource lands exist, and that subsidence could cause material damage or diminution of value or foreseeable use of the land, or if the Division determines that such damage or diminution could occur, the application shall include a subsidence control plan which shall contain the following information:

1.) A description of the method of coal removal, such as longwall mining, room-and-pillar removal, hydraulic mining, or other extraction methods, including the size, sequence, and timing for the development of underground workings.
2.) A map of underground workings which describes the location and extent of areas in which planned-subsidence mining methods will be used and which includes all areas where measures will be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage.
3.) A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage.
4.) A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage.
5.) Except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and, taking measures on the surface to prevent material damage or lessening of the value or reasonably foreseeable use of the surface.
6.) A description of the anticipated effects of planned subsidence, if any.
7.) A description of the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law.
8.) Other information specified by the Division as necessary to demonstrate that the operation will be conducted in accordance with the performance standards for subsidence control.

Performance standards for subsidence control

The operator shall either adopt measures consistent with known technology which prevent subsidence from causing material damage to the extent technologically and economically feasible, maximize mine stability, and maintain the value and reasonably foreseeable use of surface lands; or, adopt mining technology which provides for planned subsidence in a predictable and controlled manner. Nothing in this part shall be construed to prohibit the standard method of room-and-pillar mining.

The operator shall comply with all provisions of the approved subsidence control plan.

The operator shall correct any material damage resulting from subsidence caused to surface lands, to the extent technologically and economically feasible, by restoring the land to a condition capable of maintaining the value and reasonably foreseeable uses which it was capable of supporting before subsidence, and, to the extent required under applicable provisions of State law, either correct material damage resulting from subsidence caused to any structures or facilities by repairing the damage or compensate the owner of such structures or facilities in the full amount of the diminution in value resulting from the subsidence. Repair of damage includes rehabilitation, restoration, or replacement of damaged structures or facilities. Compensation may be accomplished by the purchase prior to mining of a non-cancelable premium-prepaid insurance policy.

Underground mining activities shall not be conducted beneath or adjacent to: public buildings and facilities; churches, schools, and hospitals; or, impoundments with a storage capacity of 20 acre-feet or more or bodies of water with a volume of 20 acre-feet or more, unless the subsidence control plan demonstrates that subsidence will not cause material damage to, or reduce the reasonably foreseeable use of, such features or facilities. If the Division determines that it is necessary in order to minimize the potential for material damage to the features or facilities described above or to any aquifer or body of water that serves as a significant water source for any public water supply system, it may limit the percentage of coal extracted under or adjacent thereto.

If subsidence causes material damage to any of the features or facilities, the Division may suspend mining under or adjacent to such features or facilities until the subsidence control plan is modified to ensure prevention of further material damage to such features or facilities.

The Division shall suspend underground mining activities under urbanized areas, cities, towns, and communities, and

adjacent to industrial or commercial buildings, major impoundments, or perennial streams, if imminent danger is found to inhabitants of the urbanized areas, cities, towns, or communities.

Within a schedule approved by the Division, the operator shall submit a detailed plan of the underground workings. The detailed plan shall include maps and descriptions, as appropriate, of significant features of the underground mine, including the size, configuration, and approximate location of pillars and entries, extraction ratios, measures taken to prevent or minimize subsidence and related damage, areas of full extraction, and other information required by the Division. Upon request of the operator, information submitted with the detailed plan may be held as confidential.

Notification

At least 6 months prior to mining, or within that period if approved by the Division, the underground mine operator shall mail a notification to all owners and occupants of surface property and structures above the underground workings. The notification shall include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the operator's subsidence control plan may be examined.

Analysis:

General

The Permittee gave the Division maps of the underground workings. Plate 5-3, Subsidence Control Map, shows the location of water rights, springs, and eagle nests. The map also shows the location of the underground mine workings and angle-of-draw. Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, full extraction areas and main entries that will be protected. The R2P2 contains additional information on location of pillars, entries, extraction ratios, and measures taken to prevent or minimize subsidence and related damage.

SUWA and five other commenters have raised concerns that subsidence will dewater springs and mitigation will be inadequate.

Renewable Resources Survey

The Permittee conducted a survey and found that no structures exist within the area of projected subsidence. The Permittee did find that some renewable resources including seeps and springs exist in the area of projected subsidence.

Plate 5-3, Subsidence Control Map is at a scale of 1:12,000. The map shows the location of the springs and water rights. The Division checked the location of several springs and found the locations on Plate 5-3 are not accurate. The Permittee must show the precise location of each spring in order to determine what the potential subsidence impacts could be. Some dirt roads exist in the subsidence zone, but were not mapped.

The subsidence survey found that no public buildings, public facilities, churches, schools or hospitals or impoundments or bodies of water with 20 acre-feet or more storage capacity are located within the potential subsidence area.

On Plate 5-3, the Permittee shows the location of eagle nests. Some of the nests are within the subsidence zone. The Permittee describes mitigation for loss of eagle nests in Chapter 3 of the PAP.

SUWA commented that subsidence could damage snake dens. For all wildlife issues, see the Operation Plan Fish and Wildlife Information section of this TA.

Subsidence Control Plan

The Permittee will prevent subsidence from occuring on the escarpments by first mining only. Control of subsidence in other areas needs to be reassessed after all resource information is collected.

Description of Coal Mining Method

Coal mining will begin in Sec 15, T. 16 S., R. 14 E., in the Lower Sunnyside Coal Seam. See Plate 5-2 for the location of the portals and Plate 5-5 for the mine workings.

Initial mining will be conducted by room-and-pillar method in the Lower Sunnyside Coal Seam. In the future, a long wall is contemplated. The estimated life-of-mine is 20 years.

Mine Map

Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, full extraction areas and main entries that will be protected.

Plate 5-5 shows the underground workings and depicts areas where first mining only will be utilized to protect escarpments and raptor nests that may exist on the escarpments. The areas to be protected from subsidence are confined to the western edge of the underground mine.

Subsidence Monitoring

The subsidence monitoring will be initiated in an area prior to any second mining being done within that area. The subsidence-monitoring plan will consist of the following:

- Aerial subsidence monitoring
- A 200-foot grid
- 12-16 control points
- Six of these points outside the subsidence zone
- Accuracy of plus or minus 6 inches horizontally and vertically
- A map of subsided areas
- Annual surveys in active subsidence areas

Subsidence monitoring will continue for five years after mining stops or until subsidence is complete. If for three years in a row, the subsidence is measured to be less than 10 percent of the highest subsidence year, subsidence will be determined to be complete, and no additional monitoring for that area will be required.

A ground survey will be performed in conjunction with the quarterly water-monitoring program. Any cracks observed will be noted and reported to DOGM.

The two main objectives of the subsidence monitoring program are to 1) determine when subsidence starts and stops and 2) if any damage has occurred. The aerial monitoring program, which measures ground movement, is the best way to determine when subsidence begins and ends. Ground surveys are done to determine if any subsidence damage has occurred. The Permittee should pay particular attention to any stream channels under 1000 feet of cover.

Subsidence Control Measures

The only subsidence control method that will be used in the Lila Canyon Extension is to protect the escarpments. Leaving barrier pillars and only allowing first mining within 200 feet of the outcrop barrier will protect the escarpments.

Anticipated Subsidence Effects

The main panels of the mine in which retreat mining has been completed have dimensions of approximately 1,200 feet wide by 4,000 feet long. The cover (h) in these areas is approximately 2,000 feet. Using the methods described in the National Coal Board's *Subsidence Engineers' Handbook* the S/m ratio for this geometry would be 0.55 where "S" is the maximum subsidence and "m" is the seam extraction thickness. For an average seam extraction thickness of 12 feet, the total subsidence would be 6.6 feet. However, as described on page V-12 of the Horse Canyon MRP, the major impacts of subsidence are due to extension strains and not total vertical subsidence. The prediction of average extension strain is accomplished with the use of the formula:

$+E = 0.75\ S/h$ where S = Subsidence and h= depth of cover

The solution of this equation for the Horse Canyon Mine configuration discussed above produces a predicted, average extension strain of 2.5×10^{-3} which is less than that the limiting strain of 5×10^{-3} for protecting surface waters and groundwater resources. Thus, it is unlikely that the gradual compression expected over much of the subsidence area will have any deleterious effects on the overlying renewable surface resources. As reported in Chapter V of the Horse Canyon MRP, the cover thickness of over 2,00 feet is also much greater than the limiting thickness of 450 feet.

The amount of extensive strain can be greatly enhanced by a cantilever effect of symmetrical subsidence on either side of thick pillars. The Horse Canyon MRP indicates in Chapter V, that Dunrud demonstrated this effect at the Geneva (Horse Canyon) mine over the barrier pillar separating the Geneva and Book Cliff mines. A nearly vertical break line occurred over the pillar with the appearance of large surface fissures hundreds of feet long and as much as 3 feet wide. The cover thickness in this area was about 900 feet. Such features would obviously have the greatest effect on the surface and groundwater resources in the area.

The pace at which subsidence occurs depends on many controls including the type and speed of coal extraction, the width, length and thickness of the coal removed, and the strength and thickness of the overburden. Observations of subsidence by Dunrud over the Geneva and Somerset Mines indicate that the subsidence effects on the surface occurred within months after mining was completed, and the maximum subsidence was essentially completed within 2 years of the finishing of retreat mining as reported in Chapter V of the Horse Canyon MRP.

In the 1992 annual subsidence report for the Horse Canyon Mine, the Permittee reported subsidence features outside of the Horse Canyon permit area but within the area underlain by workings of both the Book Cliffs Coal Mine and the Geneva Coal Mine. The surface subsidence features were observed in Sec 9, 10, 15 and 16, T. 16 S. R.14 E. Those areas have cover averaging 800 feet but did not exceed 1,000 feet. A number of the subsidence features were noted including:

- Open jointing and fissuring related to cliff face retreat and spalling
- Swarms of fissures related to extensional ground movements above or adjacent to the property- boundary barrier pillar between the Book Cliffs and Geneva Mines. The fissures are generally parallel to sub-parallel to the barrier pillar and are developed primarily along existing regional joint sets. Individual fissures can reach hundreds of feet in length and as much as three feet in width. Vertical displacement on the order of a few inches has been observed at some localities.
- Modifications in vegetation and soil structure were often associated with fissure development. Fallen trees were observed along several fissures and cryptogammic soil communities had been disrupted locally.
- At one or two locations cool air was felt emanating from the larger fissures.

The 1992 annual subsidence survey showed that within the Horse Canyon permit area the only subsidence related activity noted was cliff spalling that occurred in 1958. Close examination of the outcrop areas and soil covered slopes directly above and to the north of the area of cliff failure did not reveal any evidence of mine subsidence features.

Most of the area scheduled to be subsided in the Lila Canyon Extension is greater than 1,000 feet of cover. In areas with more than 1,000 feet of cover no surface subsidence features are anticipated with the exception of ground lowering.

In areas with less than 1,000 feet of cover, subsidence features could include tension cracks, fissures, sinkholes, and ground lowering. In the southwest part of the permit area, the cover drops to less than 500 feet. Parts of Little Park Wash, an ephemeral stream, are located in the shallow cover area. The Permittee must describe the anticipated subsidence effects in the areas with less than 1,000 feet cover including the impact on Little Park Wash.

Minimize Damage to Non-commercial and Occupied Building

No non-commercial or occupied buildings exist with in the proposed subsidence zone.

Replacement of Adversely Affected State-Appropriated Water Supplies and Mitigation to Material Damage of Land and Protected Structures

SUWA commented on damage to plants and animals that could occur if subsidence damaged seeps and springs. The Permittee does not propose any specific steps to protect any springs or seeps within the subsidence zone. The seeps and springs will be monitored for flow and quality as described in section731.211 of the PAP. If damage to the seeps or springs occurs then the Permittee will mitigate the damage to the water rights as outlined in section 727 of the PAP.

Repair of Damages

The Permittee committed to restore surface lands to the extent technologically and economically feasible. While the use of heavy equipment in some areas is not practical, there are alternatives that have been used in mines in Utah that have been quite successful. Those methods include manual labor and the use of explosives. The Utah AML Program has used explosives in wilderness areas to eliminate hazards caused by mining.

Since no structures exist within the subsidence zone, the Permittee does not have to address how they will repair damage to buildings and other related structures.

Rebuttable Presumption of Causation By Subsidence

The Permittee has used an angle of draw of 21.5°. The rebuttable presumption of causation for damage within the angle-of-draw is that if damage to non-commercial buildings or occupied residential dwellings occurs as a result of earthen movement, the assumption exists that the mining caused the damage unless the Permittee can prove otherwise. R645-301-525.541 assumes an angle-of-draw of 30° unless the Permittee can demonstrate that another angle-of-draw is more appropriate.

Adjustment of Bond Amount for Subsidence Damage

The Division has received a comment from SUWA requesting that additional bond be

required to ensure that subsidence related damage would be repaired. The Division does not bond for subsidence damage except for conditions outlined in R645-301-525.550. The general practice to protect buildings and other structures is for the Permittee to purchase liability insurance, see R645-301-525.520, R645-301-525.530 and R645-301-830.500. Additional bond will be required, if and when subsidence-related material damage has occurred to land, structures, or facilities or where contamination, diminution, or interruption to a water supply has occurred.

Performance Standards for Subsidence Control

The Permittee will comply with all provisions of the approved subsidence control plan.

Notification

The Permittee is required to notify the water conservancy district, if any, and the owners and all occupants of surface properties and structures above the underground workings. The notification will include the specific areas where mining will occur and the location or locations where the Permittee's subsidence control plan may be examined.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-525.110, The Permittee must show the precise location of each seep, spring, stock pond, existing water right and dirt road on Plate 5-3.

R645-301-525.120, The Permittee must state what impact subsidence could have on dirt roads in the subsidence area and what mitigation methods will be used if damage occurs, including accessing the site.

R645-301-525.430 and R645-301-525.490, The Permittee must state what the possible effects of subsidence will be in areas of shallow cover (less than 1,000 feet), in particular stream channels. The Division is specifically interested in potential damage to Little Park Wash and the unnamed stream in the southwest corner of the permit area; the re-assessment of the subsidence control plan; and possible mitigation methods.

R645-301-525.490 and R645-301-525.540, The Permittee must demonstrate why a 21.5° angle-of-draw is valid for the Lila Canyon Extension instead of 30°. The 30° is assumed by the Division for all material damage unless demonstrated otherwise.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR 817.99; R645-301-515.

Minimum Regulatory Requirements:

At any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, the person who conducts the underground mining activities shall notify the Division by the fastest available means and comply with any remedial measures required by the Division.

The permit application will incorporate a description of notification when potential impoundment hazards exist. The requirements for the description are: If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division will be notified immediately. The Division will then notify the appropriate agencies that other emergency procedures are required to protect the public.

Analysis:

The Permittee has committed to phone the Division if a slide occurs (Section 515). The Division would then be informed of the remedial plan. The Division will determine the adequacy of the remediation plan. The Permittee has also committed to report any potential hazards found during impoundment inspection.

Findings:

The Permittee meets the minimum regulatory requirements for slides and other damage.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Minimum Regulatory Requirements:

Protection and enhancement plan

Each application shall include a description of how, to the extent possible using the best technology currently available, the operator will minimize disturbances and adverse impacts on fish and wildlife and related environmental values, including compliance with the Endangered Species Act, during the surface coal mining and reclamation operations and how enhancement of these resources will be achieved where practicable. This description shall apply, at a minimum, to species and habitats identified. The description shall include: protective measures that will be used during the active mining phase of operation. Such measures may include the establishment of buffer zones, the selective location and special design of haul roads and powerlines, and the monitoring of surface water quality and quantity; and, enhancement measures that will be used during the reclamation and postmining phase of operation to develop aquatic and terrestrial habitat. Such measures may include restoration of streams and other wetlands, retention of ponds and impoundments, establishment of vegetation for wildlife food and cover, and the placement of perches and nest boxes. Where the plan does not include enhancement measures, a statement shall be given explaining why enhancement is not practicable.

Each operator shall, to the extent possible using the best technology currently available: ensure that electric powerlines and other transmission facilities used for, or incidental to, underground mining activities on the permit area are designed and constructed to minimize electrocution hazards to raptors, except where the Division determines that such requirements are unnecessary; locate and operate haul and access roads so as to avoid or minimize impacts on important fish and wildlife species or other species protected by State or Federal law; design fences, overland conveyors, and other potential barriers to permit passage for large mammals except where the Division determines that such requirements are unnecessary; and, fence, cover, or use other

appropriate methods to exclude wildlife from ponds which contain hazardous concentrations of toxic-forming materials.

Endangered and threatened species

No underground mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the Secretary or which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The operator shall promptly report to the Division any State- or federally-listed endangered or threatened species within the permit area of which the operator becomes aware. Upon notification, the Division shall consult with appropriate State and Federal fish and wildlife agencies and, after consultation, shall identify whether, and under what conditions, the operator may proceed.

Bald and golden eagles

No underground mining activity shall be conducted in a manner which would result in the unlawful taking of a bald or golden eagle, its nest, or any of its eggs. The operator shall promptly report to the Division any golden or bald eagle nest within the permit area of which the operator becomes aware. Upon notification, the Division shall consult with the U.S. Fish and Wildlife Service and also, where appropriate, the State fish and wildlife agency and, after consultation, shall identify whether, and under what conditions, the operator may proceed.

Nothing in these regulatory requirements shall authorize the taking of an endangered or threatened species or a bald or golden eagle, its nest, or any of its eggs in violation of the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq., or the Bald Eagle Protection Act, as amended, 16 U.S.C. 668 et seq.

Wetlands and habitats of unusually high value for fish and wildlife

The operator conducting underground mining activities shall avoid disturbances to, enhance where practicable, restore, or replace, wetlands and riparian vegetation along rivers and streams and bordering ponds and lakes. Underground mining activities shall avoid disturbances to, enhance where practicable, or restore habitats of unusually high value for fish and wildlife.

Analysis:

Protection and Enhancement Plan

Section 333 states: "It has been demonstrated that subsidence has little direct impact on wildlife or vegetation with the exception of escarpment failure and disruption of ground water." Data must be provided to substantiate this claim or the statement must be removed from the PAP.

SUWA commented that all key wildlife species, not only raptors, should be monitored. The Division consulted with DWR and BLM and no additional monitoring will be required at this time. However, this will be reassessed as mining is being conducted and/or conditions change and/or other information becomes available.

SUWA had comments concerning the coal haul road and impacts to wildlife. SUWA commented that the following statement from Section 333 of the PAP is dismissive and does not satisfy the rules, "The operational activities at the site impact the wildlife slightly but most of the wildlife in the area will either accept or adjust their behavior to coexist with the operations." The comment or statement should be removed or further explained in the PAP.

The Permittee has committed to train mine employees annually on environmental awareness (Section 333). This will include wildlife protection measures, such as avoidance during stress periods, caution in driving, recognition of threatened or endangered species, and

instructions to remove wildlife carcasses well off the road. The Permittee will notify DWR and request that large carcasses are moved to safeguard raptors. The Permittee will instruct personnel as to current regulations pertaining to off-road vehicle and firearm use.

All suitable water encountered during mining will be discharged in a manner that it becomes available to wildlife. Ensuring water quality suitability is a requirement of the UPDES discharge permit. The application discusses the possible benefits of water in the sediment pond to wildlife in Chapter 3, page 20, as follows: "In the event water in the pond contains materials hazardous to wildlife, it would be removed and the pond monitored to ensure no negative effects on wildlife." SUWA commented on the need for additional information on removal of hazardous materials to wildlife (ie, oil, grease). The Division is requesting additional information. The PAP must describe how the materials will be removed from the pond and provide greater detail of the daily monitoring to insure no negative impacts to wildlife.

Lila Canyon and the drainage in the southwest corner of the permit are used by the sheep and are important canyons. The PAP states (page 10) that usage by sheep is considered infrequent and minimal and there is abundance of other suitable similar habitat. This statement is incorrect and must be removed.

According the the DWR, Rocky Mountain bighorn sheep spend all year along the escarpments in the Lila Canyon area of the Book Cliffs. DWR and the Division visited the proposed disturbed area on June 11, 2002. Prior to the visit, the DWR representative was concerned that sheep may need to move further up the cliff when traveling the escarpments because of the mine and that sheep would likely leave the area. After the visit, the DWR representative felt that the sheep use of Lila Canyon may not be affected. The change in opinion may be due to the fact that the DWR representative was not familiar with the specifics of the mine plan until the site visit.

The DWR commented that Lila Canyon, and more particularly the water sources up the canyon, are heavily used by chukars, and they feel the mining operations near the mouth of the canyon will affect these birds. No mining is planned under Lila Canyon. Effects will be from the disturbance at the mouth of the canyon.

The Permittee plans to construct a culvert and sediment pond in the southwest portion of the disturbed area. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this drainage, when there are islands of undisturbed areas on the pediment within the disturbed area boundary. Regulation R645-301-358 requires minimizing disturbances and adverse impacts. The Division recommends that operational activity be kept out of the drainages.

The conveyor from the rock tunnel to the run of mine coal stockpile is elevated to avoid restriction of large mammal movement. Other conveyors are close enough to the loadout and other facilities that it is unlikely that large mammals will use these areas. The only fence shown

on the surface facilities map is along the road. It is about 1000 feet long. The fence will not impede large mammal movement up-canyon, but will restrict movement in the drainage to the south. If the sediment pond is moved as recommended above, the fence can remain out of the drainage.

The Permittee developed a mitigation plan during the EA process (Section 333). The mitigation is a habitat enhancement project on about 70 acres of pinyon-juniper woodland to shrubs, forbs, and grasses and to install two guzzlers. The mitigation will profit both big game and raptors. SUWA commented on the need for cultural resource and T & E clearances on mitigation projects. Any requirements for Cultural Resource and T & E clearances will be addressed by the BLM and DWR prior to disturbance. The Division did not participate in this mitigation development and would have suggested other alternatives than those which have been chosen.

Endangered and Threatened Species

The Division cannot fully analyze the operational effects on T & E species until all the baseline resource information is provided.

The Fish and Wildlife Service commented in a letter dated April 14, 1999 (Appendix 3-3), that there should be an evaluation of effects on the Colorado pikeminnow (formerly the Colorado squawfish) on a water discharge line to the Price River. This discharge line was apparently proposed early in the planning process for the mine, but it is no longer being planned.

Water consumption by the proposed operation could jeopardize the continued existence of or adversely modify the critical habitat of these species. The PAP must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Effects should be addressed by determining the amount of water used by the mine.

SUWA commented that UEI has not assessed the potential impact of mine water discharge increasing salinity by running over the Mancos Shale before it drains to the Price River. Increasing salinity is in conflict with the Colorado River Basin Salinity Control Program and potentially could affect the Colorado River endangered fish. USFWS was contacted by the Division concerning this effect. They stated salinity is not a concern to the fish; however, selenium is a concern. The Permittee should address the potential for increased selenium and perhaps commit to monitor at the point of discharge into the Price River should waters ever reach that point.

The Bureau of Reclamation (BOR) was contacted by the Division concerning the mine water discharge and the Colorado River Basin Salinity Control Program. The BOR has no regulatory requirement for salinity control. However, if the mine does discharge and does contribute salinity, then they would be interested in working with the mine to reduce the output.

Working with the mine could include the BOR paying to pipe the water to the Price River. The BOR also stated that since the BLM has salinity mandates, they should be the agency that addresses this issue.

The Mexican spotted owl protection plan cannot be addressed until all resource information has been provided.

Bald and Golden Eagles

Plate 5-3 shows raptor nests and also includes subsidence limits. Two golden eagle nests are within the subsidence area. The Permittee's consultant, EIS, discussed the nests near the facilities with USFWS, DWR, and BLM during the EA process (Volume 2, page 11). There is a high probability that these nests will be abandoned and subsidence is a moot point. However, if the USFWS determines in the future that the loss of the nest due to subsidence is a "taking," then a permit must be obtained before subsidence is allowed. The mitigation plan for 70 acres of habitat improvement described above was developed for loss of these nests.

The Permittee has committed to working with USFWS and DWR in analyzing the potential construction of alternative nest sites, if a nest is lost. This statement indicates confusion about the process required by the coal regulations. The Permittee must revise this statement to read that the mine will work with the Division and the Division will then consult with USFWS, DWR and BLM for mitigation requirements (Section 322.220).

The Permittee commits to conduct a raptor survey to ensure that raptors, their nests or young will not be adversely affected through any mining or mine-related activity (Section 358.200). If any previously unknown nests are found, it may be necessary to develop protection or mitigation plans. A one-half mile buffer zone of no disturbance will be established during critical nesting periods for raptors. This is adequate to protect eggs and chicks from abandonment, and this commitment combined with the mitigation discussed above should be adequate for the loss of most nests near the mine. If any nests are active when the Permittee plans to begin construction, it might be necessary to delay construction until the nesting season has ended.

As the mitigation projects are completed, a summary should be included in the MRP. If this does not happen, it is easy to lose track of what was accomplished. If the Permittee or anyone else visits the mitigation sites, general comments on use should be noted and reported to DWR and the Division.

R645-301-358.510 requires that the operator ensure that power lines used for or incidental to coal mining and reclamation operations within the permit area be designed, constructed and maintained to minimize electrocution hazards to raptors. The application contains a commitment to this effect. The USFWS recommends application of power line designs such as those in the Avian Power Line Interaction Committee's Mitigating Bird

Collisions with Power Lines: the State of the Art in 1994, or Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 1996, prepared for the Edison Electric Institute/Raptor Research Foundation, Washington, D. C. The West Ridge mine, a mine developed in the Book Cliffs coal field in 1998, has located all power lines underground. The Division suggests UEI do the same.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

According to the PAP, there are no wetlands or riparian areas within the proposed addition to the permit area. While there are a few springs in the area, there are no perennial drainages. The resource section of this TA contains a deficiency requesting additional information concerning the flora and fauna surrounding the springs.

Subsidence

SUWA commented that subsidence could damage snake dens. DWR and BLM wildlife Biologist in consultation with the Division have determined that any loss of snake dens to subsidence would be random and a minor impact to the population of snakes. No surveys are required but additional information is requested on the impacts of subsidence in areas of less than 1000 feet of cover. (See the deficiency written under R645-301-524.430 and R645-301-525.490.)

The PAP describes the potential effects of subsidence as escarpment failure and disruption of surface and ground water. The effects on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss (R645-301-330). Other effects of subsidence must also be discussed particularly in areas with less than 1000 feet of cover. The effects to snakes and other wildlife species must be addressed.

A standard stipulation on federal coal leases is that the lessee monitor the effects of underground mining on vegetation. The application includes a plan to monitor vegetation with color infrared photography every five years. This commitment is consistent with Division requirements for other mines and is acceptable.

Findings:

Information provided in the application is not considered adequate to meet the minimum Fish and Wildlife Information requirements of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-333, The PAP must include a discussion of the possible effects of a mine water discharge to the endangered fish of the Upper Colorado River Basin and methods of minimizing those effects.

R645-301-120, The PAP states (page 10) that usage by sheep is considered infrequent and minimal and there is abundance of other suitable similar habitat. This statement must be substantiated or amended.

R645-301-120, Section 333 states; it has been demonstrated that subsidence has little direct impact on wildlife or vegetation with the exception of escarpment failure and disruption of ground water. Data must be provided to substantiate this claim or the statement amended in the PAP.

R645-301-120, The PAP statement "the operational activities at the site impact the wildlife slightly but most of the wildlife in the area will either accept or adjust their behavior to coexist with the operations" (Section 333.) should be amended or further explained in the PAP.

R645-301-333, The PAP must describe all efforts to minimize disturbances to wildlife and wildlife habitat. This can be done by protecting the drainage immediately south of the disturbed area from construction. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this area when there are islands of undisturbed areas on the pediment.

R645-301-120, The Permittee has committed to working with USFWS and DWR in analyzing the potential and construction of alternative nest sites. This statement confuses the process required by the coal regulations. The Permittee must revise this statement to read that the mine will work with the Division who will then consult with USFWS, DWR and BLM for mitigation requirments (Section 322.220).

R645-301-332, The effects of subsidence on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss. Other effects of subsidence must also be discussed particularly in areas with less than 1000 feet of cover. The effects to snakes and other wildlife species must be addressed.

R645-301-358.530, The PAP must describe how hazardous materials (i.e. oil and grease) will be removed from the pond and provide greater detail of the daily monitoring to ensure no negative impacts to wildlife will occur.

TOPSOIL AND SUBSOIL

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

Minimum Regulatory Requirements:

Topsoil removal and storage

All topsoil shall be removed as a separate layer from the area to be disturbed, and segregated. Where the topsoil is of insufficient quantity or of poor quality for sustaining vegetation, the selected overburden materials approved by the Division for use as a substitute or supplement to topsoil shall be removed as a separate layer from the area to be disturbed, and segregated. If topsoil is less than 6 inches thick, the operator may remove the topsoil and the unconsolidated materials immediately below the topsoil and treat the mixture as topsoil.

The Division may choose not to require the removal of topsoil for minor disturbances which occur at the site of small structures, such as power poles, signs, or fence lines; or, will not destroy the existing vegetation and will not cause erosion.

All materials shall be removed after the vegetative cover that would interfere with its salvage is cleared from the area to be disturbed, but before any drilling, blasting, mining, or other surface disturbance takes place.

Selected overburden materials may be substituted for, or used as a supplement to, topsoil if the operator demonstrates to the Division that the resulting soil medium is equal to, or more suitable for sustaining vegetation than, the existing topsoil, and the resulting soil medium is the best available in the permit area to support revegetation.

Materials removed shall be segregated and stockpiled when it is impractical to redistribute such materials promptly on regraded areas. Stockpiled materials shall: be selectively placed on a stable site within the permit area; be protected from contaminants and unnecessary compaction that would interfere with revegetation; be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick growing vegetative cover or through other measures approved by the Division; and, not be moved until required for redistribution unless approved by the Division.

Where long-term surface disturbances will result from facilities such as support facilities and preparation plants and where stockpiling of materials would be detrimental to the quality or quantity of those materials, the Division may approve the temporary distribution of the soil materials so removed to an approved site within the permit area to enhance the current use of that site until needed for later reclamation, provided that: such action will not permanently diminish the capability of the topsoil of the host site; and, the material will be retained in a condition more suitable for redistribution than if stockpiled.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, be removed and segregated, stockpiled, and redistributed as subsoil in accordance with the above requirements if it finds that such subsoil layers are necessary to comply with the revegetation.

Analysis:

Removal and Storage

The Permittee has outlined a disturbed area boundary on Plate 5-2 and has shaded undisturbed areas within those areas on Plate 5-2. The PAP indicates in Section 232.100 that "surface disturbance may not be required on all of the acreage identified as the disturbed area." The difference between the acreage falling within the disturbed area boundary (48 acres) and that to be disturbed (25 acres) is shown in the Available Soil Resources Table in Section 232.100. Since Regulation 645-301-232.100 requires topsoil removal from all disturbed areas, further explanation of the need to include 23 acres of undisturbed land within the disturbed area boundary has been requested.

For the purposes of removal, the PAP defines topsoil as all soil from the surface down to eighteen inches (Section 231.100). Plate 2-3 Soil Salvage and Replacement provides guidance for the topsoil removal. Plate 2-3 shows removal of eighteen inches of topsoil from the central and northwest portion of the disturbed area with twelve to eight inches being removed from the roadway and twelve to eighteen inches removed from the sediment pond location and eight to

eighteen inches removed from beneath the coal stockpile and coal storage bin. A soil scientist will be on-site during topsoil removal (Section 231.100).

The PAP describes topsoil removal in several sections in the plan as follows:

- The depth of "topsoil" removal will be eighteen inches "from those areas of the mine yard where material will be excavated in order to achieve final yard configuration, " (Section 232.100).
- "The actual topsoil salvage will consist of removing a surface layer up to 18 inches thick over the disturbed area." (Section 232.200)
- "Available underlying soils will be salvaged from stony disturbed areas" (Section 232.710).
- "If shale is encountered within 18 inches only the soil above the shale will be salvaged. (Plate 2-3)." (Section 232.100).

Soils will be removed from all disturbed areas to a depth of eighteen inches or to shale (Section 232.300) with the following exceptions:

- The steep rocky slopes within the disturbed area below and between the conveyor and coal storage pile (Section 232.710).
- The two bents to be constructed for the conveyor.
- The area of topsoil storage, except that topsoil will be removed from the access road to and around the topsoil pile, but not from beneath the topsoil pile (Section 232.100).
- From undisturbed islands within the disturbed area (Section 234.220).

The Permittee has commited in Section 232.710 to keeping the native soils (beneath the conveyor and in undisturbed islands) free of coal accumulations by vacuuming the slope and by installation of jersey barriers to protect the slope from encroachment by the coal stockpile. The PAP indicates "the feasibility of a conveyor pan will be analyzed." The Division also requests that the best technology is utilized and that would be a completely enclosed conveyor or conveyor pan.

Soils available for salvage are indicated in a table of Available Soil Resources in Section 232.100. The table indicates that 61,512 loose cubic yards of soil may be available for storage in the topsoil pile. The table divides salvageable soil by map unit type. Soils will be removed from the 25 acres to be disturbed with a crawler-tractor, grader, front-end loader, and/or trackhoe.

Soil removal will pulverize the soil into powder unless the soil moisture content is between 10 and 15% as described on page 60 of The Practical Guide to Reclamation in Utah, available in PDF format at web site http://dogm.nr.state.ut.us/ . Ensuring that the soil is neither too dry, nor too wet during removal operations may entail timing of operations during a favorable season or watering the soil to optimum moisture content before beginning removal.

The Permittee commits in Section 232.500 to maintaining records of materials removed and placement of materials either in the topsoil storage pile or in the fill. The Permittee also

commits to having a certified soil scientist on site during construction and reclamation phases (Section 232.100). The soil scientist would log pedestal heights to verify soil removal depths (Section 232.500). Further the PAP provides a commitment to develop As-Built maps showing where subsoil materials have been used as fill material (Section 232.500).

SUWA commented on the need for soil-borrow areas. Topsoil will be recovered from all disturbed areas (from a minimum depth of 6 inches from RBT soil up to 18 inches from VBJ, SBG and DSH soils). The total recovery of topsoil is estimated at 52,000 bank cubic yards. On the average, this represents a salvage depth of 15 inches over the 25 proposed disturbed acres. Furthermore, the Permittee indicates in the PAP (Section 233) that no substitute topsoil will be necessary based upon the Order 1 Soil Survey that indicates subsoils are also suitable for plant growth down to a depth of 48 inches. There is no need to develop a soil borrow area.

Storage of the approximately 60,000 loose cubic yards of topsoil will be in a stockpile with the approximate dimensions shown on Figure 1 of Chapter 2: 26 feet height, 246 feet length, 146 feet width. The PAP inaccurately relates the dimensions of the topsoil pile for a 26 feet high pile in Section 232.100. The operational topography shown on Plate 5-7A-2, does not show the proposed topsoil stockpile in cross section 4+00.

The topsoil stockpile is located on Plate 5-2 and Plate 5-7. Topsoil stockpiles will be protected from upstream flow by drainage ditches. The surface of the stockpile will be pitted to retain moisture and reduce erosion (Section 231.100 and 231.400). The Division notes that this practice is described in the Practical Guide to Reclamation (DOGM, 2000), available at http://dogm.nr.state.ut.us. The topsoil will be retained in place with the use of berm/ditches or silt fences surrounding the pile. The stockpile will be mulched and seeded using the mix in Table 3-4, after September 15 (231.400).

Table 3-4 Interim and Final Reclamation Seed Mix includes Yellow Sweet Clover, Alfalfa and Forage Kochia at the request of the BLM, "based on their proven benefits to wildlife and domestic stock as well as their ability to provide erosion control and their widespread distribution as a result of previous seeding public lands." The Division has requested modification of the species mix in Table 3-4 under Operation Plan Vegetation (See deficiency written under R645-301-331). Species in the mix should be chosen to control erosion yet maintain the natural beauty of the landscape.

The Division recommends that the surface layer of soil from 2 – 4 inches is removed with the vegetation and set aside for application to the surface of the topsoil pile after gouging. The surface layer of soil is valuable, for it contains seeds, cryptogam filaments, other microorganisms, organic matter, elevated levels of nitrogen and phosphorus. The Division recommends that the topsoil pile receive an initial irrigation after the 2 – 4 inch surface layer is applied, to ensure good contact, based upon the paper: Jayne Belnap, "Cryptobiotic Soil Crusts: Basis for Arid Land Restoration (Utah)," Restoration and Management Notes 12:1 Summer 1994. The biologic soil crusts established on the topsoil pile could be later harvested for

inoculation of the reclaimed site.

Storage of topsoil from the topsoil access road will be in berms around the topsoil stockpile. Storage of topsoil from the fan portal will be in a berm around the fan disturbance (Section 232.100) and silt fence (Section 234.100). Plate 5-2 shows the location of the topsoil berm around the fan site. The Division anticipates that this topsoil will become covered with rock dust from inside the mine and that it will be difficult to establish vegetation on the pile with air constantly blowing across the pile. The Permittee should evaluate an alternate location for storage of fan portal topsoil.

Subsoils

In Section 232.500, the PAP refers to a Salvageable Soils Map in Appendix A-2 that is incorporated into the PAP. Although not stated in the PAP, the Division understands that the referenced Map is part of the Order 1 Soil Survey and that it is located in Appendix A-2 of Appendix 2-3. This map recommends salvage of between six and 48 inches of topsoil and subsoil from the disturbed area.

The PAP states that subsoil used to achieve four feet of cover over refuse will be excavated from the refuse disposal site and replaced over the waste (Section 232.500). (The Division is uncertain whether this includes the rock slope waste site as well as the refuse.) The PAP also indicates that subsoil from 12 – 30 inches from cut areas will be used as fill material (Section 232.500). Section 232.700 specifies the subsoil recovery for soil types SBG, DSH, and VBJ, based upon recommendations found in Part 3.4 of Appendix 2-3 Soil Inventory. The Division understands that the recovery depth in inches is the depth of salvageable subsoil remaining after topsoil removal. Thus, for SBG soil the 30 inch removal thickness would come from from between 18 inches and 48 inches in the profile.

SUWA commented that a subsoil stockpile should be required. Adequate topsoil will be salvaged from the proposed disturbed area, but the location of subsoil used as fill material will be mapped for use during reclamation (Section 232.500 and Section 241). The subsoil from the cut areas will be replaced in its approximate original location to extend rooting depth of the reclaimed site. These subsoils will be located in underneath parking areas, roads, buildings, and storage sites. These subsoils will be protected during operations by asphalt, concrete, or gravel over an impervious membrane. Contaminated subsoils will be hauled to a landfill site. (It is not clear to in the PAP what contaminants will be monitored and what monitoring will occur.)

Findings:

The Division will coordinate review of the species found in Table 3-4 with the BLM to obtain a species mix that can control erosion yet maintain the natural beauty of the landscape, an issue raised six times through public comment. Several areas of deficiency have been identified with the topsoil salvage and storage plans. Prior to approval and in accordance with:

R645-301-231.100, The PAP must describe a method of ensuring that the soil is neither too dry, nor too wet during topsoil removal operations. This may entail timing of operations during a favorable season or watering the soil to optimum moisture content between 10 and 15% before beginning removal.

R645-301-231.400, The Permittee must accurately relate the dimensions of the topsoil pile in Section 232.100 for a 26 foot high pile as calculated in Figure 1.

R645-301-234.220, The Permittee should evaluate an alternate location for storage of fan portal topsoil.

R645-301-232.700, The Permittee must provide in the next submittal the results of the conveyor pan feasibility analysis committed to in Section 232.710 in order to apply the best technology available to protect the topsoil where it will not be salvaged on the rocky slopes below the conveyor.

R645-301-521.565, The Permittee must include the topsoil pile as a topographic feature on the cross sections of Plate 5-7A-2.

R645-301-553.252, Section 232.500 of the PAP should specify the use of subsoils as cover over the entire waste rock site, including rock slope waste and refuse and the Permittee must explain what contaminants will be monitored in the stored subsoil and how the monitoring will take place.

R645-301-232.200, Topsoil salvage described in the PAP should include salvage of the surface layer of topsoil from 0 – 4 inches along with the vegetation to be set aside for application to the surface of the topsoil pile after gouging.

R645-301-234.230, The topsoil pile construction should include the replacement of the surface 0 – 4 inches of the surface soil to the surface of the gouged pile, immediately followed by irrigation to ensure good contact with the topsoil pile.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Minimum Regulatory Requirements:

Each application will contain a plan for protection of vegetation, fish, and wildlife resources throughout the life of the mine. The plan will provide a description of the measures taken to disturb the smallest practicable area at any one time and through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas to minimize surface erosion. This may include part or all of the plan for final revegetation as described in reclamation plan for revegetation.

For UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES a description of the anticipated impacts of

subsidence on renewable resource lands and how such impact will be mitigated needs to be presented.

A description of how, to the extent possible, using the best technology currently available, the operator will minimize disturbances and adverse impacts. This description will include protective measures that will be used during the active mining phase of operation. Such measures may include the establishment of buffer zones, the selective location and special design of haul roads and powerlines, the monitoring of surface water quality and quantity, and through prompt establishment and maintenance of vegetation for interim stabilization of disturbed areas to minimize surface erosion.

Analysis:

All incidental disturbances not used as part of the operations will be revegetated with an interim seed mix. Table 3.4/3.5 is a seed mix that will be used for both interim and final revegetation. The mixture contains several aggressive spreading non-native species. Yellow sweetclover, alfalfa, and forage kochia must be removed from the interim seed mixture.

Section 331 refers to the revegetation plan in Section 340 for further information about revegetation methods. The details of this plan are discussed under Revegetation in the Reclamation Plan.

Findings:

Information provided in the application is not considered adequate to meet the minimum Vegetation requirements of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-331, The interim seed mixture contains several aggressive spreading non-native species. Yellow sweetclover, alfalfa, and forage kochia must be removed or replaced in the interim seed mixture.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Minimum Regulatory Requirements:

Road classification system

Each road shall be classified as either a primary road or an ancillary road. A primary road is any road which is: used for transporting coal or spoil; frequently used for access or other purposes for a period in excess of six months; or, to be retained for an approved postmining land use. An ancillary road is any road not classified as a primary road.

Plans and drawings

Each applicant for an underground coal mining and reclamation permit shall submit plans and drawings for each road to be constructed, used, or maintained within the proposed permit area. To ensure environmental protection appropriate for their planned duration and use, including consideration of the type and size of equipment used, the design and construction or reconstruction of roads shall incorporate appropriate limits for grade, width, surface materials, surface drainage control, culvert placement, and culvert size, in accordance with current, prudent engineering practices, and any necessary design criteria established by the Division. The plans and drawings shall:

1.) Include a map, appropriate cross sections, design drawings, and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures;
2.) Contain the drawings and specifications of each proposed road that is located in the channel of an intermittent or perennial stream, as necessary for approval of the road by the Division;
3.) Contain the drawings and specifications for each proposed ford of perennial or intermittent streams that is used as a temporary route, as necessary for approval of the ford by the Division;
4.) Contain a description of measures to be taken to obtain approval of the Division for alteration or relocation of a natural stream channel;
5.) Contain the drawings and specifications for each low-water crossing of perennial or intermittent stream channels so that the Division can maximize the protection of the stream; and,
6.) Describe the plans to remove and reclaim each road that would not be retained under an approved postmining land use, and the schedule for this removal and reclamation.

Performance standards

All roads road shall be located, designed, constructed, reconstructed, used, maintained, and reclaimed so as to:

1.) Control or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust and dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;
2.) Control or prevent damage to fish, wildlife, or other habitat and related environmental values;
3.) Control or prevent additional contributions of suspended solids to streamflow or runoff outside the permit area;
4.) Neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standard applicable to receiving waters;
5.) Refrain from seriously altering the normal flow of water in streambeds or drainage channels;
6.) Not locate any road in the channel of an intermittent or perennial stream unless specifically approved by the Division. Roads shall be located to minimize downstream sedimentation and flooding;
7.) Prevent or control damage to public or private property, including the prevention or mitigation of adverse effects on lands within the boundaries of units of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, including designated study rivers, and National Recreation Areas designated by Act of Congress;
8.) Use nonacid- and nontoxic-forming substances in road surfacing: and,
9.) Maintain all roads to meet the performance standards of this part and any additional criteria specified by the Division. A road damaged by a catastrophic event, such as a flood or earthquake, shall be repaired as soon as is practicable after the damage has occurred.

In addition to the above, primary roads shall meet the following requirements:

1.) The construction or reconstruction of primary roads shall be certified in a report to the Division by a qualified registered professional engineer, or in any State which authorizes land surveyors to certify the construction or reconstruction of primary roads, a qualified registered professional land surveyor, with experience in the design and construction of roads. The report shall indicate that the primary road has been constructed or reconstructed as designed and in accordance with the approved plan;
2.) Each primary road embankment shall have a minimum static factor of 1.3. The Division may establish engineering design standards for primary roads through the State program approval process, in lieu of engineering tests, to establish compliance with the minimum static safety factor of 1.3 for all embankments;
3.) Primary roads shall be located to minimize erosion, insofar as is practicable, on the most stable available surface;
4.) Fords of perennial or intermittent streams by primary roads are prohibited unless they are specifically approved by the Division as temporary routes during periods of road construction.
5.) Each primary road shall be constructed or reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to bridges, ditches, cross drains, and ditch relief drains. The drainage control system shall be designed to safely pass the peak runoff from a 10-year, 6-hour precipitation event, or greater event as specified by the Division. Drainage pipes and culverts shall be installed as designed, and maintained in a free and operating condition and to prevent or control erosion at inlets and outlets. Drainage ditches shall be constructed and maintained to prevent uncontrolled drainage over the road surface and embankment. Culverts shall be installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road. Natural stream channels shall not be altered or relocated without the prior approval of the Division. Except as specifically approved by the Division, structures for perennial or intermittent stream channel crossings shall be made using bridges, culverts, low-water crossings, or other structures designed, constructed, and maintained using current, prudent engineering practices. The Division shall ensure that low-water crossings are designed, constructed, and maintained to prevent erosion of the structure or streambed and additional contributions of suspended solids to streamflow.
6.) Primary roads shall be surfaced with material approved by the Division as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road.

Primary road certification

The plans and drawings for each primary road shall be prepared by, or under the direction of, and certified by a qualified registered professional engineer, or in any State which authorizes land surveyors to certify the design of primary roads a qualified registered professional land surveyor, experienced in the design and construction of roads, as meeting the requirements of this chapter; current, prudent engineering practices; and any design criteria established by the Division.

Other Transportation Facilities

The plan must include a detailed description of each road, conveyor, and rail system to be constructed, used, or maintained within the proposed permit area. The description will include a map, appropriate cross sections, and the following: specifications for each road width, road gradient, road surface, road cut, fill embankment, culvert, bridge, drainage ditch, and drainage structure; measures to be taken to obtain Division approval for alteration or relocation of a natural drainageway; a maintenance plan describing how roads will be maintained throughout their life to meet the design standards throughout their use; a commitment that if a road is damaged by a catastrophic event, such as a flood or earthquake, the road will be repaired as soon as practical after the damage has occurred; a report of appropriate geotechnical analysis, where approval of the Division is required for alternative specifications, or for steep cut slopes.

Analysis:

Road Classification System

The location of all roads that will be used for coal mining and reclamation within the disturbed Lila Canyon area and are shown on Plate 5-2. The roads within the disturbed area boundary include the county road, the mine facilities road, the coal loadout road and the portal access road. All of the roads in the disturbed Lila Canyon area that will be constructed by the Permittee are classified as primary roads. The roads were classified as primary roads because they will be used to transport coal and/or will be used frequently for more than six months.

Plans and Drawings

The Permittee must give the Division plans and drawings for each primary and ancillary road. The designs for the roads that the Permittee will build are in Section 527.200 and Appendix 5-4. In addition, all roads are shown on Plate 5-2. The stability analysis for the road embankment is in Appendix 5-5.

Detail Description of Roads and Conveyor (R645-301-527.200)

The Permittee is required to submit a detailed description of each road and conveyor. The information about the roads and conveyors is scattered throughout the plan. The information must be stated in a comprehensive form in the PAP.

The Permittee must describe the road that goes from the county road through the disturbed area and into the truck loadout facility. In addition, the Permittee must describe each road. The road description must include the road width, the average and maximum road gradient, road surfacing materials, the type of fill that will be used, if any culverts or bridges will be used, the drainage ditches and drainage structures.

The cut and fill quantities for the road are shown in Table 1 of Appendix 5-4. A generalized cross section of the primary roads is shown on Figure 1 in Appendix 5-4.

The Permittee needs to describe each of the conveyors that will be used, including but not limited to: the 60-inch conveyor from the portal to the stacking tube, the conveyor in the reclaim tunnel, the 48-inch conveyor from the stacking tube to the crusher, the conveyor from the crusher to the storage bin and the conveyor from the storage bin to the truck loadout.

Measures to be Taken to Obtain Division Approval for Alteration or Relocation of a Natural Drainage

The Permittee proposes to construct temporary culvert UC-1 in an ephemeral channel to accommodate a truck turn-around. Designs are discussed in the hydrology section of this PAP. The culvert will be removed during reclamation.

The Division has reviewed the maps and plans for the disturbed area boundary and is concerned that the Permittee is disturbing more area than is needed by constructing the road in the ephemeral channel. The Permittee must show why they need to place a culvert in the ephemeral stream rather than modifying the truck turn around. See R645-301-532.100.

Location of Roads in Intermittent or Perennial Streams a Ford

The Permittee does not propose to locate a road in the channel of an intermittent or perennial stream, locate a temporary ford in the channel of an intermittent or perennial stream, or install a low-water crossing of a perennial or intermittent stream channel.

Drawings and Specifications for each Low-Water Crossing of Perennial or Intermittent Stream Channels so that The Division Can Maximize the Protection of the Stream

No low-water crossings are planned.

Plans to Remove and Reclaim Each Road that would not be Retained Under an Approved Postmining Land Use, and the Schedule for this Removal and Reclamation.

The Permittee states in Section 542.600 that there will be no roads left after final reclamation within the mine-disturbed area. All roads will be reclaimed upon cessation of mining.

Performance Standards

The Permittee must ensure that each ancillary and primary road will meet the performance standards outlined above in the Minimum Regulatory Requirements for Road Systems and Other Transportation Facilities.

In meeting regulatory requirements, the Permittee has provided the following information:

- Appendix 5-5 has information about slope stability for the roads. The Permittee states that a slope stability analysis was done for the road embankment and road cut slope. The stability analysis done in Appendix 5-5 shows that the road embankment will have a safety factor of 2.48 under dry conditions and 1.58 for saturated conditions. The road cut slopes will have a safety factor of 1.85 under dry conditions and 1.31 under saturated conditions. The minimum safety factor required for those slopes is 1.30. Thus, the slopes meet or exceed the safety factors of the Utah Coal Rules.

- The Permittee using STABLE, a slope stability program, did additional stability analysis. The Permittee analyzed several road embankment and cut-slope configurations in the disturbed area. Each cut slope exceeded the minimum safety factor requirement of 1.3.

- Primary roads have been located in the pad area. The pad area has been designed to minimize erosion, insofar as is practicable. In addition, the roads are located on stable surface.

- The Permittee does not propose to have any temporary fords in perennial or intermittent streams.

- The primary roads will be constructed to have adequate drainage controls.

- The road base shown for the primary roads in Figure 1 of Appendix 5-4 will be 6-inch road base gravel. That type of material has been used at other mines and is considered adequate.

Primary Road Certification

The road plans and cross-sections are located in Appendix 5-5 and Plate 5-2. A registered professional engineer certified the plans.

A qualified registered professional engineer shall also certify the actual construction or reconstruction of primary roads in a report to the Division. Those reports, called as-builts, must be provided to the Division upon completion of the road.

Other Transportation Facilities

The only other transportation facility associated with the Lila Canyon Extension is the conveyor system. The Division requests additional information about the conveyor system (see the deficiencies written under R645-301-232.700 and R645-301- 527.200).

SUWA commented that the coal haul road must be included as part of the permit area. On Plate 4-4, the Permittee labeled a county road as a proposed coal haul road. While the proposed county road will be used to transport coal from the mine to State Highway 6, that road is a public road and not a road owned or controlled by the mine. The Division has made a separate finding on the disposition of this road and has determined that it should not be permitted. The activities proposed for this road are commensurate with activities allowed on public roads of this designation. The Permittee does not propose to utilize this road for coal mining and reclamation operations; transportation of coal is not considered coal mining and reclamation operations. To avoid confusion the Permittee must label the proposed coal haul road as a county road.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-121.200, The Permittee must state the information about the roads and conveyors in a comprehensive form in one location in the PAP. At present, the information about the roads and conveyors is scattered throughout the PAP.

R645-301-527.210, At a minimum the description of each mine road must include the road width, the average and maximum road gradient, road surfacing materials, the type of fill that will be used, if any culverts or bridges will be used, the drainage ditches and drainage structures.

R645-301-527.200, The Permittee needs to describe each of the conveyors that will be used, including but not limited to: the 60-inch conveyor from the portal to the stacking tube, the conveyor in the reclaim tunnel, the 48-inch conveyor from the stacking tube to the crusher, the conveyor from the crusher to the storage bin and the conveyor from the storage bin to the truck loadout.

R645-301-121.200, The Permittee must clearly label the county road from Highway 6 to the mine site as a county road on maps.

R645-301-532.100, The Permittee must either eliminate the disturbance to the drainage in the southern end of the disturbed area by the truck turn around loop or show good cause.

SPOIL AND WASTE MATERIALS

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

Minimum Regulatory Requirements:

Disposal of noncoal mine wastes

Noncoal mine wastes including, but not limited to, grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber, and other combustible materials generated during mining activities shall be placed and stored in a controlled manner in a designated portion of the permit area. Placement and storage shall ensure that leachate and surface runoff do not degrade surface or ground water, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings.

Final disposal of noncoal mine wastes shall be in a designated disposal site in the permit area or a State-approved solid waste disposal area. Disposal sites in the permit area shall be designed and constructed to ensure that leachate and drainage from the noncoal mine waste area does not degrade surface or underground water. Wastes shall be routinely compacted and covered to prevent combustion and windborne waste. When the disposal is completed, a minimum of 2 feet of soil cover shall be placed over the site, slopes stabilized, and revegetated. Operation of the disposal site shall be conducted in accordance with all local, State, and Federal requirements.

At no time shall any noncoal mine waste be deposited in a refuse pile or impounding structure, nor shall any excavation for a noncoal mine waste disposal site be located within 8 feet of any coal outcrop or coal storage area.

Any noncoal mine waste defined as "hazardous" under Section 3001 of the Resource Conservation and Recovery Act (RCRA) (Pub. L. 94-580, as amended) and 40 CFR Part 261 shall be handled in accordance with the requirements of Subtitle C of RCRA and any implementing regulations.

Coal mine waste

Each plan shall contain descriptions, including appropriate maps and cross-section drawings of the proposed disposal methods and sites for placing underground development waste and excess spoil generated at surface areas affected by surface operations and facilities. Each plan shall describe the geotechnical investigation, design, construction, operation, maintenance, and removal, if appropriate, of the structures.

All coal mine waste shall be placed in new or existing disposal areas within a permit area that are approved by the Division for this purpose. Coal mine waste shall be placed in a controlled manner to:

1.) Minimize adverse effects of leachate and surface-water runoff on surface- and ground-water quality and quantity;
2.) Ensure mass stability and prevent mass movement during and after construction;
3.) Ensure that the final disposal facility is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use;
4.) Not create a public hazard; and
5.) Prevent combustion.

Coal mine waste materials from activities located outside a permit area may be disposed of in the permit area only if approved by the Division. Approval shall be based upon a showing that such disposal will be in accordance with the standards of this section.

The disposal facility shall be designed using current, prudent engineering practices and shall meet any design criteria established by the Division. A qualified registered professional engineer, experienced in the design of similar earth and waste structures, shall certify the design of the disposal facility. The disposal facility shall be designed to attain a minimum long-term static safety factor of 1.5. The foundation and abutments must be stable under all conditions of construction. Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, shall be performed in order to determine the design requirements for foundation stability. The analyses of the foundation conditions shall take into consideration the effect of underground mine workings, if any, upon the stability of the disposal facility.

If any examination or inspection discloses that a potential hazard exists, the Division shall be informed promptly of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented the Division shall be notified immediately. The Division shall then notify the appropriate agencies that

other emergency procedures are required to protect the public.

Refuse piles

Refuse piles shall meet the requirements of coal mine waste, the additional requirements provided below and the requirements of 30 CFR Sections 77.214 and 77.215.

If the disposal area contains springs, natural or manmade water courses, or wet-weather seeps, the design shall include diversions and underdrains as necessary to control erosion, prevent water infiltration into the disposal facility, and ensure stability. Uncontrolled surface drainage may not be diverted over the outslope of the refuse pile. Runoff from areas above the refuse pile and runoff from the surface of the refuse pile shall be diverted into stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event. Runoff diverted from undisturbed areas need not be commingled with runoff from the surface of the refuse pile.

Underdrains shall comply with the general requirements for the disposal of excess spoil.

Slope protection shall be provided to minimize surface erosion at the site. All disturbed areas, including diversion channels that are not riprapped or otherwise protected, shall be revegetated upon completion of construction.

All vegetative and organic materials shall be removed from the disposal area prior to placement of coal mine waste. Topsoil shall be removed, segregated and stored or redistributed. If approved by the Division, organic material may be used as mulch or may be included in the topsoil to control erosion, promote growth of vegetation, or increase the moisture retention of the soil.

The final configuration of the refuse pile shall be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the refuse pile if required for stability, control of erosion, conservation of soil moisture, or facilitation of the approved postmining land use. The grade of the outslope between terrace benches shall not be steeper than 2h:1v (50 percent).

No permanent impoundments shall be allowed on the completed refuse pile. Small depressions may be allowed by the Division if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation, and if they are not incompatible with the stability of the refuse pile.

Following final grading of the refuse pile, the coal mine waste shall be covered with a minimum of 4 feet of the best available, nontoxic and noncombustible material, in a manner that does not impede drainage from the underdrains. The Division may allow less than 4 feet of cover material based on physical and chemical analyses which show that the revegetation requirements will be met.

A qualified registered professional engineer, or other qualified professional specialist under the direction of the professional engineer, shall inspect the refuse pile during construction. The professional engineer or specialist shall be experienced in the construction of similar earth and waste structures. Such inspection shall be made at least quarterly throughout construction and during critical construction periods. Critical construction periods shall include, at a minimum: Foundation preparation including the removal of all organic material and topsoil; Placement of underdrains and protective filter systems; Installation of final surface drainage systems; and, The final graded and revegetated facility. Regular inspections by the engineer or specialist shall also be conducted during placement and compaction of coal mine waste materials. More frequent inspections shall be conducted if a danger of harm exists to the public health and safety or the environment. Inspections shall continue until the refuse pile has been finally graded and revegetated or until a later time as required by the Division.

The qualified registered professional engineer shall provide a certified report to the Division promptly after each inspection that the refuse pile has been constructed and maintained as designed and in accordance with the approved plan and this Chapter. The report shall include appearances of instability, structural weakness, and other hazardous conditions. The certified report on the drainage system and protective filters shall include color photographs taken during and after construction, but before underdrains are covered with coal mine waste. If the underdrain system is constructed in phases, each phase shall be certified separately. The photographs accompanying each certified report shall be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site. A copy of each inspection report shall be retained at or near the minesite.

Impounding structures

New and existing impounding structures constructed of coal mine waste or intended to impound coal mine waste shall meet the requirements for coal mine waste.

Coal mine waste shall not be used for construction of impounding structures unless it has been demonstrated to the Division that the stability of such a structure conforms to the requirements of this part and that the use of coal mine waste will not have a detrimental effect on downstream water quality or the environment due to acid seepage through the impounding structure.

The stability of the structure and the potential impact of acid mine seepage through the impounding structure shall be discussed in detail in the design plan submitted to the Division.

Each impounding structure constructed of coal mine waste or intended to impound coal mine waste shall be designed, constructed, and maintained in accordance with the requirements for temporary impoundments. Such structures may not be retained permanently as part of the approved postmining land use.

Each impounding structure constructed of coal mine waste or intended to impound coal mine waste that meets the criteria of 30 CFR Sec. 77.216(a) shall have sufficient spillway capacity to safely pass, adequate storage capacity to safely contain, or a combination of storage capacity and spillway capacity to safely control, the probable maximum precipitation of a 6-hour precipitation event, or greater event as specified by the Division. Spillways and outlet works shall be designed to provide adequate protection against erosion and corrosion. Inlets shall be protected against blockage.

Runoff from areas above the disposal facility or runoff from the surface of the facility that may cause instability or erosion of the impounding structure shall be diverted into a stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour design precipitation event.

Impounding structures constructed of or impounding coal mine waste shall be designed and function so that at least 90 percent of the water stored during the design precipitation event can be removed within a 10-day period.
Burning and burned waste utilization

Coal mine waste fires shall be extinguished by the person who conducts the surface mining activities, in accordance with a plan approved by the Division and the Mine Safety and Health Administration. The plan shall contain, at a minimum, provisions to ensure that only those persons authorized by the operator, and who have an understanding of the procedures to be used, shall be involved in the extinguishing operations. No burning or unburned coal mine waste shall be removed from a permitted disposal area without a removal plan approved by the Division. Consideration shall be given to potential hazards to persons working or living in the vicinity of the structure.

Return of coal processing waste to abandoned underground workings

Each plan shall describe the design, operation and maintenance of any proposed coal processing waste disposal facility, including flow diagrams and any other necessary drawings and maps, for the approval of the Division and the Mine Safety and Health Administration.

Each plan shall describe the source and quality of waste to be stowed, area to be backfilled, percent of the mine void to be filled, method of constructing underground retaining walls, influence of the backfilling operation on active underground mine operations, surface area to be supported by the backfill, and the anticipated occurrence of surface effects following backfilling.

The applicant shall describe the source of the hydraulic transport mediums, method of dewatering the placed backfill, retainment of water underground, treatment of water if released to surface streams, and the effect on the hydrologic regime.

The plan shall describe each permanent monitoring well to be located in the backfilled area, the stratum underlying the mined coal, and gradient from the backfilled area.

The requirements of this section shall also apply to pneumatic backfilling operations, except where the operations are exempted by the Division from requirements specifying hydrologic monitoring.

Excess Spoil: General Requirements

Excess spoil shall be placed in designated disposal areas within the permit area, in a controlled manner to: minimize the adverse effects of leachate and surfacewater runoff from the fill on surface and ground waters; ensure mass stability and prevent mass movement during and after construction; and, ensure that the final fill is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use.

The fill and appurtenant structures shall be designed using current, prudent engineering practices and shall meet any design criteria established by the Division. A qualified registered professional engineer experienced in the design of earth and rock fills shall certify the design of the fill and appurtenant structures. The fill shall be designed to attain a minimum long-term static safety factor of 1.5. The foundation and abutments of the fill must be stable under all conditions of construction.

The disposal area shall be located on the most moderately sloping and naturally stable areas available, as approved by the Division, and shall be placed, where possible, upon or above a natural terrace, bench, or berm, if such placement provides additional stability and prevents mass movement.

Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, shall be performed in order to determine the design requirements for foundation stability. The analyses of foundation conditions shall take into

consideration the effect of underground mine workings, if any, upon the stability of the fill and appurtenant structures. When the slope in the disposal area is in excess of 2.8h:1v (36 percent), or such lesser slope as may be designated by the Division based on local conditions, keyway cuts (excavations to stable bedrock) or rock toe buttresses shall be constructed to ensure stability of the fill. Where the toe of the spoil rests on a downslope, stability analyses shall be performed to determine the size of rock toe buttresses and keyway cuts.

All vegetative and organic materials shall be removed from the disposal area prior to placement of excess spoil. Topsoil shall be removed, segregated and stored and redistributed in accordance with the requirements for topsoil handling. If approved by the Division, organic material may be used as mulch or may be included in the topsoil to control erosion, promote growth of vegetation, or increase the moisture retention of the soil.

Excess spoil shall be transported and placed in a controlled manner in horizontal lifts not exceeding 4 feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction; graded so that surface and subsurface drainage is compatible with the natural surroundings; and covered with topsoil or substitute material. The Division may approve a design which incorporates placement of excess spoil in horizontal lifts other than 4 feet in thickness when it is demonstrated by the operator and certified by a qualified registered professional engineer that the design will ensure the stability of the fill and will meet all other applicable requirements.

The final configuration of the fill shall be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the fill if required for stability, control of erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches shall not be steeper than 2h:1v (50 percent).

No permanent impoundments are allowed on the completed fill. Small depressions may be allowed by the Division if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation; and if they are not incompatible with the stability of the fill.

Excess spoil that is acid- or toxic-forming or combustible shall be adequately covered with nonacid, nontoxic and noncombustible material, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design shall include diversions and underdrains as necessary to control erosion, prevent water infiltration into the fill, and ensure stability. Underdrains shall consist of durable rock or pipe, be designed and constructed using current, prudent engineering practices and meet any design criteria established by the Division. The underdrain system shall be designed to carry the anticipated seepage of water due to rainfall away from the excess spoil fill and from seeps and springs in the foundation of the disposal area and shall be protected from piping and contamination by an adequate filter. Rock underdrains shall be constructed of durable, nonacid-, nontoxic-forming rock (e.g., natural sand and gravel, sandstone, limestone, or other durable rock) that does not slake in water or degrade to soil materials, and which is free or coal, clay, or other nondurable material. Perforated pipe underdrains shall be corrosion resistant and shall have characteristics consistent with the long-term life of the fill.

Slope protection shall be provided to minimize surface erosion at the site. All distributed areas, including diversion channels that are not riprapped or otherwise protected, shall be revegetated upon completion of construction.

A qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer, shall periodically inspect the fill during construction. The professional engineer or specialist shall be experienced in the construction of earth and rock fills. Such inspections shall be made at least quarterly throughout construction and during critical construction periods. Critical construction periods shall include at a minimum: foundation preparation, including the removal of all organic material and topsoil; placement of underdrains and protective filter systems; installation of final surface drainage systems; and, the final graded and revegetated fill. Regular inspections by the engineer or specialist shall also be conducted during placement and compaction of fill materials. The qualified registered professional engineer shall provide a certified report to the Division promptly after each inspection that the fill has been constructed and maintained as designed and in accordance with the regulatory requirements. The report shall include appearances of instability, structural weakness, and other hazardous conditions. The certified report on the drainage system and protective filters shall include color photographs taken during and after construction, but before underdrains are covered with excess spoil. If the underdrain system is constructed in phases, each phase shall be certified separately. Where excess durable rock spoil is placed in single or multiple lifts such that the underdrain system is constructed simultaneously with excess spoil placement by the natural segregation of dumped materials, color photographs shall be taken of the underdrain as the underdrain system is being formed. The photographs accompanying each certified report shall be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site. A copy of each inspection report shall be retained at or near the mine site.

Coal mines waste may be disposed of in excess spoil fills if approved by the Division and, if such waste is: placed in accordance with the requirements for refuse piles; nontoxic and nonacid forming; and, of the proper characteristics to be consistent with the design stability of the fill.

Spoil resulting from face-up operations for underground coal mine development may be placed at drift entries as part of a cut-and-fill structure, if the structure is less than 400 feet in horizontal length and designed in accordance with the general requirements for the disposal of excess spoil.

Excess Spoil: Valley fills/head-of-hollow fills

Valley fills and head-of-hollow fills shall meet the general requirements for excess spoil and the following additional requirements.

The top surface of the completed fill shall be graded such that the final slope after settlement will be toward properly designed drainage channels. Uncontrolled surface drainage may not be directed over the outslope of the fill. Runoff from areas above the fill and runoff from the surface of the fill shall be diverted into stabilized diversion channels and to safely pass the runoff from a 100-year, 6-hour precipitation event.

A rock-core chimney drain may be used in a head-of-hollow fill, instead of the underdrain and surface diversion system normally required, as long as the fill is not located in an area containing intermittent or perennial streams. A rock-core chimney drain may be used in a valley fill if the fill does not exceed 250,000 cubic yards of material and upstream drainage is diverted around the fill. The alternative rock-core chimney drain system shall be incorporated into the design and construction of the fill as follows:

1.) The fill shall have, along the vertical projection of the main buried stream channel or rill, a vertical core of the durable rock at least 16 feet thick which shall extend from the toe of the fill to the head of the fill and from the base of the fill to the surface of the fill. A system of lateral rock underdrains shall connect this rock core to each area of potential drainage or seepage in the disposal area. The underdrain system and rock core shall be designed to carry the anticipated seepage of water due to rainfall away from the excess spoil fill and from seeps and springs in the foundation of the disposal area.
2.) A filter system to ensure the proper long-term functioning of the rock core shall be designed and constructed using current, prudent engineering practices.
3.) Grading may drain surface water away from the outslope of the fill and toward the rock core. In no case, however, may intermittent or perennial streams be diverted into the rock core. The maximum slope of the top of the fill shall be 33h:1v (3 percent). A drainage pocket may be maintained at the head of the fill during and after construction, to intercept surface runoff and discharge the runoff through or over the rock drain, if stability of the fill is not impaired. In no case shall this pocket or sump have a potential capacity for impounding more than 10,000 cubic feet of water. Terraces on the fill shall be graded with a 3- to 5-percent grade toward the fill and a 1-percent slope toward the rock core.

Excess Spoil: Durable rock fills

The Division may approve the alternative method of disposal of excess durable rock spoil by gravity placement in single or multiple lifts, provided the following conditions are met: durable rock fills shall meet the general requirements for excess spoil except as provided in this section; the excess spoil consists of at least 80 percent, by volume, durable, nonacid- and nontoxic-forming rock (e.g., sandstone or limestone) that does not slake in water and will not degrade to soil material. Where used, noncemented clay shale, clay spoil, soil, or other nondurable excess spoil material shall be mixed with excess durable rock spoil in a controlled manner such that no more than 20 percent of the fill volume, as determined by tests performed by a registered engineer and approved by the Division, is not durable rock; a qualified registered professional engineer certifies that the design will ensure the stability of the fill and meet all other applicable requirements; the fill is designed to attain a minimum long-term static safety factor of 1.5, and an earthquake safety factor of 1.1; the underdrain system may be constructed simultaneously with excess spoil placement by the natural segregation of dumped materials, provided the resulting underdrain system is capable of carrying anticipated seepage of water due to rainfall away from the excess spoil fill and from seeps and springs in the foundation of the disposal area and the other requirements for drainage control are met; and, surface water runoff from areas adjacent to and above the fill is not allowed to flow onto the fill and is diverted into stabilized diversion channels designed to safely pass the runoff from a 100-year, 6-hour precipitation event.

Excess Spoil: Preexisting benches

The Division may approve the disposal of excess spoil through placement on preexisting benches, provided that the general requirements for excess spoil and the requirements of this section are met.

Excess spoil shall be placed only on the solid portion of the preexisting bench. The fill shall be designed, using current, prudent engineering practices, to attain a long-term static safety factor of 1.3 for all portions of the fill. The preexisting bench shall be backfilled and graded to achieve the most moderate slope possible which does not exceed the angle of repose, and eliminate the highwall to the maximum extent technically practical.

Disposal of excess spoil from an upper actively mined bench to a lower preexisting bench by means of gravity transport may be approved by the Division provided that: the gravity transport courses are determined on a site-specific basis by the operator as part of the permit application and approved by the Division to minimize hazards to health and safety and to ensure that damage

will be minimized between the benches, outside the set course, and downslope of the lower bench should excess spoil accidentally move; all gravity-transported excess spoil, including that excess spoil immediately below the gravity transport courses and any preexisting spoil that is disturbed, is rehandled and placed in horizontal lifts in a controlled manner, concurrently compacted as necessary to ensure mass stability and to prevent mass movement, and graded to allow surface and subsurface drainage to be compatible with the natural surroundings and to ensure a minimum long-term static safety factor of 1.3. Excess spoil on the bench prior to the current mining operation that is not disturbed need not be rehandled except where necessary to ensure stability of the fill; a safety berm is constructed on the solid portion of the lower bench prior to gravity transport of the excess spoil. Where there is insufficient material on the lower bench to construct a safety berm, only that amount of excess spoil necessary for the construction of the berm may be gravity transported to the lower bench prior to construction of the berm; and, excess spoil shall not be allowed on the downslope below the upper bench except on designated gravity-transport courses properly prepared by removing topsoil. Upon completion of the fill, no excess spoil shall be allowed to remain on the designated gravity-transport course between the two benches and each transport course shall be reclaimed.

Analysis:

Disposal of Noncoal Waste

Noncoal waste can be classified as non-hazardous or hazardous and include recyclable materials, asphalt and concrete. Non-hazardous waste consists of garbage and will be placed in dumpsters. The non-hazardous waste will then be shipped to a state licensed disposal site, most likely East Carbon Development Corporation (ECDC.) Hazardous waste, as defined by Resource Conservation and Recovery Act (RCRA), will be sent to a state licensed disposal site - most likely ECDC. See Section 528.224 of the PAP for more details about hazardous waste disposal. Scrap material and used machinery is usually sent to a scrap dealer or a recycling center for disposal.

The Division will allow the Permittee to dispose of concrete debris on site. The on site disposal of concrete will be done by placing the concrete in areas that will be backfilled and graded, as shown on Plate 5-6. The PAP indicates in Section 542.640 that a minimum of two feet of cover will be placed over "road surfacing materials that are unsuitable for vegetation establishment." The Division interprets this statement to mean that road base and gravels would be buried under two feet of cover, but that cement and asphalt (as mentioned in the PAP, Section 542.741) would be buried with four feet of cover. The PAP should be clear on this issue.

The Permittee must address how asphalt will be disposed of. If the Permittee plans to dispose of asphalt on site then they must obtain a permit from the Department of Environmental Quality. If the Permittee plans to dispose of asphalt off site, they can either dispose of the asphalt in a landfill or send the material to a recycling facility. The Permittee plans to have asphalt parking lots near the main buildings.

Coal Mine Waste

In section 528.320 of the PAP, the Permittee states that coal mine waste will consist of coal processing waste and underground development waste. The underground development waste will be divided into three subcategories: rock slope material, underground development waste that contains coal and reject material from the coal crushing operation. The location of the coal mine waste storage facilities (refuse pile) is shown on many maps and cross sections

including Map 5-2, Surface Area, Figure 1 Appendix 5-7 and cross sections 5-7A. The location of the coal mine waste is shown as "hatched marked" on the cross-sections but is not labeled. To avoid confusion the Permittee must differentiate between the inert material from the rock slopes and the coal containing material from the coal crushing and underground development waste from the coal sections of the mine.

The coal mine waste disposal site (refuse pile) will be constructed as follows:

- Ground Preparation: Vegetation and topsoil will be removed from the site and stored in topsoil piles. The subsoil will be removed as shown on Figure 1 in Appendix 5-8. The cell that is created will be filled with coal mine waste. The Permittee plans to construct several cells.
- Placement of Coal Mine Waste (Refuse): The Permittee states in Appendix 5-7 that coal mine waste will be dumped into the hole. Because the coal mine waste that consists of only rock slope material will be used as structural fill the Permittee needs to describe how that material will be placed and compacted. Because the coal mine waste from the crusher or coal section of the mine will contain coal the Permittee must describe how that material will be placed and compacted to prevent fires.
- Coal Processing Waste Testing: The Permittee will test the material from the rock slopes during the initial startup and at the ¼, ½ and ¾ mark and at the end of the project. Material from the crusher or coal sections of the mine will be tested every 6,000 tons.
- Spreading and Compaction: The Permittee states that compaction will take place using a wheeled loader during the filling operation. The Division has concerns about the plan; 1) wheeled loaders do not compact rock material very well and 2) the Permittee did not state the maximum lift thickness. For structural fill the maximum lift thickness is usually 4 to 6 inches. To prevent combustion the material should be placed in lifts with a maximum thickness of 2 feet.
- Drainage: The subsoil will be graded to allow proper drainage and to prevent impoundment of water.

The main design criterion for coal mine waste disposal areas are as follows:

The coal mine waste must be disposed of in a way that minimizes the adverse effects of leachate and surface-water runoff on surface and ground water quality and quantity. The Division does not anticipate that significant amounts of acid or toxic-forming material will be encountered. If significant amounts of acid or toxic-forming materials are encountered, the 4 feet of material placed over the coal mine waste will limit any leachate from coming in contact with surface water. There are no water resources underneath the coal mine waste. Therefore, groundwater resources will not be damaged from leachate from the coal mine waste disposal site.

The coal mine waste disposal facility (refuse pile) must be constructed to ensure mass stability and prevent mass movement during and after construction. The coal mine waste disposal facility has a static safety factor of 16.19. The minimum static safety required is 1.5.

The calculations were made at cross section 8+00.

After final grading, the coal mine waste disposal area (refuse pile) will be covered with 4 feet of material. The 4-foot cover will be adequate to protect vegetation from any acid or toxic materials.

The coal mine waste storage facility will be located within the disturbed area of the Lila Canyon Extension. Access to the site will be restricted to mine personnel during normal mining operations. In the event of the mine going into temporary cessation the cover and cell construction methods will protect the public from hazards associated with the site.

The Permittee did not specifically address how they would prevent combustion from occurring in the coal mine waste pile.

The Permittee does not anticipate that any coal mine waste will be disposed of outside the permit area, nor do they anticipate that coal mine waste from another permittee will be placed in the Horse Canyon Permit area. If the need arises, then the Permittee must modify the MRP.

A registered professional engineer (P.E.) designed the coal mine waste disposal facility. The Division will require P.E. certified, as-built drawings after the site has been constructed.

The Permittee has committed to notify the Division in the event of a potential hazard at the coal mine waste disposal site. See the section on slides and other damage in this TA for details on how the Permittee will handle emergencies.

Appendix 5.7 describes 25,000 loose cubic yards of underground development waste generated from portal development. Additional refuse will come from the operation of the screening plant and the mine itself. Appendix 5.7 indicates that there is room at the refuse disposal facility for storage of an additional 19,500 cu yards of mine waste.

Refuse Piles

The coal mine rules definition of terms are found in R645-100 as follows:

- A refuse pile is a surface deposit of coal mine waste that does not impound water.
- Coal mine waste means coal processing waste and underground development waste.
- Coal processing waste means earth materials that are separated from the product coal during cleaning, concentrating, or the processing or preparation of coal.
- Underground development waste means waste-rock mixtures of coal, shale, claystone, siltstone, sandstone, limestone, or related materials that are excavated, moved, and disposed of from underground workings in connection with underground coal mining and reclamation activities.

Coal processing waste will be limited to materials from the crusher. Material separated from the coal during the crushing process will not be disposed of underground. The coal processing waste will be disposed of in a refuse pile shown on Plate 5-2 and described in Appendix 5-7.

The Permittee plans to generate 16,650 cubic yards of material during the construction of the rock slopes that lead from the surface facilities area to the coal seam. The Permittee assumes that the material will swell 1.3 times the original volume. Therefore, a disposal site with the capacity for approximately 25,000 cubic yards of coal mine waste is necessary. Because the material from the rock slopes is not expected to contain coal or acid- or toxic- forming materials the Permittee proposes to use the 25,000 cubic yards of material for structural fill.

Refuse material from the crushing process or from material taken from within the section of the mine that has coal will not be used as structural fill. To distinguish the two types of refuse the Permittee refers to one as rock slope material. See Section 536.300 in the PAP for details.

The Utah coal rules do not have any specific requirements for how refuse may be used for structural fill material. The rules do specifically state that refuse can be used for structural backfill in underground mines (R645-301-536.700) and to construct dams and embankments (R645-301-536.800.) The Utah coal rules (R645-301-536.900) do state that refuse piles must meet the requirements of 30 CFR 77.214 and 30 CFR 77.215:

- 30 CRF 77.214, Refuse piles shall be a safe distance from surface installations.
- 30 CFR 77.215, Refuse piles shall be constructed to minimize fires, but not to impede drainage or impound water.

The Permittee should address these two federal rules in planning for using refuse material as structural fill, since the PAP describes the use of refuse material (rock slope material) for structural fill upon which the shop/warehouse will be constructed. The Permittee must show that the material is safe. Safety factors include, but are not limited to, combustion and stability. The rock slope material is assumed to be inert material, while the coal processing waste material is assumed to have coal. Therefore, the Permittee must have a plan for using only inert rock slope material for the structure fill material upon which the shop/warehouse will be constructed. In addition, the Permittee must plan for a barrier between the rock slope material and the coal processing waste material. The Permittee must address how the shop warehouse structure will be protected from the hazards associated with the refuse pile. In addition, the Permittee should describe how the refuse pile will be designed so as not to impede drainage or impound water.

On Plate 5-2, the Permittee shows the location of the refuse pile. The material from the rock slopes that will be used for structural fill labeled and marked differently than the coal processing waste. In Appendix 5-7, the Permittee states that 25,000 cubic yards of rock slope material will be place in the refuse pile as structural fill and up to 19,473 cubic yards of coal processing waste can be disposed in the refuse pile. Section 520 – Refuse Piles – gives the

refuse disposal pile capacity as 150,000 tons. Numbers used for rock density and swell factor can affect the conversion to cubic yards, but this number seems to indicate roughly 50% more material than the refuse pile design in App. 5-7.

To avoid confusion, the Division will require the Permittee to list separately the amount of rock slope material and coal processing waste material in Table 1 in Appendix 5-7.

Appendix 5-7 contains detailed information on the construction of the refuse pile/coal mine waste disposal facility. Figure 1 Appendix 5-7 shows the location of the refuse pile and the division between the rock slope material and coal waste in plan view. The profiles show the pre-mining, operational, and reclaimed stages of the refuse pile. Figure 2 Appendix 5-7 shows the cross-sections for the refuse pile.

The profiles and cross-sections show how the refuse pile will be constructed. The top 18 inches will be salvaged as topsoil. The subsoil will then be removed.

On Figure 1, Appendix 5-7, the Permittee shows that coal mine waste will be placed in the refuse pile. However, on Figure 2 Appendix 5-7, the Permittee shows that slope rock material will be placed in the entire refuse pile. Because the rock slope material will be handled differently than material with coal, the Permittee must distinguish between the two types of materials in the cross-sections and profiles.

On Figure 2, Appendix 5-7, the Permittee shows that the slope rock (coal mine waste) will be covered with 18 inches of topsoil and 30 inches of fill material. The coal mine waste will be covered with 48 inches of cover. Note: R645-301-553.252 requires that all refuse piles be covered with a minimum of 4 feet of cover unless otherwise approved by the Division.

The Division has received several comments from SUWA about coal mine waste. Those comments (bulleted) and the Division responses are as follows:

- **Confusing/inconsistent references.** The application frequently refers to coal mine waste (a term defined to include waste rock mixtures removed from underground workings) or underground development waste as "rock slope material," a term the Rules do not define. The application does not specify exactly what this "rock slope material" is or how it will be handled.

In section 528.320 of the PAP, the Permittee states that coal mine waste will consist of coal processing waste and underground development waste. The underground development waste will be divided into two subcategories, rock slope material and underground development waste that contains coal. While the term "rock slope material" is not defined by the Utah Coal Rules, "rock slope material" is defined in the PAP as coal mine waste. The Division will require that all coal mine waste be handled according to the Utah Coal Rules. Terminology used in the PAP is explained in Sections 536.300 and 537.210 and in Appendix 5-7 of the PAP.

Nevertheless, the Permittee should determine a single term and use it consistently throughout the PAP to avoid confusion. The Permittee must use the term "rock-slope material" in conjunction with a term or replaced by a term defined by the Regulations.

- **Location/extent of coal mine waste.** The application says, variously, that the coal mine waste will be disposed of in the refuse pile, will be used as structural fill material, and will be spread out and graded so as to be compatible with the natural surroundings. It is not clear if these are three categories of waste or simply inconsistent treatment of the same waste. The volumes and weights of each category are not specified.

The amount of rock slope material is estimated to be 25,000 cubic yards. Section 536.300 states there is unlikely to be any coal in the slope rock material, but Section 537.200 discusses treatment of slope rock material containing coal. This is not necessarily contradictory, but it is confusing. The Division has requested further information on the separation of coal containing waste from the structural fill.

Section 537.200 isn't clear on the distinction between low areas to be used as "pads" and the refuse storage area. The use of the plural, "pads," is confusing to the reader since there is only one pad shown on Figure 1 of App. 5-7 and Plate 5-2. The statement should be corrected to avoid confusion.

Section 528.320 distinguishes the coal-free coal mine waste to be used as structural fill from the material that will go into an apparently separate refuse pile. In the discussion in Section 528.320, the PAP should make it clear that these two areas area adjacent and conjoining and will be treated as one area or structure, especially during reclamation .

Figure 1, Appendix 5-7 shows that the refuse pile will be divided into two sections. The western section will be used to dispose of rock slope material to create a structural fill. The eastern section of the waste disposal site has the capacity for 19,437 cubic yards of coal mine waste, see Appendix 5-7. The Division has requested a barrier between the western structural fill and the eastern side with coal mine waste containing coal.

The Permittee states in Appendix 5-7 that the capacity of the eastern half of the refuse disposal site for coal mine waste is 19,437 CY. The Permittee must state how much coal mine waste they anticipate will be generated from the Lila Canyon Extension based on historical information from the Horse Canyon project and drill hole data from the Lila Canyon area.

- **Treatment of coal mine waste.** The application indicates that acid- and toxic-forming materials will be covered with four feet of fill upon reclamation. There is no indication of the volume of materials to be covered in this manner or where the required fill material will come from. The reclamation plan states that approximately 44,210 cubic yards of material will be distributed over the 28 acre site prior to placement of topsoil. While the plan is not specific as to where re-grading will occur, if any of it involves coal mine

waste found to be potentially acid- or toxic-forming then such acid- or toxic-forming materials could be spread throughout the site and not covered with four feet of clean material.

Section 536.600 isn't clear as to how and why slope rock material placed in the pads will be spread out and graded: this leaves the impression it will not be buried as part of the refuse pile reclamation but rather spread across the site. Section 537.200 clarifies this, but the Permittee should describe the situation clearly in Section 536.600 also.

Table 1 in Appendix 5-7 lists the amount of coal mine waste that will be placed in the refuse pile. Approximately 44,437 cubic yards of material will be placed in the refuse pile. Figure 1 and Figure 2 in Appendix 5-7 show how coal mine waste will be placed and stored in the refuse pile. The cross sections in drawing 5-7A and 5-7B show the backfilling and grading place for the entire site. The backfilling and grading plan shows that all coal mine waste will be covered with a minimum of 4 feet of material. To clarify the point, the Division will require the Permittee to label all coal mine waste on the cross-sections in drawing 5-7A and 5-7B.

- **Testing of coal mine waste.** The application indicates that mine development waste will be tested three times (at the beginning, middle, and near completion of the project.) Since the project is expected to last tens of years, this sampling method is too infrequent to identify acid-and toxic-forming materials and allow them to be handled properly. Under this plan, it would be possible to place as much as 12,500 cubic yards of coal mine waste as "structural fill" without testing it for acid- or toxic-forming potential.

Testing of coal mine waste is outlined in Appendix 5-7. The testing program calls for all rock slope material to be tested five times. Only rock slope material will be used as structural fill material. The testing will take place during the initial start up, at the ¼ mark, the ½ mark, and the ¾ mark and near completion. Other coal mine waste, generated during operations from the crusher and underground development and containing coal, will be tested every 6,000 cubic yards.

All coal mine waste will be treated and disposed of as if the material was acid- or toxic-forming. All coal mine waste will be disposed of under four feet of material.

Impounding Structures

The Permittee will not construct any impoundments from coal mine waste. The only impoundment structure at the Lila Canyon site is the incised sediment pond.

Burning and Burned Waste Utilization

The plan to extinguish coal mine fires is in Appendix 5-3. In the event of a small fire the

area will be covered with subsoil to smother the flames. For large fires the burning materials will be removed and spread into thin strips for extinguishing.

The plan indicates that the source of the soil may be salvaged and placed in a subsoil pile for use as cover over the waste. This procedure would be unacceptable, since this soil is already committed for use as final reclamation cover.

Return of Coal Processing Waste to Abandoned Underground Workings

The Permittee does not propose to dispose of coal mine waste underground.

Excess Spoil

The Permittee does not anticipate that any excess spoil will be generated.

Findings:

The information provided does not meet the minimum acceptable requirements of the Regulations. Prior to approval and in accordance with:

R645-301-528.323.1, The Coal Mine Waste Fire Extinguishing Plan (Appendix 5-3) must describe an alternative source of soil material for fire suppression, use of the salvaged subsoil is not acceptable.

R645-301-542.742, The PAP should clearly indicate which road surfacing materials will be buried under a minimum of two feet of cover and which fall under the requirements for four feet of cover.

R645-301-528.332, The Permittee must describe asphalt disposal.

R645-301-121.200 and R645-301-521.190, The Permittee must 1) state in the text of the PAP where the inert rock slop material will be placed in the refuse pile and where coal mine waste that does contain coal will be placed, 2) show where coal mine waste suitable for structural fill will be placed and where material containing coal will be placed in the refuse pile. The maps and cross sections include, but are not limited to: drawing 5-7A and 5-7B, and Figure 1 and Figure 2 in Appendix 5-7.

R645-301-528.350, The Permittee must describe the methods that will be used to place the coal mine waste in the refuse pile to ensure that the material does not constitute a fire hazard. At a minimum, the Division needs to know the maximum lift thickness and how the material will be compacted to reduce air circulation.

R645-301-528, (1) The Permittee must describe how the coal mine waste that comes from the rock slope tunnels will be compacted to provide adequate support for the surface structures. At a minimum, the Permittee must state the lift thickness, the minimum compaction standard and what type of equipment can achieve the compaction standard. (2) The Permittee must explain the discrepancy in the design capacity of the refuse disposal site given in Section 520 which is conflicted by the information in App. 5-7 and provide estimation of projected waste disposal needs based on drill logs, historic information from the Horse Canyon Mine and current market requirements.

R645-301-536.900, (1) The Permittee must describe how all surface structures will be protected from any potential hazards associated with the refuse pile. The Division is interested in how the shop/warehouse will be protected from potential hazards including settling and coal mine waste fires. (2) The Permittee must describe how the refuse pile will be designed so as not to impede drainage or impound water.

R645-301-121.200, (1) The Permittee must use the term "rock-slope material" in conjunction with, or replaced by, a term defined by the Regulations. (2) The Permittee will list separately the amount of rock slope material and coal processing waste material in Table 1 in Appendix 5-7. (3) Section 528.320 distinguishes the coal-free slope rock material used as structural fill for the shop – warehouse from the material that will go into an apparently separate refuse pile. The Permittee must 1) state in the text of the PAP where the inert rock slope material will be placed in the refuse pile and where coal mine waste that does contain coal will be placed, 2) show where coal mine waste suitable for structural fill will be placed and where material containing coal will be placed in the refuse pile. The text should make it clear that these two areas are adjacent and conjoining and will be treated as one area or structure, especially during reclamation (4) In Section 537.200, the distinction, or similarity, between low areas to be used as pads and the refuse storage area (sic. plural "pads" – there is only one pad shown on Figure 1 of App. 5-7 and Plate 5-2) is confusing and needs clarification. (5) The Permittee must clarify Section 536.300 to be consistent with Section 537.700. The Sections might appear contradictory in stating that there is unlikely to be any coal in the slope rock material, but treatment is planned for slope rock material containing coal. (6) Section 536.600 isn't clear as to how and why slope rock material placed in the pads will be spread out and graded; this leaves the impression it will not be buried as part of the refuse pile reclamation but rather spread across the site. Section 537.200 clarifies this, but 536.600 should also be clear.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

General

All underground mining and reclamation activities shall be conducted to minimize disturbance of the hydrologic balance within the permit and adjacent areas, to prevent material damage to the hydrologic balance outside the permit area, and to support approved postmining land uses in accordance with the terms and conditions of the approved permit and the performance standards of this part. The Division may require additional preventative, remedial, or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented. Mining and reclamation practices that minimize water pollution and changes in flow shall be used in preference to water treatment.

Groundwater Monitoring

In order to protect the hydrologic balance underground mining activities shall be conducted according to the hydrologic reclamation plan. Ground-water quality shall be protected by handling earth materials and runoff in a manner that minimizes acidic, toxic, or other harmful infiltration to ground-water systems and by managing excavations and other disturbances to prevent or control the discharge of pollutants into the ground water.

Ground-water monitoring shall be conducted according to the ground-water monitoring plan. The Division may require additional monitoring when necessary. Ground-water monitoring data shall be submitted every 3 months to the Division or more frequently as prescribed by the Division. Monitoring reports shall include analytical results from each sample taken during the reporting period. When the analysis of any ground-water sample indicates noncompliance with the permit conditions, the operator shall promptly notify the Division and immediately provide for any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance. Plans and hydrologic information to evaluate and mitigate the noncompliance situation and information relevant to the PHC shall be submitted to the Division as required.

Ground-water monitoring shall proceed through mining and continue during reclamation until bond release. The Division may modify the monitoring requirements including the parameters covered and the sampling frequency if the operator demonstrates, using the monitoring data obtained, that: the operation has minimized disturbance to the prevailing hydrologic balance in the permit and adjacent areas and prevented material damage to the hydrologic balance outside the permit area; water quantity and quality are suitable to support approved postmining land uses; or, monitoring is no longer necessary to achieve the purposes set forth in the monitoring plan.

Equipment, structures, and other devices used in conjunction with monitoring the quality and quantity of ground water onsite and offsite shall be properly installed, maintained, and operated and shall be removed by the operator when no longer needed.

Surface Water Monitoring

In order to protect the hydrologic balance, underground mining activities shall be conducted according to the approved plan, and the following: surface-water quality shall be protected by handling earth materials, ground-water discharges, and runoff in a manner that minimizes the formation of acidic or toxic drainage; prevents, to the extent possible using the best technology currently available, additional contribution of suspended solids to streamflow outside the permit area; and otherwise prevent water pollution. If drainage control, restabilization and revegetation of disturbed areas, diversion of runoff, mulching, or other reclamation and remedial practices are not adequate to meet water-quality standards and effluent limitations, the operator shall use and maintain the necessary water-treatment facilities or water-quality controls. Surface-water quantity and flow rates shall be protected by handling earth materials and runoff in accordance with the steps outlined in the approved plan.

Surface-water monitoring shall be conducted according to the approved surface-water monitoring plan. The Division may require additional monitoring when necessary. Surface-water monitoring data shall be submitted every 3 months to the Division or more frequently as prescribed by the Division. Monitoring reports shall include analytical results from each sample taken during the reporting period. When the analysis of any surface-water sample indicates noncompliance with the permit conditions, the operator shall promptly notify the Division and immediately provide for any accelerated or additional monitoring necessary to determine the nature and extent of noncompliance and the results of the noncompliance. Plans and hydrologic information to evaluate and mitigate the noncompliance situation and information relevant to the PHC shall be submitted to the Division as required. The reporting requirements of the water monitoring plan do not exempt the operator from meeting any National Pollutant Discharge

Elimination System (NPDES) reporting requirements.

Surface-water monitoring shall proceed through mining and continue during reclamation until bond release. The Division may modify the monitoring requirements, except those required by the NPDES permitting authority, including the parameters covered and sampling frequency if the operator demonstrates, using the monitoring data obtained, that: the operation has minimized disturbance to the hydrologic balance in the permit and adjacent areas and prevented material damage to the hydrologic balance outside the permit area; water quantity and quality are suitable to support approved postmining land uses; and, monitoring is no longer necessary to achieve the purposes set forth in the approved monitoring plan.

Equipment, structures, and other devices used in conjunction with monitoring the quality and quantity of surface water onsite and offsite shall be properly installed, maintained, and operated and shall be removed by the operator when no longer needed.

Acid- and toxic-forming materials and underground development waste

Drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water shall be avoided by: identifying and burying and/or treating, when necessary, materials which may adversely affect water quality, or be detrimental to vegetation or to public health and safety if not buried and/or treated; and, storing materials in a manner that will protect surface water and ground water by preventing erosion, the formation of polluted runoff, and the infiltration of polluted water.

Discharges into an underground mine

Discharges into an underground mine are prohibited, unless specifically approved by the Division after a demonstration that the discharge will: minimize disturbance to the hydrologic balance on the permit area, prevent material damage outside the permit area and otherwise eliminate public hazards resulting from underground mining activities; not result in a violation of applicable water quality standards or effluent limitations; be at a known rate and quality which shall meet the effluent limitations for pH and total suspended solids, except that the pH and total suspended solids limitations may be exceeded, if approved by the Division; and, meet with the approval of the Mine Safety and Health Administration.

Discharges shall be limited to the following: water; coal-processing waste; fly ash from a coal-fired facility; sludge from an acid-mine-drainage treatment facility; flue-gas desulfurization sludge; inert materials used for stabilizing underground mines; and, underground mine development wastes.

Water from one underground mine may be diverted into other underground workings according to the requirements of this section.

Gravity discharges from underground mines

Surface entries and accesses to underground workings shall be located and managed to prevent or control gravity discharge of water from the mine. The surface entries and accesses of drift mines first used after the implementation of a State, Federal, or Federal Lands Program and located in acid-producing or iron-producing coal seams shall be located in such a manner as to prevent any gravity discharge from the mine. Gravity discharges of water from an underground mine first used before the implementation of a State, Federal, or Federal Lands Program, may be allowed by the Division if it is demonstrated that the untreated or treated discharge complies with the performance standards and any additional NPDES permit requirements.

Water-quality standards and effluent limitations

Compliance with all applicable State and Federal water quality laws and regulations and with the effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

Diversions: General

With the approval of the Division, any flow from mined areas abandoned before May 3, 1978, and any flow from undisturbed areas or reclaimed areas, after meeting the criteria for siltation structure removal, may be diverted from disturbed areas by means of temporary or permanent diversions. All diversions shall be designed to minimize adverse impacts to the hydrologic balance within the permit and adjacent areas, to prevent material damage outside the permit area and to assure the safety of the public. Diversions shall not be used to divert water into underground mines without approval of the Division.

The diversion and its appurtenant structures shall be designed, located, constructed, and maintained to: be stable; provide protection against flooding and resultant damage to life and property; prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area; and, comply with all applicable local, State, and Federal laws and regulations.

Temporary diversions shall be removed when no longer needed to achieve the purpose for which they were authorized.

The land disturbed by the removal process shall be restored. Before diversions are removed, downstream water-treatment facilities previously protected by the diversion shall be modified or removed, as necessary, to prevent overtopping or failure of the facilities. This requirement shall not relieve the operator from maintaining water-treatment facilities as otherwise required.

A permanent diversion or a stream channel reclaimed after the removal of a temporary diversion shall be designed and constructed so as to restore or approximate the premining characteristics of the original stream channel including the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat. The Division may specify additional design criteria for diversions.

Diversions: Perennial and intermittent streams

Diversion of perennial and intermittent streams within the permit area may be approved by the Division after making the finding relating to stream buffer zones that the diversions will not adversely affect the water quantity and quality and related environmental resources of the stream. The design capacity of channels for temporary and permanent stream channel diversions shall be at least equal to the capacity of the unmodified stream channel immediately upstream and downstream from the diversion. Protection against flooding and resultant damage to life and property shall be met when the temporary and permanent diversions for perennial and intermittent streams are designed so that the combination of channel, bank and flood-plain configuration is adequate to pass safely the peak runoff of a 10-year, 6-hour precipitation event for a temporary diversion and a 100-year, 6-hour precipitation event for a permanent diversion. The design and construction of all stream channel diversions of perennial land intermittent streams shall be certified by a qualified registered professional engineer as meeting the performance standards and any design criteria set by the Division.

Diversions: Miscellaneous flows

Diversion of miscellaneous flows, which consist of all flows except for perennial and intermittent streams, may be diverted away from disturbed areas if required or approved by the Division. Miscellaneous flows shall include ground-water discharges and ephemeral streams. The design, location, construction, maintenance, and removal of diversions of miscellaneous flows shall meet all of the general performance standards of this section. Protection against flooding and resultant damage to life and property shall be met when the temporary and permanent diversions for miscellaneous flows are designed so that the combination of channel, bank and flood-plain configuration is adequate to pass safely the peak runoff of a 2-year, 6-hour precipitation event for a temporary diversion and a 10-year, 6-hour precipitation event for a permanent diversion.

Stream buffer zones

No land within 100 feet of a perennial stream or an intermittent stream shall be disturbed by underground mining activities, unless the Division specifically authorizes underground mining activities closer to, or through, such a stream. The Division may authorize such activities only upon finding that: underground mining activities will not cause or contribute to the violation of applicable State or Federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of the stream; and, if there will be a temporary or permanent steam-channel diversion, it will comply with the regulatory requirements for diversions.

The area not to be disturbed shall be designated as a buffer zone, and the operator shall mark it accordingly with buffer zone markers.

Sediment control measures

Appropriate sediment control measures shall be designed, constructed, and maintained using the best technology currently available to: prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area; meet the more stringent of applicable State or Federal effluent limitations; and, minimize erosion to the extent possible.

Sediment control measures include practices carried out within and adjacent to the disturbed area. The sedimentation storage capacity of practices in and downstream from the disturbed areas shall reflect the degree to which successful mining and reclamation techniques are applied to reduce erosion and control sediment. Sediment control measures consist of the utilization of proper mining and reclamation methods and sediment control practices, singly or in combination. Sediment control methods include but are not limited to: disturbing the smallest practicable area at any one time during the mining operation through progressive backfilling, grading, and prompt revegetation; stabilizing the backfilled material to promote a reduction of the rate and volume of runoff; retaining sediment within disturbed areas; diverting runoff away from disturbed areas; diverting runoff using protected channels or pipes through disturbed areas so as not to cause additional erosion; using straw dikes, riprap, check dams, mulches, vegetative sediment filters, dugout ponds, and other measures that reduce overland flow velocity, reduce runoff volume, or trap sediment; treating with chemicals; and, treating mine drainage in underground sumps.

Siltation Structures: General

All surface drainage from disturbed areas shall be passed through a siltation structure before leaving the permit area. Siltation structures shall mean a sedimentation pond, a series of sedimentation ponds, or other treatment facility. Other treatment

facilities means any chemical treatments, such as flocculation, or mechanical structures, such as clarifiers, that have a point-source discharge and that are utilized to prevent additional contribution of suspended solids to streamflow or runoff outside the permit area.

Disturbed area requiring treatment through a siltation structure shall not include those areas in which the only underground mining activities include: diversion ditches, siltation structures, or roads that are designed, constructed and maintained in accordance with the regulatory requirements; and, for which the upstream area is not otherwise disturbed by the operator.

Additional contributions of suspended solids and sediment to streamflow or runoff outside the permit area shall be prevented to the extent possible using the best technology currently available. Siltation structures for an area shall be constructed before beginning any underground mining activities in that area, and upon construction shall be certified by a qualified registered professional engineer, or when authorized under the regulations, by a qualified registered professional land surveyor, to be constructed as designed and as approved in the reclamation plan.

Any siltation structure which impounds water shall be designed, constructed and maintained in accordance with the requirements for impoundments.

Siltation structures shall be maintained until removal is authorized by the Division and the disturbed area has been stabilized and revegetated. In no case shall the structure be removed sooner than 2 years after the last augmented seeding. When the siltation structure is removed, the land on which the siltation structure was located shall be regraded and revegetated in accordance with the reclamation plan. Sedimentation ponds approved by the Division for retention as permanent impoundments may be exempted from this requirement.

Any point-source discharge of water from underground workings to surface waters which does not meet effluent limitations shall be passed through a siltation structure before leaving the permit area.

Siltation Structures: Sedimentation ponds

Sedimentation ponds, when used, shall: be used individually or in series; be located as near as possible to the disturbed area and out of perennial streams unless approved by the Division; and, be designed, constructed, and maintained to:

1.) Provide adequate sediment storage volume;
2.) Provide adequate detention time to allow the effluent from the ponds to meet State and Federal effluent limitations;
3.) Contain or treat the 10-year, 24-hour precipitation event ("design event") unless a lesser design event is approved by the Division based on terrain, climate, other site-specific conditions and on a demonstration by the operator that the effluent limitations will be met;
4.) Provide a nonclogging dewatering device adequate to maintain the required time;
5.) Minimize, to the extent possible, short circuiting;
6.) Provide periodic sediment removal sufficient to maintain adequate volume for the design event;
7.) Ensure against excessive settlement;
8.) Be free of sod, large roots, frozen soil, and acid- or toxic-forming coal-processing waste; and
10.) Be compacted properly.

A sedimentation pond shall include either a combination of principal and emergency spillways or a single open-channel spillway configured as specified in this section, designed and constructed to safely pass the applicable design precipitation event. The Division may approve a single open-channel spillway that is: of nonerodible construction and designed to carry sustained flows; or earth- or grass-lined and designed to carry short-term infrequent flows at non-erosive velocities where sustained flows are not expected.

The required design precipitation event for a sedimentation pond meeting the spillway requirements of this section is: for a sedimentation pond meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 100-year 6-hour event, or greater event as specified by the Division; or, for a sedimentation pond not meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 25-year 6-hour event, or greater event as specified by the Division.

In lieu of meeting the above spillway requirements, the Division may approve a sedimentation pond that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or, as applicable, a qualified registered professional land surveyor that; the sedimentation pond will safely control the design precipitation event; the water from which shall be safely removed in accordance with current, prudent, engineering practices; and, such a sedimentation pond shall be located where failure would not be expected to cause loss of life or serious property damage. If the sediment pond is located where failure would be expected to cause loss of life or serious property damage, a sedimentation pond that relies primarily on storage to control the runoff from the design precipitation event may be allowed if, in addition to the design event, is: in the case of a sedimentation pond meeting the size or other criteria of 30 CFR Sec. 77.216(a), designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or greater event as specified by the Division; or, in the case of a sedimentation pond not meeting the size or other criteria of 30 CFR Sec. 77.216(a), designed to control the precipitation of a 100-year 6-hour event, or greater event as specified by the Division.

Siltation Structures: Other treatment facilities

Other treatment facilities shall be designed to treat the 10-year, 24-hour precipitation even unless a lesser design event is approved by the Division based on terrain, climate, other site-specific conditions and a demonstration by the operator that the effluent limitations will be met. Other treatment facilities shall be designed, constructed and maintained accordance with the applicable requirements as described under sediment ponds.

Siltation Structures: Exemptions

Exemptions to the requirements of this section may be granted if: the disturbed drainage area within the total disturbed area is small; and, the operator demonstrates that siltation structures and alternate sediment control measures are not necessary for drainage from the disturbed drainage areas to meet effluent limitations and applicable State and Federal water-quality standards for the receiving waters.

Discharge structures

Discharge from sedimentation ponds, permanent and temporary impoundments, coal processing waste dams and embankments, and diversions shall be controlled, by energy dissipators, riprap channels, and other devices, where necessary, to reduce erosion, to prevent deepening or enlargement of stream channels, and to minimize disturbance of the hydrologic balance. Discharge structures shall be designed according to standard engineering design procedures.

Impoundments

The following requirements apply to both temporary and permanent impoundments:

1.) An impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) shall comply with the requirements of 30 CFR Sec. 77.216 and this section.
2.) The design of impoundments shall be certified as designed to meet the requirements of the regulations using current, prudent, engineering practices and any design criteria established by the Division. The qualified, registered, professional engineer or qualified, registered, professional, land surveyor shall be experienced in the design and construction or impoundments.
3.) An impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) or located where failure would be expected to cause loss of life or serious property damage shall have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions, and a seismic safety factor of at least 1.2. Impoundments not meeting the size or other criteria of 30 CFR Sec. 77.216(a), except for a coal mine waste impounding structure, and located where failure would not be expected to cause loss of life or serious property damage shall have a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions. For an impoundment not meeting the size of other criteria of 30 CFR Sec. 77.216(a), where failure would not be expected to cause loss of life or serious property damage, the Division may establish engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of engineering tests to establish compliance with the minimum static safety factor of 1.3.
4.) Impoundments shall have adequate freeboard to resist overtopping by waves and by sudden increases in storage volume.
5.) Foundations and abutments for an impounding structure shall be stable during all phases of construction and operation and shall be designed based on adequate and accurate information on the foundation conditions. For an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a), foundation investigation, as well as any necessary laboratory testing of foundation material, shall be performed to determine the design requirements for foundation stability. All vegetative and organic materials shall be removed and foundations excavated and prepared to resist failure. Cutoff trenches shall be installed if necessary to ensure stability.
6.) Slope protection shall be provided to protect against surface erosion at the site and protect against sudden drawdown.
7.) Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices.
8.) Spillways: An impoundment shall include either a combination of principal and emergency spillways, a single open-channel spillway, or, be configured as an impoundment that relies primarily on storage to control the runoff from the applicable design precipitation event. The Division may approve a single open-channel spillway that is of nonerodible construction and designed to carry sustained flows; or, earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected. Except impoundments that rely primarily on storage to control the runoff, the required design precipitation events for an impoundment having spillways are: for an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a) a 100-year 6-hour event, or greater event as specified by the Division; and, for an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a), a 25-year 6-hour event, or greater event as specified by the Division. In lieu of meeting the single open-channel spillway requirements, the

Division may approve an impoundment that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or qualified registered professional land surveyor that the impoundment will safely control the design precipitation event, the water from which shall be safely removed in accordance with current, prudent, engineering practices. Such an impoundment shall be located where failure would not be expected to cause loss of life or serious property damage, except where: in the case of an impoundment meeting the size or other criteria of 30 CFR Sec. 77.216(a), it is designed to control the precipitation of the probable maximum precipitation of a 6-hour event, or greater event as specified by the Division; or, in the case of an impoundment not meeting the size or other criteria of 30 CFR Sec. 77.216(a), it is designed to control the precipitation of a 100-year6-hour event, or greater event as specified by the Division.

9.) The vertical portion of any remaining highwall shall be located far enough below the low-water line along the full extent of highwall to provide adequate safety and access for the proposed water users.

10.) Inspections: Except as provided in paragraph (a)(10)(iv) of this section, a qualified registered professional engineer or other qualified professional specialist under the direction of a professional engineer, shall inspect each impoundment as provided in paragraph (a)(10)(i) of this section. The professional engineer or specialist shall be experienced in the construction of impoundments.

Inspections shall be made regularly during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond. The qualified registered professional engineer, or qualified registered professional land surveyor as applicable, shall promptly after each inspection provide to the Division a certified report that the impoundment has been constructed and/or maintained as designed and in accordance with the approved plan and this section. The report shall include discussion of any appearance of instability, structural weakness or other hazardous condition, depth and elevation of any impounded waters, existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspects of the structure affecting stability. A copy of the report shall be retained at or near the minesite.

A qualified registered professional land surveyor may inspect any temporary or permanent impoundment that does not meet the size or other criteria of 30 CFR Sec. 77.216(a) and certify and submit the report required above, except that all coal mine waste impounding structures shall be certified by a qualified registered professional engineer. The professional land surveyor shall be experienced in the construction of impoundments. Impoundments subject to 30 CFR Sec. 77.216 must be examined in accordance with 30 CFR Sec. 77.216-3. Other impoundments shall be examined at least quarterly by a qualified person designated by the operator for appearance of structural weakness and other hazardous conditions.

If any examination or inspection discloses that a potential hazard exists, the person who examined the impoundment shall promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the Division shall be notified immediately. The Division shall then notify the appropriate agencies that other emergency procedures are required to protect the public.

A permanent impoundment of water may be created, if authorized by the Division in the approved permit based upon the following demonstration:

1.) The size and configuration of such impoundment will be adequate for its intended purposes.

2.) The quality of impounded water will be suitable on a permanent basis for its intended use and, after reclamation, will meet applicable State and Federal water quality standards, and discharges from the impoundment will meet applicable effluent limitations and will not degrade the quality of receiving water below applicable State and Federal water quality standards.

3.) The water level will be sufficiently stable and be capable of supporting the intended use.

4.) Final grading will provide for adequate safety and access for proposed water users.

5.) The impoundment will not result in the diminution of the quality and quantity of water utilized by adjacent or surrounding landowners for agricultural, industrial, recreational, or domestic uses.

6.) The impoundment will be suitable for the approved postmining land use.

The Division may authorize the construction of temporary impoundments as part of underground mining activities.

Ponds, impoundments, banks, dams, and embankments

Each application shall include a general plan for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam, or embankment within the proposed permit area. Each general plan shall:

1.) Be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor with assistance from experts in related fields such as landscape architecture;

2.) Contain a description, map, and cross section of the structure and its location;

3.) Contain preliminary hydrologic and geologic information required to assess the hydrologic impact of the structure;

4.) Contain a survey describing the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining operations if underground mining has occurred; and
5.) Contain a certification statement which includes a schedule setting forth the dates when any detailed design plans for structures that are not submitted with the general plan will be submitted to the Division. The Division shall have approved, in writing, the detailed design plan for a structure before construction of the structure begins.

Each detailed design plan for a structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall:

1.) Be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture;
2.) Include any geotechnical investigation, design, and construction requirements for the structure;
3.) Describe the operation and maintenance requirements for each structure; and
4.) Describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for a structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall:

1.) Be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments covered by Sections 817.81-817.84 of this Chapter shall be certified by a qualified, registered, professional engineer;
2.) Include any design and construction requirements for the structure, including any required geotechnical information;
3.) Describe the operation and maintenance requirements for each structure; and
4.) Describe the timetable and plans to remove each structure, if appropriate.

Sedimentation ponds, whether temporary or permanent, shall be designed in compliance with the requirements of Siltation Structures. Any sedimentation pond or earthen structure which will remain on the proposed permit area as a permanent water impoundment shall also be designed to comply with the requirements for Impoundments. Each plan shall, at a minimum, comply with the requirements of the Mine Safety and Health Administration, 30 CFR Sections 77.216-1 and 77.216-2.

Permanent and temporary impoundments shall be designed to comply with the requirements for Impoundments. Each plan for an impoundment meeting the size of other criteria of the Mine Safety and Health Administration shall comply with the requirements of 30 CFR Sec. 77.216-1 and 77.216-2. The plan required to be submitted to the District Manager of MSHA under Sec. 77.216 of this title shall be submitted to the Division as part of the permit application. For an impoundment not meeting the size of other criteria of 30 CFR Sec. 77.216(a) and located where failure would not be expected to cause loss of life or serious property damage, the Division may establish through the State program approval process engineering design standards that ensure stability comparable to a 1.3 minimum static safety factor in lieu of engineering tests to establish compliance with the minimum static safety factor of 1.3.

Coal processing waste banks, dams and embankments shall be designed to comply with the requirements for Coal Mine Waste. Each plan shall comply with the requirements of the Mine Safety and Health Administration, 30 CFR Sections 77.216-1 and 77.216-2, and shall contain the results of a geotechnical investigation of the proposed dam or embankment foundation area, to determine the structural competence of the foundation which will support the proposed dam or embankment structure and the impounded material. The geotechnical investigation shall be planned and supervised by an engineer or engineering geologist, according to the following:

1.) The number, location, and depth of the borings and test pits shall be determined using current prudent engineering practice for the size of the dam or embankment, quantity of material to be impounded, and subsurface conditions.
2.) The character of the overburden and bedrock, the proposed abutment sites, and any adverse geotechnical conditions which may affect the particular dam, embankment, or reservoir site shall be considered.
3.) All springs, seepage, and ground-water flow observed or anticipated during wet periods in the area of the proposed dam or embankment shall be identified on each plan.
4.) Consideration shall be given to the possibility of mudflows, rock-debris falls, or other landslides into the dam, embankment, or impounded material.

If the structure is 20 feet or higher or impounds more than 20 acre-feet, each plan of this section shall include a stability analysis of each structure. The stability analysis shall include, but not be limited to, strength parameters, pore pressures, and long-term seepage conditions. The plan shall also contain a description of each engineering design assumption and calculation with a discussion of each alternative considered in selecting the specific design parameters and construction methods.

Analysis:

General

Locations of all monitoring sites are shown on Plate 7-4, "Water Monitoring Location Map." Proposed monitoring methods, parameters and frequencies are described in Table 7-3, "Water Monitoring Stations," and Table 7-4, "Water Monitoring Parameters." Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter. The operational water-monitoring plan will be implemented upon approval of the PAP.

Ground-Water Monitoring

Section 731.211 discusses the ground-water monitoring plan. It makes reference to water rights on several of the springs to be monitored. Ground-water will be monitored and data will be submitted at least every three months for each monitoring location. Ground-water monitoring will continue through mining and reclamation until bond release (Section 731.214). Monitoring submittals will include analytical results from each sample taken during the approved reporting period. The statement on page 32 (Chapter 7) that the springs have not been monitored since 1995 needs to be updated.

When the analysis of any ground-water sample indicates noncompliance with the permit conditions, then the operator will promptly notify the Division and immediately take the actions provided for in (R645-300-)145 and (R645-301-)731 (Section 731.212).: other than following the mine plan, it isn't clear what specific actions these two sections describe. The monitoring plan needs to describe more clearly or specifically how the monitoring information may be used to determine the impacts of mining on the hydrologic balance and what actions will be taken in case water monitoring indicates non-compliance with the permit.

No ground-water system underlies the planned surface facilities, which are to be built on fill placed on Mancos Shale, a shale formation several hundred feet thick that greatly restricts vertical and horizontal movement of water (Section 724.100). All potential acid- and toxic-forming material will be disposed of in a confined, stable area and covered with at least 4 feet of soil. Contamination of perched ground water in the Price River and Colton Formations is unlikely because the perched zones are several hundred feet above the Lower Sunnyside Coal Seam, and low-permeability strata separate the perched ground-water zones from the coal seam. The perched ground water will not be intercepted by mining activities.

SUWA has raised concerns that five seeps and springs are not sufficient, that four of them are outside the permit, and that one spring in the permit area is not sufficient. Determination of the permit area is not based on hydrologic systems. The Coal Mining Rules require protection of resources both within and outside the permit area and baseline and operational monitoring of both the permit area and adjacent areas. The Division notes that

expanding the permit area to include more springs would actually lower the performance standard for protection of the added springs from; "minimize impact" and "prevent material damage", to simply "minimize impact".

The seven seeps and springs selected by the Permittee for operational monitoring are representative of the springs and seeps in the ground-water emergence zones located over or adjacent to the area of proposed mining. Additional, detailed investigation of every aspect of every component of the hydrologic resources is not needed to monitor the resources and minimize impacts, or to comply with the Coal Mining Rules. Springs selected typically have baseline water-quantity and -quality data from the EarthFax survey, have been developed for use by the water right holder, and have the greatest or most consistent flow of the group or zone. Monitoring was resumed at these seven seeps and springs in 2001 to establish a continuous record from pre-mining into operational conditions. Recently discovered seeps in the southwest corner of the Lila Canyon Extension permit area need to be added to the monitoring plan.

Eleven sites are proposed for ground-water monitoring. Locations are shown on Plate 7-4.

- L-5-G, proposed mine discharge point
- L-6-G, spring near JBR spring H-18; JBR spring H-19 - Leslie Spring – water right 91-618; and JBR spring H-21 - Mont Spring - water right 91-617;
- L-7-G, spring corresponds with EarthFax springs 9 – Cottonwood Spring - water right 91-2521; near water rights 91-399 and 91-2537;
- L-8-G, spring corresponds with EarthFax spring 10 – water rights 91-808 and 91-2538;
- L-9-G, spring corresponds with EarthFax spring 16-Z - Pine Spring - water rights 91-2539
- L-10-G, spring corresponds with EarthFax spring 14 - Williams Draw Spring - water rights 91-809 and 91-2535;
- L-11-G, spring corresponds with JBR springs H-18A and H-18B; upstream of L-6-G;
- L-12-G, spring near EarthFax springs 11, 12, and 12E.
- IPA-1, piezometer;
- IPA-2, piezometer;
- IPA-3, piezometer.

Springs selected for monitoring are located in or adjacent to the area of proposed mining. These are described in Section 731.211, and except for L-11-G and L-12-G, they are listed in Table 7-3: Table 7-3 needs to be updated. Seeps and springs will be monitored quarterly for parameters listed in Table 7-5.

L-5-G is the potential mine discharge point and will be monitored in accordance with UPDES Permit requirements. L-6-G has been dry during recent monitoring, so L-11-G, which is approximately 100 yards upstream of L-6-G, has been added to the monitoring plan to supplement or perhaps eventually replace L-6-G. IPA-1, -2, and -3 will be monitored quarterly for depth.

Map 7-1, based on data from several sources, shows potential ground-water levels and where the Permittee anticipates the mine workings will intercept ground water. The amount of ground water that will actually enter the mine workings depends on the storage capacity of the surrounding formation, the permeability, and type of structure at the mining face. If mine water interception occurs, the water will be stored in sumps and used in the mine and, if necessary, discharged from the mine. Eventually, the three IPA piezometers may be intercepted by the mine, so in addition to the three piezometers, the Permittee commits in Section 731.513 to the monitoring of underground usage and discharge to more accurately define potential impacts on ground water.

Equipment, structures and other devices used in conjunction with monitoring the quality of ground water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator and when no longer needed (Section 731.215).

Surface-Water Monitoring

The Permittee plans to mitigate the disturbed runoff by constructing ditches, culverts, berms, a sedimentation pond and other siltation structures. The Permittee discusses mitigation for disturbed area drainage beginning on Page 9, Chapter 7.

Surface water monitoring is presented on Page 34, Chapter 7. The Permittee proposes to monitor the significant surface water sources. Seeps, springs and mine water discharge are treated as groundwater.

The monitoring data will be used to determine the impacts of mining on the hydrologic balance by comparison with relevant baseline data and applicable effluent limitations.

Sediment pond will be monitored as described in the UPDES permit (Table 7-3). SUWA commented that there is no UPDES permit. Appendix 7-5 contains a copy of the Permittee's application for a UPDES permit, but not the permit itself. The PAP should contain a copy of the UPDES permit which was issued on October 1, 1999.

The Permittee states in Chapter 7 that "drainages in the area flow in response to snowmelt and precipitation events." SUWA commented on the implications of this statement, suggesting that samples could be easily pulled from a flowing stream. The proposed surface-water monitoring program will monitor the Lila Canyon drainage both above and below the disturbed mine site area at L-1-S, L-2-S, and L-3-S and the sediment pond discharge at L-4-S to characterize flows.

L-1-S, L-2-S, L-3-S, and L-4-S have been monitored monthly since July 2000, and a summary of field observations is in Appendix 7-1. Most reports are "no flow". "No access" was reported for December 2000 and 2001; January and February of 2001; and January, February, and March 2002. The Division and the Permittee will review the Division's policy on reporting

"no access" and revising this monitoring plan if this is truly a problem; once the mine is in operation, access shouldn't be a problem.

The proposed surface-water monitoring plan is detailed in Section 731.220. This plan is based on PHC determination and analysis of all baseline hydrologic, geologic and other information in this permit application. The plan provides for monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in R645-301- 751 (see Table 7-4).

SUWA expressed concerns that Range Creek would be impacted by mining and cited the absence of information in the PAP as evidence. The BLM originally proposed that the Permittee develop a water-monitoring plan for Range Creek, a perennial stream several miles northwest of the mine, to assess any potential impacts from mining to the perennial stream. The BLM later determined that Range Creek was separated from the mine by several miles, that impacts from mining activities were unlikely, and that it did not have to be monitored for impacts. The Division concurred with the BLM after conducting a review for potential adverse impacts. A monitoring plan is not proposed for Range Creek. However, the Permittee must expand the PHC to include Range Creek. Further studies may be required depending on the results of the PHC.

Discharges of water from this operation will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the Environmental Protection Agency (EPA) set forth in 40 CFR Part 434 (see Sections 731 and 742).

Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter (Section 731.220). Surface-water monitoring will continue through mining and reclamation until bond release (Section 731.224).

Equipment, structures and other devices used in conjunction with monitoring the quality and quantity of surface water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator when no longer needed (Section 731.225).

Acid- and Toxic-Forming Materials

The Permittee has committed to periodic sampling of the materials to be placed in the refuse pile; samples will be collected and analyzed five times during construction of the rock-slope tunnels and from every 6,000 tons of waste rock placed on the refuse pile during mine operation: parameters are in Table 2 of Appendix 5-7. The reclamation plan specifies 4 feet of subsoil and topsoil will be placed over the refuse pile. The slope-rock underground development waste used to build the pads will be left in place for final reclamation and buried with 4 feet of subsoil and topsoil (Chapters 2, 5, and 7, and Appendix 5-7).

The Division requires that the slope-rock material be disposed of in a refuse pile. At a minimum, the material in the refuse pile must be covered with 4 feet of non-acid and non-toxic forming material. (See Chapters 2, 5, and 7, and Appendix 5-7 for details.)

Transfer of Wells

There are no plans to transfer any wells to any other party (731.400).

Discharges into an Underground Mine

There are no plans to discharge any water into an underground mine.

Gravity Discharges

The proposed access portals are below the coal outcrop, as shown on Plates 5-2 and 7-5. The fan is to be located above the outcrop. The two 1,227-foot access tunnels will slope up at approximately 12 percent, from a starting elevation at the surface of approximately 6,150 feet. The intersection of the coal seam and the rock slope will take place at approximately 6,300 feet elevation. Maximum ground-water elevation measured in the three IPA piezometers is 5,975 feet, and maximum projected elevation in the vicinity of the rock-slope tunnels is approximately 6,000 feet (Plate 7-1). Ground-water levels would need to rise approximately 150 feet just to reach the starting elevation of the tunnels at the base of the Book Cliffs (6,150 feet) and approximately 300 feet to reach the intersection of the tunnels with the coal seam (6,300 feet), so it is unlikely water levels will ever reach the intersection of the tunnel and coal seam. It is also unlikely the rock slopes will intercept ground water in the Blackhawk Formation. Therefore, gravity discharge from the mine is not expected.

Water Quality Standards and Effluent Limitations

Page 47 of Chapter 7 indicates that the only discharges from the site would be planned and consist of discharge water from the sediment pond or pumped from the underground mine. Page 48 indicates that mine water would be treated prior to being discharged by use of sumps. The sumps would remove sediments and oil/grease from the water.

The Permittee states on Page 49 of Chapter 7 that if it became necessary to discharge mine water, the mine water would meet UPDES standards.

Water monitoring parameters are shown in Table 7-4. Water monitoring locations and sample frequencies are described in Table 7-3 and on Plate 7-4.

The surface-water monitoring point-source discharge will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the DWQ for UPDES permits. A UPDES discharge permit has been issued by the DWQ for the proposed sediment pond and

any mine water for the Lila Canyon operation.

As indicated in Section 731.220, surface-water monitoring data will be submitted to the Division at least every three months. Discharge monitoring reports will be submitted to UDWQ monthly. When analysis of any surface-water sample indicates non-compliance with the permit conditions, the Permittee will promptly notify the Division and immediately take action to identify the source of the problem, correct the problem and, if necessary, to provide warning to any person whose health and safety is in imminent danger due to the non-compliance.

Diversions

The Permittee claims that only one undisturbed diversion is planned for the mine site, Section 732.300. However, Plate 7-5 indicates two undisturbed diversions are planned for the channel, UC-1 and UC-2. This is a moot point since these diversions should be reconsidered in the proposed PAP.

Undisturbed Diversion

Other diversions are planned in the form of berms, culverts and ditches. Alternate designs of the culverts have been requested to minimize impacts both during the operational and reclamation phases.

Disturbed Diversion

Disturbed diversions will consist of berms, culverts and ditches and will be used to direct flows over the disturbed area.

Stream Buffer Zones

Section 731.600 and 731.612 indicate that no mining activities will take place within 100 feet of a perennial or intermittent stream. This determination can not be made until all stream channels are characterized. Section 731.612 requesting information for marking a stream buffer zone in the channels has not been addressed.

The Permittee needs to characterize all stream channels using monitoring to substantiate the classification and provide protective barriers 100 feet from the channel where needed.

Sediment Control Measures

The Permittee has proposed plans to control sedimentation from the disturbed area. The plans are accurate, however the Division's review concludes the plans cause unnecessary disturbance. The Permittee has proposed to place the sedimentation pond and locate diversion culverts in a drainage. According to the proposed plans there appears to be sufficient area to

install a sedimentation pond on site without disturbing the channel. The Division suggests that a new plan needs to be submitted for the removal of culverts and location of the sedimentation pond.

Siltation Structures

The Permittee proposes to use berms and silt fences below the fan portal to control and treat runoff from that site.

Sedimentation Ponds

The only sediment pond is located in the southwest corner of the property as shown on Plate 5-2. The sediment pond was designed to provide adequate protection for the Lila Canyon disturbed area. The designs are located in Appendix 7-4 and Plate 7-6.

An evaluation of the surface area maps (as an example, Plate 7-5) identified unused areas in the mine permit proposed disturbed area that could allow the Permittee to minimize surface disturbance and impacts.

The Permittee has developed mine plans that place a sedimentation pond and a large 60 inch diversion culvert (UC-2) in the channel south of the mine pad. The Permittee also proposes to construct another shorter 60 inch culvert (UC-1) upstream from the large culvert for a truck turn-around. The plans of the disturbed area shows there is room to move some of the operations and minimize disturbance to the stream channel.

Exemptions for Siltation Structures

No exemptions for siltation structures have been requested or given

Discharge Structures

Two discharge structures are planned for the mine. A sedimentation pond will contain and treat disturbed area runoff. The Permittee has identified a mine-water discharge pipe, Section 731.512, that will transport treated mine water from the mine to Lila Canyon Wash.

The Permittee mentions the potential of ground-water contact in the PAP, Section 731.513. The Division has assessed groundwater information from what has been presented in the PAP and other mines in the Book Cliffs. The Division has determined there is a good probability that water will be intercepted and pumped from the mine. The Permittee has obtained and provided preliminary plans on Plate 7-5 showing the area where mine waters (UPDES 002) will be discharged. The information given on Plate 7-5 states that DOGM approval would be obtained prior to the installation of the discharge line.

The question of increased salinity in the Colorado River system has been raised by SUWA. The PHC should address the potential of increasing salinity in the Colorado River by discharging water from the mine, how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River, and the potential for water from the mine reaching the Price River.

Impoundments

The Permittee proposes to construct only one sedimentation pond that will be in the southwest corner of the disturbed area (See Plate 5-2). The sedimentation pond will have a maximum storage capacity of 12 acre-feet and a height of 11 feet. Therefore, the pond does not meet the criteria for an MSHA pond and will not need to be regulated as such. A registered professional engineer certified the sedimentation pond design.

In Appendix 5-5, the Permittee shows the results of the static safety factor analysis. The lowest safety factor of the embankments is 2.35 for the slopes under saturated conditions, which exceeds the 1.3 requirement. The Permittee did include the analysis of the physical and engineering properties of the foundation materials.

The Permittee states in Appendix 5-5 that the pond is protected against sudden draw down. The analysis shows that the pond will be safe under sudden draw down conditions. The safety factor calculated in the analysis is 2.02. A safety factor of 1.0 is considered safe under rapid draw down conditions; therefore, the Permittee meets the regulatory requirements.

The sedimentation pond design was approved by the Division of Water Rights. The Division has a copy of the approval letter.

A freeboard is planned to resist overtopping by waves and by sudden increases in storage volume. The elevation of the emergency spillway is 5841 feet while the top of the embankment will be 5843 feet, with a freeboard of 2 feet and a volume of 2.36 ac-ft.

The outslopes of the sedimentation pond will be planted with an approved seed mix to help prevent erosion and promote stability. No highwalls are associated with the impoundment.

The application discusses treatment facilities around the fan portal. The small disturbed area will be treated using silt fences and a berm to control and contain the expected runoff of 0.06 acre-feet for the 10-year, 24-hour design precipitation event.

The sediment pond will be inspected according to the requirements of R645-301-514. The designs have been certified by a professional engineer according to the requirements of R645-301-512.

Casing and Sealing of Wells

Section 765 does not mention the Horse Canyon Well. If any wells are installed in the future, the requirements of R645-301-765 will be met (765).

Findings:

R645-301-731.211, The Permittee must more clearly or specifically describe how the monitoring information will be used to determine the impacts of mining on the hydrologic balance and what actions will be taken in case water monitoring indicates non-compliance with the permit.

R645-301-121.200, The Permittee must update the statement on Page 32 (Ch. 7) that the springs have not been monitored since 1995.

R645-301-751, -731.200, The Permittee must include a copy of the UPDES permit, which was issued in 1999, in the PAP.

R645-301-724, -731.200, The Permittee must clarify the nature of L-12-G and its relationship to L-6-G, H-18, H-18A, and H-18B.

R645-301-724, -731.200, The Permittee must update Table 7-3 to include L-11-G and L-12-G.

R645-301-724, -731.200, The Permittee must add water-monitoring data from the monitoring program implemented in July 2000, including L-11-G and L-12-G, to the PAP.

R645-301-731.400, -765, The Permittee must discuss transfer and permanent casing and sealing of the Horse Canyon Well in Horse Canyon.

R45-301-731 The Permittee must evaluate the impacts from mine discharges and sedimentation pond discharges on receiving channels prior to mining. The Permittee must assess the level contaminants such as dissolved salts, and toxic elements (such as boron and selenium), and channel sediments will cause downstream of the permit area to the Price River. A model using mine water discharges ranging from 0 to 500 gallons per minute shall be evaluated to determine the potential of impacts to the Price River and the fishery. In the PHC, the Permittee must describe the probable impacts from mine water discharges impacting the Price River and fishery from high mine water discharges, chemical and sediment contamination.

R45-301-731 The Permittee must submit plans for the mine water discharge system prior to mining. The plan will specify pipe size to handle at least 500 gpm, routing, discharge area and designs for erosion control at the discharge area.

R45-301-731 The Permittee must submit appropriate plans to consolidate discharge points by routing mine water through the sedimentation pond or, if meeting UPDES limits, discharging in the same area as the sedimentation pond discharge. This action should reduce impacts to stream channels and reduce monitoring and reporting of data.

R45-301-731 If mine discharge is routed to the sediment pond, the Permittee must submit design plans for a sedimentation pond to contain and control the runoff from the mine pad area for treatment of the 10 year-24 hour precipitation event falling on the mine pad and treatment of at least a 500 gpm mine water discharge.

R45-301-731 The Permittee must submit a copy of the approved UPDES permit.

R45-301-731 Prior to mining, the Permittee must assess the channel morphology and characteristics of channels downstream from proposed UPDES monitoring sites. The Permittee must assess the potential impacts of mine water discharges to downstream channels from the discharge site to the Price River. In the PHC, the Permittee must describe the impacts to downstream channels.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR 784.30, 817.180, 817.181; R645-301-526.

Minimum Regulatory Requirements:

Each applicant for an underground coal mining and reclamation permit shall submit a description, plans, and drawings for each support facility to be constructed, used, or maintained within the proposed permit area. The plans and drawings shall include a map, appropriate cross sections, design drawings, and specifications sufficient to demonstrate compliance.

Support facilities shall be operated in accordance with a permit issued for the mine or coal preparation plant to which it is incident or from which its operation results. In addition to the other provisions of this part, support facilities shall be located, maintained, and used in a manner that: prevents or controls erosion and siltation, water pollution, and damage to public or private property; and, to the extent possible using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values and minimizes additional contributions of suspended solids to streamflow or runoff outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

All surface and underground mining activities shall be conducted in a manner which minimizes damage, destruction, or disruption of services provided by oil, gas, and water wells; oil, gas, and coal-slurry pipelines, railroads; electric and telephone lines; and water and sewage lines which pass over, under, or through the permit area, unless otherwise approved by the owner of those facilities and the Division.

Support facilities shall be operated in accordance with a permit issued for the mine or coal preparation plant to which it is incident or from which its operation results. In addition to the other provisions of this part, support facilities shall be located, maintained, and used in a manner that prevents or controls erosion and siltation, water pollution, and damage to public or private property. Support facilities shall, to the extent possible using the best technology currently available, minimizes damage to fish, wildlife, and related environmental values; and, minimizes additional contributions of suspended solids to streamflow or runoff

outside the permit area. Any such contributions shall not be in excess of limitations of State or Federal law.

Analysis:

The new support facilities are described in Section 520, shown on Plate 5-2, described in the appendices in Chapter 5 or listed in the bond calculations. Appendix 5-4, New Facility Design, shows the design for the roads and sewage system. Appendix 5-7 has the designs for the refuse pile. The new structures and facilities listed include:

Building
- Office/Bathhouse
- Shop Warehouse
- Security Shack

Utilities
- Mine Substation
- Power Lines
- Power Poles
- Water Treatment Plant
- Potable Water Tank
- Process Water Tank
- Sewer Tank & Drain Field

Mine Facilities
- Ventilation Fan
- 60-inch Conveyor from tunnels to Coal Stockpile
- Run of Mine (ROM) Underground Belt from Stockpile to Crusher
- 48-inch Conveyor from Crusher to Loadout Bin
- 48-inch Conveyor from Loadout Bin to Truck Loadout
- Reclaim Tunnel, Escape Tunnel, Fan and Fan House
- ROM Storage Pile
- Crusher Screen Plant
- Truck Scale and Loadout
- Coal Loadout Storage Bin
- Coal Stacking Tube
- Culverts (Note: names, diameter and length must be included)
- Guardrails
- Underground Pipes
- Chain Link Fence

Support Facilities
- Non-Coal Waste Area
- Equipment & Supplies Storage Area

Topsoil Pile
Refuse Pile
Sediment Pond
Slope Access Road
Rock Slopes
Mine Facilities Road
Truck Loadout Road
Portal Access Road
Office/Bathhouse/Warehouse Asphalt Parking Area
Mine Parking
Fuel Tanks
Rock Dust Bins
Explosive Magazines

Plate 5-8 is a detailed map with cross-sections that shows the coal handling facilities. Those facilities consist of a truck loadout, scale, and a 48-inch conveyor from the loadout bin to the truck loadout, a 48-inch conveyor for the loadout bin to the crusher, a 48-inch reclaim conveyor, a stacking tube and a 60-inch conveyor from the mine.

The Permittee did not include a complete list of facilities and structures in any section of the PAP. Since the information is scattered throughout the PAP the reader would have a difficult time locating the information. To avoid confusion the Permittee must list all of the structures and facilities in at least one section of the PAP. The Division recommends that the Permittee list the facilities and structures in section 520 of the PAP. This deficiency was addressed in the operation section of the TA.

The buildings, support structures and mine facilities will be constructed using standard building materials such as steel, wood and concrete. Construction and demolition of the facilities will be done by standard construction techniques. Reclamation of the surface facilities will be accomplished by removing the structures. When possible, machinery and steel building components would be salvaged. Building debris with the exception of concrete would be shipped off site

The Permittee is required to construct and maintain support facilities to:

- Control or prevent erosion, siltation, water pollution and damage to public or private property.
- Minimize damage to fish, wildlife, and related environmental issues such as minimizing additional contributions of suspended solids to streamflows.
- Minimize damage to oil, gas and water wells; oil, gas and coal-slurry pipelines, railroads and other utilities.

All support facilities will be located within the disturbed area. Runoff from the disturbed

area will report to the sedimentation pond for treatment before being discharged. For additional details on erosion, siltation and water pollution see the Hydrology section of this TA. Fish and wildlife issues are discussed in detail in the Fish and Wildlife Protection Plan section of this TA.

Findings:

The Permittee has met the minimum requirements of the support facilities and utility installations section of the regulations.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR 817.11; R645-301-521.

Minimum Regulatory Requirements:

Signs and markers shall: be posted, maintained, and removed by the person who conducts the underground mining activities; be of a uniform design throughout the activities that can be easily seen and read; be made of durable material; and, conform to local laws and regulations. Signs and markers shall be maintained during all activities to which they pertain.

Mine and permit identification signs shall be displayed at each point of access from public roads to areas of surface operations and facilities on permit areas for underground mining activities. Signs will show the name, business address, and telephone number of the person who conducts underground mining activities and the identification number of the current regulatory program permit authorizing underground mining activities. Signs shall be retained and maintained until after the release of all bonds for the permit area.

Perimeter markers shall clearly mark the perimeter of all areas affected by surface operations or facilities before beginning mining activities.

Buffer zones shall be clearly marked to prevent disturbance by surface operations and facilities.

Topsoil markers shall be used where topsoil or other vegetation-supporting material is segregated and stockpiled.

Analysis:

The Permittee committed to place signs and markers as required by the Utah Coal Rules. Those Rules require placement of signs and markers for underground coal mines as follows:

- Be posted, maintained, and removed by the person who conducts the coal mining and reclamation operations.
- Be a uniform design that can be easily seen and read; be made of durable material; and conform to local laws and regulations.
- Be maintained during all activities to which they pertain.
- Identification signs will be displayed at each point of access from public roads to areas of surface operations and facilities on permit areas.
- Show the name, business address, and telephone number of the Permittee who conducts coal mining and reclamation operations and the identification number of the permanent program permit authorizing coal mining and reclamation operations.
- Be maintained until after the release of all bonds for the permit area.

- The perimeter of all areas affected by surface operations or facilities before beginning mining activities will be clearly marked.
- Signs will be erected to mark buffer zones as required under R645-301-731.600 and will be clearly marked to prevent disturbance by surface operations and facilities.
- Topsoil markers will be erected to mark where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

Findings:

The Permittee has met the minimum requirements of the signs and markers section of the regulations.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Minimum Regulatory Requirements:

General Requirements

These requirements apply to surface blasting activities incident to underground coal mining, including, but not limited to, initial rounds of slopes and shafts. Each operator shall comply with all applicable State and Federal laws and regulations in the use of explosives.

All surface blasting operations incident to underground mining shall be conducted under the direction of a certified blaster. Certificates of blaster certification shall be carried by blasters or shall be on file at the permit area during blasting operations. A blaster and at least one other person shall be present at the firing of a blast. Any blaster who is responsible for conducting blasting operations at a blasting site shall be familiar with the site-specific performance standards and give direction and on-the-job training to persons who are not certified and who are assigned to the blasting crew or assist in the use of explosives.

An anticipated blast design shall be submitted if blasting operations will be conducted within 1,000 feet of any building used as a dwelling, public building, school, church or community or institutional building or 500 feet of active or abandoned underground mines. The blast design may be presented as part of a permit application or at a time, before the blast, approved by the Division. The blast design shall contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected, as well as a discussion of design factors to be used, which protect the public and meet the applicable airblast, flyrock, and ground-vibration standards. The blast design shall be prepared and signed by a certified blaster. The Division may require changes to the design submitted.

Preblasting survey

At least 30 days before initiation of blasting, the operator shall notify, in writing, all residents or owners of dwellings or other structures located within 1/2 mile of the permit area how to request a preblasting survey. A resident or owner of a dwelling or structure within 1/2 mile of any part of the permit area may request a preblasting survey. This request shall be made, in writing, directly to the operator or to the Division, who shall promptly notify the operator. The operator shall promptly conduct a preblasting survey of the dwelling or structure and promptly prepare a written report of the survey. An updated survey of any additions, modifications, or renovations shall be performed by the operator if requested by the resident or owner.

The operator shall determine the condition of the dwelling or structure and shall document any preblasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, and transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data. The written report of the survey shall be signed by the person who conducted the survey. Copies of the report shall be promptly provided to the Division and to the person requesting the survey. If the person requesting the survey disagrees with the contents and/or recommendations contained therein, he or she may submit to both the operator and the Division a detailed description of the specific areas of disagreement. Any surveys requested more than

10 days before the planned initiation of blasting shall be completed by the operator before the initiation of blasting.

General performance standards

The operator shall notify, in writing, residents within 1/2 mile of the blasting site and local governments of the proposed times and locations of blasting operations. Such notice of times that blasting is to be conducted may be announced weekly, but in no case less than 24 hours before blasting will occur. Unscheduled blasts may be conducted only where public or operator health and safety so require and for emergency blasting actions. When an operator conducts an unscheduled surface blast incidental to underground coal mining operations, the operator, using audible signals, shall notify residents within 1/2 mile of the blasting site and document the reason. All blasting shall be conducted between sunrise and sunset unless nighttime blasting is approved by the Division based upon a showing by the operator that the public will be protected from adverse noise and other impacts. The Division may specify more restrictive time periods for blasting.

Blasting signs, warnings, and access control

The operator shall conspicuously place signs reading "Blasting Area" along the edge of any blasting area that comes within 100 feet of any public-road right-of-way, and at the point where any other road provides access to the blasting area and at all entrances to the permit area from public roads or highways, place conspicuous signs which state "Warning! Explosives in Use," which clearly list and describe the meaning of the audible blast warning and all-clear signals that are in use, and which explain the marking of blasting areas and charged holes awaiting firing within the permit area.

Warning and all-clear signals of different character or pattern that are audible within a range of 1/2 mile from the point of the blast shall be given. Each person within the permit area and each person who resides or regularly works within 1/2 mile of the permit area shall be notified of the meaning of the signals in the blasting notification.

Access within the blasting areas shall be controlled to prevent presence of livestock or unauthorized persons during blasting and until an authorized representative of the operator has reasonably determined that no unusual hazards, such as imminent slides or undetonated charges, exist and access to and travel within the blasting area can be safely resumed.

Control of adverse effects

Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of surface or ground water outside the permit area.

Airblast shall not exceed the maximum limits specified in the regulations at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area. The maximum airblast and ground-vibration standards shall not apply at structures owned by the permittee and not leased to another person or at structures owned by the permittee and leased to another person, if a written waiver by the lessee is submitted to the Division before blasting.

Flyrock travelling in the air or along the ground shall not be cast from the blasting site: more than one-half the distance to the nearest dwelling or other occupied structure; beyond the area of control; or beyond the permit boundary.

In all blasting operations, except as otherwise authorized, the maximum ground vibration shall not exceed the values approved by the Division. All structures in the vicinity of the blasting area, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines shall be protected from damage by establishment of a maximum allowable limit on the ground vibration, submitted by the operator and approved by the Division before the initiation of blasting.

The maximum allowable ground vibration shall be reduced by the Division beyond the limits otherwise provided by this section, if determined necessary to provide damage protection. The Division may require an operator to conduct seismic monitoring of any or all blasts and may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

Records of blasting operations

The operator shall retain a record of all blasts for at least 3 years. Upon request, copies of these records shall be made available to the Division and to the public for inspection.

Analysis:

R645-301-524.220 allows the Permittee to submit a specific blasting plan separate from the PAP. The Permittee has opted to submit a detailed blasting plan if and when they propose to

blast.

Findings:

The Permittee has met the minimum regulatory requirements for the use of explosives.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

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

Minimum Regulatory Requirements:

Each application shall contain maps, plans, and cross sections which show the mining activities to be conducted, the lands to be affected throughout the operation, and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown and described as an existing structure.

The following shall be shown for the proposed permit area:

Affected area maps

The boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for mining design and mining operations shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Mining facilities maps

Location of each facility used in conjunction with mining operations. Such structures and facilities shall include, but not be limited to: buildings, utility corridors, roads, and facilities to be used in mining and reclamation operations or by others within the permit area; each coal storage, cleaning, and loading area; each topsoil, spoil, coal preparation waste, underground development waste, and noncoal waste storage area; each water diversion, collection, conveyance, treatment, storage and discharge facility; each source of waste and each waste disposal facility relating to coal processing or pollution control; each facility to be used to protect and enhance fish and wildlife related environmental values; each explosives storage and handling facility; location of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, and disposal areas for underground development waste and excess spoil; and, each plan or profile, at cross sections specified by the Division, of the anticipated surface configuration to be achieved for the affected areas during mining operations.

Mine workings maps

Location and extent of known workings of proposed, active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Location and extent of existing or previously surface-mined areas within the proposed permit area.

Monitoring and sampling location maps

Elevations and locations of test borings and core samplings. Elevations and locations of monitoring stations used to gather data on water quality and quantity, subsidence, fish and wildlife, and air quality, as required during mining operations.

Certification Requirements

Cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified

registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Analysis:

Affected Area Maps

Plate 1-1, Permit Area Map shows the location of the entire Horse Canyon Permit area. The area is divided into permit area A, which is the Horse Canyon project and permit area B, which is the Lila Canyon Extension. Areas of potential future expansion are also shown.

The Mine Map, Plate 5-5, shows the areas where mining is expected to occur including the size, sequence and timing of all mining operations. Plate 5-2, Surface Area, shows the area scheduled to be disturbed. Those three maps provide information to describe the affected area.

To depict areas of potential impacts from surface water discharges via the sedimentation pond and mine water discharges, the Permittee should submit affected area maps showing the named drainages and monitoring sites of the Price River drainage from the permit area to the Price River. To depict the area of any potential impacts from mining to Range Creek, maps should be submitted showing the surface water features of the permit area and Range Creek drainage.

Mining Facilities Maps

Plate 5-2 shows the surface facilities for the Lila Canyon Extension. The Division has reviewed the facilities and structures list and found that not all of the facilities mentioned in the PAP are located on Plate 5-2. The Permittee must show all surface facilities and structures on Plate 5-2. This deficiency will be addressed in the operation section of the TA.

With the changes required for the sedimentation pond, mine water discharge pond and undisturbed culverts, new facilities plans will need to be submitted.

Mine Workings Maps

The location of the known mine workings in the Horse Canyon permit area are shown on Plate 5-1, Previously Mined Areas. The old mine workings include the Horse Canyon project and the Old Book Cliff Mine. Plate 5-1 was prepared and certified by a registered professional engineer. See Plate II-2 in the Horse Canyon section of the mine plan for a detailed mine map of

the Horse Canyon project.

The DOGM Abandoned Mine Reclamation program inspected the area in and around the Lila Canyon site and found no evidence of underground workings not shown on Plate 5-1.

Plate 5-5 shows the projected mine workings for the Lila Canyon Extension. The only openings are the two tunnels and the ventilation portal. The timing and sequence of the mining operation is shown on the map.

Monitoring and Sample Location Maps

Operational ground-water and surface-water monitoring sites are listed in Table 7-3, and locations are shown on Plate 7-4. The proposed surface-water monitoring program was established to collect data around the Lila Canyon Extension both above and below the disturbed site at L-1-S, L-2-S, and L-3-S. The sedimentation pond discharge point, L-4-S, and the potential mine discharge point, L-5-S, will be monitored in accordance with UPDES permit requirements. Current UPDES discharge points UT040013-001A and -002A are also shown on Plate 7-4. Locations of seep and spring ground-water monitoring sites L-6-G through L-12-G and piezometers IPA 1, 2, and 3 are shown on Plate 7-4.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R45-301-731, The Permittee will submit affected area maps showing the relationship of the mine permit to adjacent and downstream drainages.

R45-301-731, The Permittee shall provide updated facilities maps to show the change in sedimentation pond location, change in culvert plans (UC-1 and UC-2), change of the mine discharge system, sedimentation pond discharge system, disturbed area drainage reconfiguration and UPDES discharge structures.

R45-301-731.600, The Permittee shall submit maps depicting a 100 foot buffer zone along perennial and intermittent channels.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR 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.

Minimum Regulatory Requirements:

Provide a plan for the reclamation of the lands within the proposed permit area, showing how the applicant will comply with the regulatory program and the environmental protection performance standards. The plan shall include, at a minimum, contain the following information for the proposed permit area: a detailed timetable for the completion of each major step in the reclamation plan; a detailed estimate of the cost of the reclamation of the proposed operations required to be covered by a performance bond, with supporting calculations for the estimates; a plan for backfilling, soil stabilization, compacting, and grading, with contour maps or cross sections that show the anticipated final surface configuration of the proposed permit area; a plan for redistribution of topsoil, subsoil, and other material along with a demonstration of the suitability of topsoil substitutes or supplements shall be based upon analysis of the thickness of soil horizons, total depth, texture, percent coarse fragments, pH, and areal extent of the different kinds of soils; other chemical and physical analyses, field-site trials, or greenhouse tests if determined to be necessary or desirable to demonstrate the suitability of the topsoil substitutes or supplements may also be required; a plan for revegetation including, but not limited to, descriptions of the schedule of revegetation, species and amounts per acre of seeds and seedlings to be used, methods to be used in planting and seeding, mulching techniques, irrigation, if appropriate, and pest and disease control measures, if any, measures proposed to be used to determine the success of revegetation, and, a soil testing plan for evaluation of the results of topsoil handling and reclamation procedures related to revegetation; a description of the measures to be used to maximize the use and conservation of the coal resource; a description of measures to be employed to ensure that all debris, acid-forming and toxic-forming materials, and materials constituting a fire hazard are disposed of accordingly and a description of the contingency plans which have been developed to preclude sustained combustion of such materials; a description, including appropriate cross sections and maps, of the measures to be used to seal or manage mine openings, and to plug, case, or manage exploration holes, other bore holes, wells, and other openings within the proposed permit area; and, a description of steps to be taken to comply with the requirements of the Clean Air Act, the Clean Water Act, and other applicable air and water quality laws and regulations and health and safety standards.

Analysis:

Section 241, 242, and 243 discuss topsoil and subsoil redistribution. Appendix 5.7 describes reclamation of the refuse pile. Appendix 5.8 describes the reclamation of the remaining area and divides the 48.23acre site into two reclamation units based upon slope. The upper unit is a water treatment area and portal pad, approximately 3.4 acres. The lower unit is 37.37 acres.

Findings:

The information provided is adequate to generally describe the reclamation plans as required by the Regulations.

POSTMINING LAND USES

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

In general, all disturbed areas shall be restored in a timely manner to conditions that are capable of supporting: the uses they were capable of supporting before any mining; or higher or better uses.

Provide a detailed description of the proposed use, following reclamation, of the land to be affected within the proposed permit area by surface operations or facilities, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses, and the relationship of the proposed use to existing land-use policies and plans. This description shall explain: how the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use; where a land use different from the premining land use is proposed, all materials needed for approval of the alternative use; and, the consideration given to making all of the proposed underground mining activities consistent with surface owner plans and applicable State and local land-use plans and programs.

The description shall be accompanied by a copy of the comments concerning the proposed use from the legal or equitable owner of record of the surface areas to be affected by surface operations or facilities within the proposed permit area and the State and local government agencies which would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.

Determine premining uses of land. The premining uses of land to which the postmining land use is compared shall be those uses which the land previously supported, if the land has not been previously mined and has been properly managed. The postmining land use for land that has been previously mined and not reclaimed shall be judged on the basis of the land use that existed prior to any mining; Provided that, If the land cannot be reclaimed to the land use that existed prior to any mining because of the previously mined condition, the postmining land use shall be judged on the basis of the highest and best use that can be achieved which is compatible with surrounding areas and does not require the disturbance of areas previously unaffected by mining.

Criteria for alternative postmining land uses. Higher or better uses may be approved as alternative postmining land uses after consultation with the landowner or the land management agency having jurisdiction over the lands, if the proposed uses meet the following criteria: there is a reasonable likelihood for achievement of the use; the use does not present any actual or probable hazard to public health and safety, or threat of water diminution or pollution; and , the use will not be impractical or unreasonable, inconsistent with applicable land use policies or plans, involve unreasonable delay in implementation, or cause or contribute to violation of Federal, State, or local law.

Approval of an alternative postmining land use, may be met by requesting approval through the permit revision procedures rather than requesting such approval in the original permit application. The original permit application, however, must demonstrate that the land will be returned to its premining land use capability. An application for a permit revision of this type must be submitted in accordance with the requirements of filing for a Significant Permit Revision and shall constitute a significant alternation from the mining operations contemplated by the original permit, and shall be subject to the requirements for permits, permit processing, and administrative and judicial of decisions on permits under the regulatory program.

Surface coal mining operations may be conducted under a variance from the requirement to restore disturbed areas to their approximate original contour, if the following requirements are satisfied:

1.) The Division grants a variance from approximate original contour restoration requirements.
2.) The alternative postmining land use requirements are met.
3.) All applicable requirements of the act and the regulatory program, other than the requirement to restore disturbed areas to their approximate original contour, are met.
4.) After consultation with the appropriate land use planning agencies, if any, the potential use is shown to constitute an equal or better economic or public use.
5.) The proposed use is designed and certified by a qualified registered professional engineer in conformance with professional standards established to assure the stability, drainage, and configuration necessary for the intended use of the site.
6.) After approval, where required, of the appropriate State environmental agencies, the watershed of the permit and adjacent areas is shown to be improved.
7.) The highwall is completely backfilled with spoil material, in a manner which results in a static factor of safety of at least 1.3, using standard geotechnical analysis.
8.) Only the amount of spoil as is necessary to achieve the postmining land use, ensure the stability of spoil retained on the bench, and all spoil not retained on the bench shall be placed in accordance with all other applicable regulatory requirements.

9.) The surface landowner of the permit area has knowingly requested, in writing, that a variance be granted, so as to render the land after reclamation, suitable for an industrial, commercial, residential, or public use (including recreational facilities.)
10.) Federal, State, and local government agencies with an interest in the proposed land use have an adequate period in which to review and comment on the proposed use.

Analysis:

The postmining land uses will be the same as premining land uses. This will be accomplished through the reclamation plan presented in other sections of the application. Support activities to achieve the postmining land uses will include site monitoring; remedial actions, such as regrading, reseeding with species native to the area, and replanting; and fencing as necessary to restrict access and grazing. No roads will be left in the disturbed area. These actions will make the area compatible with any future wilderness designations.

SUWA commented that the restoration plan is inadequate to ensure that the water sources and other wildlife habitats will be returned to the postmining land use. Additional information is requested in other sections of this TA to address reclamation to a postmining land use.

SUWA commented that the PAP fails to restore the land to a quality capable of supporting wilderness designation. The BLM's response to public comments in the January 2002 document titled *Revisions to the 1999 Utah Wilderness Inventory* addresses questions and concerns raised during the initial wilderness scoping project that began in March of 1999. The BLM received public comments concerning the Turtle Canyon and Desolation Canyon Inventory Units. Many of these comments questioned the wilderness character determinations made in the *1999 Utah Wilderness Inventory*. Questions concerning: impact from surface structures due to past mining; access for water monitoring; areas degraded due to coal mining activities and drill stem pipes. The BLM response was that the impact associated with past mining activity was found to be substantially unnoticeable. Accesses for water monitoring sties were determined to be vehicle ways, and not roads because they are not maintained nor do they receive regular use.

The postmining land use is in accordance with the BLM's management plans. Appendix 4-2 contains a letter from the BLM stating the postmining land use for the area is wildlife habitat, grazing, and incidental recreation, not "wilderness character".

Findings:

Information provided in the application meets the minimum Postmining Land Uses requirement of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Minimum Regulatory Requirements:

Where wetlands and habitats of unusually high value for fish and wildlife occur, the operator conducting underground mining activities shall provide a description of the measures taken to avoid disturbances to, enhance where practicable, restore, or replace, wetlands and riparian vegetation along rivers and streams and bordering ponds and lakes. Designs and plans for underground mining activities shall include measures to avoid disturbances to, enhance where practicable, or restore habitats of unusually high value for fish and wildlife.

Where fish and wildlife habitat is to be a postmining land use, the plant species to be used on reclaimed areas shall be selected on the basis of the following criteria:

1.) Their proven nutritional value for fish or wildlife.
2.) tTheir use as cover for fish or wildlife.
3.) Their ability to support and enhance fish or wildlife habitat after the release of performance bonds.

The selected plants shall be grouped and distributed in a manner which optimizes edge effect, cover, and other benefits to fish and wildlife.

Where cropland is to be the postmining land use, and where appropriate for wildlife- and crop-management practices, the operator shall intersperse the fields with trees, hedges, or fence rows throughout the harvested area to break up large blocks of monoculture and to diversify habitat types for birds and other animals.

Where residential, public service, or industrial uses are to be the postmining land use and where consistent with the approved postmining land use, the operator shall intersperse reclaimed lands with greenbelts utilizing species of grass, shrubs, and trees useful as food and cover for wildlife.

Analysis:

The application says the sediment pond will be maintained through the life of the operation and will be removed when effluent criteria are met after reclamation. Sections 761 and 763.100 indicate the sediment pond will remain in place until the stability and vegetation requirements for Phase II Bond Release are met and that this will be a minimum of 2 years after the last augmented seeding.

The species in the seed mixture will potentially provide good forage and cover for wildlife, if the changes recommended in the Revegetation section of this Technical Analysis are followed. The pinyon/juniper area will be reclaimed to a grass/shrub community; this could enhance the quality of habitat in the area if some of the pinyon/juniper areas, shown as undisturbed, remain undisturbed.

Findings:

Information provided in the application meets the minimum Protection of Fish, Wildlife and Related Environmental Values requirement of the regulations.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

Note :The following requirements have been suspended insofar as they authorize any variance from approximate original contour for surface coal mining operations in any area which is not a steep slope area.

Criteria for permits incorporating variances from approximate original contour restoration requirements.

The Division may issue a permit for nonmountaintop removal mining which includes a variance from the backfilling and grading requirements to restore the disturbed areas to their approximate original contour. The permit may contain such a variance only if the Division finds, in writing, that the applicant has demonstrated, on the basis of a complete application, that the following requirements are met:

1.) After reclamation, the lands to be affected by the variance within the permit area will be suitable for an industrial, commercial, residential, or public postmining land use (including recreational facilities).
2.) The criteria for the proposed post mining land use will be met.
3.) The watershed of lands within the proposed permit and adjacent areas will be improved by the operations when compared with the condition of the watershed before mining or with its condition if the approximate original contour were to be restored. The watershed will be deemed improved only if: the amount of total suspended solids or other pollutants discharged to ground or surface water from the permit area will be reduced, so as to improve the public or private uses or the ecology of such water, or flood hazards within the watershed containing the permit area will be reduced by reduction of the peak flow discharge from precipitation events or thaws; the total volume of flow from the proposed permit area, during every season of the year, will not vary in a way that adversely affects the ecology of any surface water or any existing or planned use of surface or ground water; and, the appropriate State environmental agency approves the plan.
4.) The owner of the surface of the lands within the permit area has knowingly requested, in writing, as part of the application, that a variance be granted. The request shall be made separately from any surface owner consent given for right-of-entry and shall show an understanding that the variance could not be granted without the surface owner's request.

If a variance is granted, the requirements of the post mining land use criteria shall be included as a specific condition of the permit, and, the permit shall be specifically marked as containing a variance from approximate original contour.

A permit incorporating a variance shall be reviewed by the Division at least every 30 months following the issuance of the permit to evaluate the progress and development of the surface coal mining and reclamation operations to establish that the operator is proceeding in accordance with the terms of the variance. If the permittee demonstrates to the Division that the operations have been, and continue to be, conducted in compliance with the terms and conditions of the permit, the review specified need not be held. The terms and conditions of a permit incorporating a variance may be modified at any time by the Division, if it determines that more stringent measures are necessary to ensure that the operations involved are conducted in compliance with the requirements of the regulatory program. The Division may grant variances only if it has promulgated specific rules to govern the granting of variances in accordance with the provisions of this section and any necessary, more stringent requirements.

Analysis:

The definitions of Approximate Original Contour (AOC) are contained in the Surface Mining Control and Reclamation Act (SMCRA) and the Utah coal rules. The objectives of post-mining backfilling and grading is to return the site to a configuration resembling the topography of the land prior to mining and to blend the site into the drainage pattern of the surrounding terrain. At the same time, reclamation performance standards including controlling erosion, establishing mass stability and establishing permanent, diverse and effective vegetative cover must be met.

The Division's Technical Directive 002 is intended to reconcile the specific performance standard requirements of the regulatory program with the general definitions of AOC in a way that accomplishes the objectives of SMCRA.

Final Surface Configuration

The Permittee did not request a variance from AOC. The Division reviewed all the premining and post mining topographic maps and cross sections and determined that the postmining topography, excluding elevation, closely resembles its premining configuration based on the following:

- The premining topography shown on Plate 5-1A is similar to the postmining topography shown on Plate 5-6. The main differences between the premining and postmining topography is that the postmining contours are smoother. However, pocking and other surface roughening techniques tend to make the postmining surface look more natural after a few years.

- The premining and postmining cross-sections shown on Plate 5-7A-1 through Plate 5-7A-4 show that premining and postmining contours will be similar. The major changes will occur in the area of the main mine facilities. The area in and around the reclaimed refuse pile will be higher than the premining topography. The area in and around cross-section 4+00 to 12+00 will have smoother postmining contours.

- Detailed cross-sections of the premining and postmining refuse pile area are shown on Figure 2 Appendix 5-7. The reclaimed refuse pile will be a slight mound. The mound will not impound any water. See the profile on Figure 1 Appendix 5-7 for details.

- The premining and postmining cross-sections shown on Plate 5-7B-1 through Plate 5-7B-3. A small cut slope will be left from the road embankment as shown in cross-section 16+00. The concrete disposal area will be a slight mound as shown on cross-section 18+00.

- Three critical areas for final surface configuration are the portal areas. The Permittee is required to eliminate all highwalls. Detailed cross-sections for all portal areas are shown on Plate 5-9. The premining contours for the rock slope portals shows the face up areas to be a cliff. Therefore, the Permittee is required to backfill the areas to form cliffs. The ventilation fan portal will be constructed on a natural slope and will be restored to the same configuration.

All Highwalls to be eliminated

The Permittee states in Section 553.120 the following:

Minor highwalls may be created with the development of the rock slope portals. Upon completion of mining, these entries will be sealed as per Closure for Mine Openings Appendix 5-6, and highwalls will be eliminated during the reclamation phase of the operation. During reclamation, suitable materials will be placed against the portals. This material will be shaped to

eliminate the highwall and to bring the slope back to the approximate original contour.

Plate 5-9 shows the premining, operational and postmining cross sections for all portals. The two portals that provide access to the mine via the rock tunnel will have highwalls or face-ups that are approximately the same height as the openings, which is 6 feet. The highwalls may be slightly taller because the Permittee may need to remove loose rock. Since the portal face up areas are in a nearly vertical cliff, the Permittee will eliminate the highwall by backfilling against the portal face-up.

The fan portal will have a 17-foot highwall. Some of the cliff will have to be removed when the fan facility is constructed. The highwall will be constructed in a high cliff. After reclamation, the highwall will be backfilled to the premining topography.

Safety is a major concern with highwalls. Since the Lila Canyon highwalls are in an existing cliff, the existence and reclamation of the highwalls will not create additional safety hazards. The steep cliffs above the two lower reclaimed portals will prevent people, livestock and wildlife from traveling over the highwall areas. People, livestock and wildlife traveling over the upper reclaimed highwall will face the same hazards as found on any other slope in the area.

Because the highwalls areas will be restored to approximate premining topography the Division finds that the highwall elimination plans meets the minimum requirements of R645-301-553.120.

Hydrology

The main concerns with hydrology are that the drainages are restored, sediment is controlled and that no hazardous or toxic discharges will occur. The Division considers that those conditions will be met when the hydrologic reclamation requirements are met.

Findings:

The Permittee meets the minimum approximate original contour restoration requirements of the regulations.

BACKFILLING AND GRADING

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

Minimum Regulatory Requirements:

General

Disturbed areas shall be backfilled and graded to: achieve the approximate original contour; eliminate all highwalls, spoil

piles, and depressions; achieve a postmining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved postmining land use.

The postmining slope may vary from the approximate original contour when approval is obtained from the Division for a variance from approximate original contour requirements, or when incomplete elimination of highwalls in previously mined areas is allowed under the regulatory requirements. Small depressions may be constructed if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat, or assist revegetation.

If it is determined by the Division that disturbance of the existing spoil or underground development waste would increase environmental harm or adversely affect the health and safety of the public, the Division may allow the existing spoil or underground development waste pile to remain in place. Accordingly, regrading of settled and revegetated fills to achieve approximate original contour at the conclusion of underground mining activities shall not be required if: the settled and revegetated fills are composed of spoil or nonacid- or nontoxic-forming underground development waste; the spoil or underground development waste is not located so as to be detrimental to the environment, to the health and safety of the public, or to the approved postmining land use; stability of the spoil or underground development waste must be demonstrated through standard geotechnical analysis to be consistent with backfilling and grading requirements for material on the solid bench (1.3 static safety factor) or excess spoil requirements for material not placed on a solid bench (1.5 static safety factor); and, the surface of the spoil or underground development waste shall be vegetated in accordance with the revegetation standards for success, and surface runoff shall be controlled in accordance with the regulatory requirements for diversions.

Spoil shall be returned to the mined-out surface area. Spoil and waste materials shall be compacted where advisable to ensure stability or to prevent leaching of toxic materials. Spoil may be placed on the area outside the mined-out surface area in nonsteep slope areas to restore the approximate original contour by blending the spoil into the surrounding terrain if the following requirements are met: all vegetative and organic materials shall be removed from the area; the topsoil on the area shall be removed, segregated, stored, and redistributed in accordance with regulatory requirements; the spoil shall be backfilled and graded on the area in accordance with the general requirements for backfilling and grading.

Disposal of coal processing waste and underground development waste in the mined-out surface area shall be in accordance with the requirements for the disposal of spoil and waste materials except that a long-term static safety factor of 1.3 shall be achieved.

Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining shall be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

Cut-and-fill terraces may be allowed by the Division where: needed to conserve soil moisture, ensure stability, and control erosion on final-graded slopes, if the terraces are compatible with the approved postmining land use; or, specialized grading, foundation conditions, or roads are required for the approved postmining land use, in which case the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land-use plan.

Preparation of final-graded surfaces shall be conducted in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

Previously mined areas

Remining operations on previously mined areas that contain a preexisting highwall shall comply with all other reclamation requirements except as provided herein. The requirement that elimination of highwalls shall not apply to remining operations where the volume of all reasonably available spoil is demonstrated in writing to the Division to be insufficient to completely backfill the reaffected or enlarged highwall. The highwall shall be eliminated to the maximum extent technically practical in accordance with the following criteria:

1.) All spoil generated by the remining operation and any other reasonably available spoil shall be used to backfill the area. Reasonably available spoil in the immediate vicinity of the remining operation shall be included within the permit area.
2.) The backfill shall be graded to a slope which is compatible with the approved postmining land use and which provides adequate drainage and long-term stability.
3.) Any highwall remnant shall be stable and not pose a hazard to the public health and safety or to the environment. The operator shall demonstrate, to the satisfaction of the Division, that the highwall remnant is stable.
4.) Spoil placed on the outslope during previous mining operations shall not be disturbed if such disturbances will cause instability of the remaining spoil or otherwise increase the hazard to the public health and safety or to the environment.

Backfilling and grading on steep slopes

Underground mining activities on steep slopes shall be conducted so as to meet other applicable regulatory requirements and the requirements of this section. The following materials shall not be placed on the downslope: spoil; waste materials of any type; debris, including that from clearing and grubbing; abandoned or disabled equipment; land above the highwall shall not be disturbed unless the Division finds that this disturbance will facilitate compliance with the environmental protection standards and the disturbance is limited to that necessary to facilitate compliance; and, woody materials shall not be buried in the backfilled area unless the Division determines that the proposed method for placing woody material within the backfill will not deteriorate the stable condition of the backfilled area.

Special provisions for steep slope mining

No permit shall be issued for any operations covered by steep slope mining, unless the Division finds, in writing, that in addition to meeting all other regulatory requirements, the operation will be conducted in accordance with the requirements for backfilling and grading on steep slopes. Any application for a permit for surface coal mining and reclamation operations covered by steep slope mining shall contain sufficient information to establish that the operations will be conducted in accordance with the requirements for backfilling and grading on steep slopes.

This section applies to any person who conducts or intends to conduct steep slope surface coal mining and reclamation operations, except: where an operator proposes to conduct surface coal mining and reclamation operations on flat or gently rolling terrain, leaving a plain or predominantly flat area, but on which an occasional steep slope is encountered as the mining operation proceeds; where a person obtains a permit under the provisions for mountaintop removal mining; or, to the extent that a person obtains a permit incorporating a variance from approximate original contour restoration requirements.

Analysis:

General

The AOC issues are discussed in the AOC section of this TA. Highwall elimination is discussed in the AOC section of this TA. No spoil piles will be associated with the site. No major depressions will be present after reclamation, see Plate 5-6, Post Mining Topography.

Slope Stability:

The slope stability requirements are in R645-301-553.130, which states that the postmining slope will not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and prevent slides. The reclaimed slopes at the Lila Canyon Extension site will meet the slope stability requirements because:

- The angle of repose for materials in and around the Lila Canyon site is approximately 35°, a 1.5h: 1v slope. The steepest reclaimed slope is the upper portion of the slope by the fan portal, and that slope will not exceed 35°.
- Some minor cut slopes along the reclaimed road may be left after reclamation. See cross-section 16+00 on Plate 5-7B-1. The Division will allow cut slopes to remain after reclamation. Before the Division approves cut slope retention the Permittee must explain why the cut slope will be left.
- The safety factor calculations for the reclaimed slopes are in Appendix 5-5. The reclaimed slopes that were analyzed will have a minimum static safety factor of 4.8 under dry conditions and 3.1 under saturated conditions.
- A registered professional engineer has prepared the backfilling and grading plan. The

plan was designed to ensure that the slopes would be stable and resistant to slides. By keeping the slope angle less than the angle-of-repose and by having the safety factor greater than 1.3, slides will be prevented from occurring. Pocking the steep slope surfaces will prevent minor slide and surface slumping. Pocking interlocks the topsoil with the subsoil layers.

Post-Mining Land Use:

The post mining land-use finding is in the post-mining land use section of the TA. The reclaimed contours will be compatible with the post mining land use. The postmining land use is wildlife habitat, grazing, and incidental recreation, which is identical to the premining land use. The postmining land use is in accordance with the BLM's management plans. See Appendix 4-2 of the PAP for a BLM postmining land use approval letter.

Settled and Revegetated Fills:

The variances from AOC and other requirements for existing spoil or underground development waste do not apply to the Lila Canyon Extension since those materials are not present on the site before the permit is issued.

Spoil Disposal:

Spoil is defined as overburden removed during coal mining and reclamation. Overburden is defined as material that overlies a coal deposit with the exception of topsoil. The only spoil that will be generated at the Lila Canyon Extension will be at the fan portal. The spoil will be used as backfill at the fan portal site. The proper compaction of spoil is a performance standard that the Permittee must meet during reclamation.

Disposal of Coal Mine Waste and Underground Development Waste:

The Division and Permittee consider the material from the rock slope tunnels to be coal mine waste; therefore, that material must be disposed in a refuse pile. In addition to the rock slope material mine development waste and reject material from the crushing process are also potential sources of coal mine waste.

The reclamation plan for the refuse pile is in Appendix 5-7. The refuse pile will meet the requirements of R645-301-553.250 because:

- The reclaimed slopes will meet the AOC requirements and will support the postmining land use. No terraces will be constructed on the outslopes of the refuse pile. The grade of the outslopes will not be steeper than 3H: 1V. See Figure 2 Appendix 5-7 for details.
- All refuse material will be covered with a minimum of 4 feet of material see Figure 2 Appendix 5-7 for details.

- The slopes in and around the reclaimed refuse pile will have very gentle slopes with a stability factor greater than 8, (see Appendix 5-7). The minimum safety factor requirement is 1.3. Thus the slopes of the reclaimed refuse pile are considered stable.

Exposed Coal Seams and Acid- and Toxic-Forming Materials and Combustible Materials:

The only exposed coal will be at the fan portal area. The cross section of the reclaimed fan portal in Plate 5-9 shows that the coal seam will be backfilled by more than 4 feet of fill materials.

Previously Mined Areas

There are no known previously mined areas in the disturbed area boundaries for the Lila Canyon site.

Steep Slopes

The section backfilling and grading on steep slopes or special provisions for steep slope mining are not considered for this TA, because Lila Canyon Extension area is not considered a steep slope mine. Special provisions for steep slope mining apply when the permittee plans to get a variance from AOC requirements. Since the permittee did not apply to an AOC variance they are not required to address these requirements.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-553, The Permittee must describe the location of cut slopes that will be left after final backfilling and grading. The Permittee will also explain why those cut slopes will be left. See cross-section 16+00 in 5-7B-1 for details.

MINE OPENINGS

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

Minimum Regulatory Requirements:

Each exploration hole, other drillhole or borehole, shaft, well, or other exposed underground opening shall be cased, lined, or otherwise managed as approved by the Division to prevent acid or other toxic drainage from entering ground and surface waters, to minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and

machinery in the permit area and adjacent area. Each exploration hole, drill hole or borehole or well that is uncovered or exposed by mining activities within the permit area shall be permanently closed, unless approved for water monitoring or otherwise managed in a manner approved by the Division. Use of a drilled hole or monitoring well as a water well must meet the provisions required to protect the hydrologic balance. This section does not apply to holes drilled and used for blasting, in the area affected by surface operations.

Each mine entry which is temporarily inactive, but has a further projected useful service under the approved permit application, shall be protected by barricades or other covering devices, fenced, and posted with signs, to prevent access into the entry and to identify the hazardous nature of the opening. These devices shall be periodically inspected and maintained in good operating condition by the person who conducts the underground mining activities.

Each exploration hole, other drill hole or borehole, shaft, well, and other exposed underground opening which has been identified in the approved permit application for use to return underground development waste, coal processing waste or water to underground workings, or to be used to monitor ground water conditions, shall be temporarily sealed until actual use.

When no longer needed for monitoring or other use approved by the Division upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each shaft, drift, adit, tunnel, exploratory hole, entry way or other opening to the surface from underground shall be capped, sealed, backfilled, or otherwise properly managed, as required by the Division and consistent with the requirements of 30 CFR Section 75.1711. Permanent closure measures shall be designed to prevent access to the mine workings by people, livestock, fish and wildlife, machinery and to keep acid or other toxic drainage from entering ground or surface waters.

Analysis:

The Permittee committed in Section 529 of the PAP to seal all underground openings when no longer needed. See Appendix 5-6 for the portal-sealing plan. The portal-sealing plan meets Division and MSHA requirements. In addition, all wells will be sealed when no longer needed.

As part of the performance standards the Permittee will be required by the Division to barricade and fence mine entries that are temporarily inactive in the permit area. These mine entries will be posted with warning signs. The barricades will be periodically inspected and maintained.

Findings:

The Permittee meets the minimum mine openings requirements of the regulations.

TOPSOIL AND SUBSOIL

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

Minimum Regulatory Requirements:

Redistribution

Topsoil materials shall be redistributed in a manner that: achieves an approximately uniform, stable thickness consistent with the approved postmining land use, contours, and surface-water drainage systems; prevents excess compaction of the materials: and, protects the materials from wind and water erosion before and after seeding and planting.

Before redistribution of the material, the regarded land shall be treated if necessary to reduce potential slippage of the redistribution material and to promote root penetration. If no harm will be caused to the redistributed material and reestablished vegetation, such treatment may be conducted after such material is replaced.

The Division may choose not to require the redistribution of topsoil or topsoil substitutes on the approved postmining embankments of permanent impoundments or of roads if it determines that placement of topsoil or topsoil substitutes on such embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation, and, such embankments will be otherwise stabilized.

Nutrients and soil amendments shall be applied to the initially redistributed material when necessary to establish the vegetative cover.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, removed and segregated, stockpiled, be redistributed as subsoil in accordance with the requirements of the above if it finds that such subsoil layers are necessary to comply with the revegetation requirements.

Analysis:

Redistribution

The PAP describes in Section 241 grading the surface to AOC, replacement of subsoils in the root zone, ripping, replacement of topsoil, replacement of boulders and gouging and treatment of the surface with an inoculum.

The grading sequence is itemized and begins with:
"a. Grade all areas where no subsoil is being stored.
b. Replace subsoil on areas from which it was removed."

SUWA commented that the sequence as written was very confusing. Crucial to the understanding of steps a and b in the regrading is an As-Built map committed to under Section 232.500 that will locate the subsoils determined to be suitable for placement in the top four feet rooting zone at reclamation, i.e. subsoil from soil map units SBJ, DSH and VBJ identified in the Order 1 Soils Survey. This proposed As-Built map is referred to in the discussion of Section 241 and 242.100.

SUWA commented on the depth of topsoil replacement, believing that the PAP called for eighteen inches of topsoil to be replaced over the entire site. Section 242.100 describes the replacement of topsoil to approximate the variable depth of topsoil encountered at the site during the Order 1 Soil Survey. Plate 2-3 Topsoil salvage and Replacement, should be referenced to illustrate and clarify the discussion found in Section 242.100. Section 242.100 also outlines the equipment to be used to replace the topsoil, including a road grader on the flat areas. A road grader is not recommended because of the compaction that can result.

Inoculum is referred to in Section 241 and soil amendments are referred to in Section 243. The inoculum will replace microbial activity in the soil. Re-establishment of biologic soil crusts would successfully add microbial activity while also serving to reduce erosion of the soil. The Division has requested that the Permittee attempt to establish biologic soil crusts on the surface of the topsoil stockpile. If successful, this source of biologic soil crusts could be utilized to inoculate the reclaimed site.

Amendments will replace lost soil nutrients based upon testing of the topsoil stockpile prior to redistribution. The Division is not clear on the number of samples to be taken and the parameters to be analyzed during analysis of the topsoil stockpile before its use during reclamation. Appendix 5-8 indicates that a 16-16-8 fertilizer will be reapplied to the surface. In past reclamation, the Division has noted that the application of nitrogen was a detriment to the encouragement of native species. The Division recommends that the fertilizer application noted in Appendix 5-8 be based upon the results of the topsoil analysis at the time of reclamation.

Findings:

The information provided in the application is adequate for the purposes of the Regulations with the following exception. Prior to approval and in accordance with:

R645-301-251, The PAP should reference Plate 2-3 Topsoil salvage and Replacement, to illustrate and clarify the discussion found in Section 242.100.

R645-301-243, The PAP should outline the number of samples to be taken and the parameters to be analyzed during analysis of the topsoil stockpile before its use during reclamation and note in Appendix 5.8 that fertilizer choice and application will be based upon this testing.

R645-301-242.120, The PAP should eliminate from the equipment list any equipment that would create excessive compaction of the reclaimed surface. i.e. road grader.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

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

Minimum Regulatory Requirements:

Reclamation

A road not to be retained under an approved postmining land use shall be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. This reclamation shall include: closing the road to traffic; removing all bridges and culverts unless approved as part of the postmining land use; removing or otherwise disposing of road-surfacing materials that are incompatible with the postmining land use and revegetation requirements; reshaping cut and fill slopes as necessary to be compatible with the postmining land use and to complement the natural drainage pattern of the surrounding terrain; protecting the natural drainage patterns by installing dikes or cross drains as necessary to control surface runoff and erosion; and, scarifying or ripping the roadbed, replacing topsoil or substitute material and revegetating disturbed surfaces.

Retention

A road to be retained for an approved postmining land use shall be classified as a primary road and designed constructed and maintained in accordance with the requirements for primary roads and in consideration of the approved postmining land use.

Analysis:

Reclamation

The Permittee committed to reclaim all roads including removal of culverts in the disturbed area. The road surfaces (road base gravel) will be removed and buried on site and covered with a minimum of two feet of material. If, in the future, the Permittee proposes to bury asphalt on site, the Division will require that the Permittee obtain the appropriate documentation from DEQ.

Retention

The Permittee states in section 642.600 of the PAP that there will be no roads left in the disturbed area after reclamation. However, a small portion of the county road (in the vicinity of the sediment pond culvert) will fall within the disturbed area boundaries. To avoid confusion the Permittee must state that the county road will be left after final reclamation and why the road will be compatible with the postmining land use.

Findings:

Information provided in the PAP is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-121.200, The Permittee must state that the county road that is located within the disturbed area will be left after reclamation.

R645-301-542.600, The Permittee must state why the county road will be compatible with the postmining land use.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

Hydrologic reclamation plan

The application shall include a plan, with maps and descriptions, indicating how the relevant regulatory requirements will be met. The plan shall be specific to the local hydrologic conditions. It shall contain the steps to be taken during mining and reclamation through bond release to minimize disturbance to the hydrologic balance within the permit and adjacent areas; to prevent material damage outside the permit area; and to meet applicable Federal and State water quality laws and regulations. The plan shall include the measures to be taken to: avoid acid or toxic drainage; prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow; provide water treatment facilities when needed; and

control drainage. The plan shall specifically address any potential adverse hydrologic consequences identified in the PHC determination and shall include preventive and remedial measures.

Each application shall contain descriptions, including maps and cross sections, of stream channel diversions and other diversions to be constructed within the proposed permit area to achieve compliance with the performance standards for those structures.

Postmining rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities

Before abandoning a permit area or seeking bond release, the operator shall ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments, and treatment facilities meet the requirements of this Chapter for permanent structures, have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator shall renovate such structures if necessary to meet the requirements of this Chapter and to conform to the approved reclamation plan.

Analysis:

General

The Permittee has submitted reclamation plans for the sediment pond in Appendix 7-4. Plates 5-7A-1 and 5-7a-2 show little reclamation work in the stream channel. The Division requests further details and will require pre-disturbance, operational and reclamation profiles and cross sections of the stream channel both upstream and downstream of the sediment pond, using an appropriate scale to show reclamation design.

Grading and shaping of the site should not direct all sheet flow towards established drainages, but should create swales in an attempt to retain sheet flow on site for vegetation establishment.

Ground-water monitoring

Ground-water monitoring will continue through mine operation and reclamation until bond release (Section 731.214). The same ground-water monitoring plan will be used during mine operation and reclamation. Parameters are listed in Table 7-5.

Surface-Water Monitoring

Surface-water monitoring will continue through mine operation and reclamation until bond release (Section 731.224). Locations, parameters, and sampling frequency (other than UPDES discharge points) may be modified by the Division or by the Permittee with the approval of the Division. Parameters are listed in Table 7-4.

Acid- and Toxic-Forming Materials

To ensure surface and ground waters will not be polluted by acid or toxic materials, the slope-rock material (underground development waste) will be examined and tested as necessary to determine acid- and toxic-forming potential (Section 536 of the plan). In Appendix 5-7, the Permittee commits to take a sample of coal processing waste for every 6,000 tons of waste

disposed of in the refuse pile. These samples will be analyzed according to the parameters listed in Table 2 of Appendix 5-7. The Division requires that the slope-rock material be disposed of in a refuse pile. At a minimum, the material in the refuse pile must be covered with 4 feet of non-acid and non-toxic forming material. (See Chapters 2, 5, and 7, and Appendix 5-7 for details.)

The Division does not expect an acid mine drainage problem to occur at the Lila Canyon Extension because refuse will be disposed of on high ground, and the refuse will be mounded and buried below four feet of growth medium. With low precipitation and four feet of soil cover, there will be limited contact of water with the refuse.

For additional discussion of –acid and toxic-forming materials refer to these other sections of the TA: Operation Plan Spoil & Waste Materials/Refuse Piles and Operation Plan Hydrology Acid Toxic Forming Materials.

Transfer of Wells

There are three piezometers and the Horse Canyon Well in or adjacent to the permit area (722.400). There is no plan to transfer any of them to any other party (731.400).

Discharges into an Underground Mine

The Permittee has not proposed any discharges into an underground mine.

Gravity Discharges

Section 731.520 explains why gravity discharges from the mine are not expected, before or after mine closure. The coal seam to be mined dips away from the portal site at approximately 12 percent. If water is encountered in the mining, it is expected to be at a static level far below the exposed outcrop or rock slopes. It is not expected that water levels will ever reach the intersection of the tunnel and coal seam, so gravity discharge from the surface entries is also not expected.

Water Quality Standards and Effluent Limitations

Water monitoring, both surface and ground water, will continue until bond release. Water monitoring data will be submitted every three months for each monitoring location. Should analysis of any sample indicate non-compliance with permit conditions, the Permittee will notify the Division and take immediate steps to correct the problem, and, if necessary, provide notice to anyone whose health or safety is in imminent danger due to non-compliance.

Sedimentation Ponds

The Lila Canyon sedimentation pond is considered temporary because it will be removed

during final reclamation. The sedimentation pond will be used to control runoff until revegetation has been established, but not any sooner than two years after the last augmented seeding. When the sediment pond is no longer needed the area will be regraded and reseeded according to the reclamation plan. Plate 7-7 provides reclamation contours and drainage plans

Discharge Structures

The sedimentation pond has a discharge structure, which directs water into the south fork of the Coleman Wash. That discharge structure will be removed when the sediment pond is reclaimed. Underneath the sediment pond is a 60-inch culvert that directs water from the undisturbed drainages into the south fork of Coleman Wash. That culvert will be removed when the pond is reclaimed.

Impoundments

There are no permanent impoundments associated with the Lila Canyon Extension. All impoundments in the Lila Canyon Extension are temporary and will be reclaimed before Phase II bond release.

Findings:

Information provided in the application is not considered adequate to meet the minimum Reclamation Hydrology requirements of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R641-301-761 The Permittee must submit pre-disturbance, operational and reclamation profiles and cross sections of the stream channel both upstream and downstream of the sediment pond, using an appropriate scale to show reclamation design.

REVEGETATION

Regulatory Reference: 30 CFR 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.

Minimum Regulatory Requirements:

Revegetation: General requirements

The permittee shall establish on regraded areas and on all other disturbed areas except water areas and surface areas of roads that are approved as part of the postmining land use, a vegetative cover that is in accordance with the approved permit and reclamation plan and that is: diverse, effective, and permanent; comprised of species native to the area, or of introduced species where desirable and necessary to achieve the approved postmining land use and approved by the Division; at least equal in extent of cover to the natural vegetation of the area; and, capable of stabilizing the soil surface from erosion.

The reestablished plant species shall: be compatible with the approved postmining land use; have the same seasonal characteristics of growth as the original vegetation; be capable of self-regeneration and plant succession; be compatible with the plant and animal species of the area; and, meet the requirements of applicable State and Federal seed, poisonous and noxious

plant, and introduced species laws or regulations.

The Division may grant exception to these requirements when the species are necessary to achieve a quick-growing, temporary, stabilizing cover, and measures to establish permanent vegetation are included in the approved permit and reclamation plan.

When the Division approves a cropland postmining land use, the Division may grant exceptions to the requirements related to the original and native species of the area. Areas identified as prime farmlands must also meet those specific requirements as specified under that section.

Revegetation: Timing

Disturbed areas shall be planted during the first normal period for favorable planting conditions after replacement of the plant-growth medium. The normal period for favorable planting is that planting time generally accepted locally for the type of plant materials selected.

Revegetation: Mulching and other soil stabilizing practices

Suitable mulch and other soil stabilizing practices shall be used on all areas that have been regraded and covered by topsoil or topsoil substitutes. The Division may waive this requirement if seasonal, soil, or slope factors result in a condition where mulch and other soil stabilizing practices are not necessary to control erosion and to promptly establish an effective vegetative cover.

Revegetation: Standards for success

Success of revegetation shall be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the cover occurring in natural vegetation of the area, and the general requirements for Revegetation. Standards for success and statistically valid sampling techniques for measuring success shall be selected by the Division and included in an approved regulatory program.

Standards for success shall include criteria representative of unmined lands in the area being reclaimed to evaluate the appropriate vegetation parameters of ground cover, production, or stocking. Ground cover, production, or stocking shall be considered equal to the approved success standard when it is not less than 90 percent of the success standard. The sampling techniques for measuring success shall use a 90-percent statistical confidence interval (i.e., a one-sided test with a 0.10 alpha error).

Standards for success shall be applied in accordance with the approved postmining land use and, at a minimum, the following conditions:

1.) For areas developed for use as grazing land or pasture land, the ground cover and production of living plants on the revegetated area shall be at least equal to that of a reference area or such other success standards approved by the Division.
2.) For areas developed for use as cropland, crop production on the revegetated area shall be at least equal to that of a reference area or such other success standards approved by the Division.
3.) For areas to be developed for fish and wildlife habitat, recreation, shelter belts, or forest products, success of vegetation shall be determined on the basis of tree and shrub stocking and vegetative ground cover. Such parameters are described as follows: minimum stocking and planting arrangements shall be specified by the Division on the basis of local and regional conditions and after consultation with and approval by the State agencies responsible for the administration of forestry and wildlife programs. Consultation and approval may occur on either a programwide or a permit-specific basis; trees and shrubs that will be used in determining the success of stocking and the adequacy of the plant arrangement shall have utility for the approved postmining land use. Trees and shrubs counted in determining such success shall be healthy and have been in place for not less than two growing seasons. At the time of bond release, at least 80 percent of the trees and shrubs used to determine such success shall have been in place for 60 percent of the applicable minimum period of responsibility; and, vegetative ground cover shall not be less than that required to achieve the approved postmining land use.

For areas to be developed for industrial, commercial, or residential use less than 2 years after regrading is completed, the vegetative ground cover shall not be less than that required to control erosion.

For areas previously disturbed by mining that were not reclaimed to the requirements of the performance standards and that are remined or otherwise redisturbed by surface coal mining operations, as a minimum, the vegetative ground cover shall be not less than the ground cover existing before redisturbance and shall be adequate to control erosion.

The period of extended responsibility for successful revegetation shall begin after the last year of augmented seeding,

fertilizing, irrigation, or other work, excluding husbandry practices that are approved by the Division.

In areas of more than 26.0 inches of annual average precipitation, the period of responsibility shall continue for a period of not less than five full years. Vegetation parameters identified for grazing land or pasture land and cropland shall equal or exceed the approved success standard during the growing seasons of any two years of the responsibility period, except the first year. Areas approved for the other uses shall equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

In areas of 26.0 inches or less average annual precipitation, the period of responsibility shall continue for a period of not less than 10 full years. Vegetation parameters shall equal or exceed the approved success standard for at least the last 2 consecutive years of the responsibility period.

The Division may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation, provided it obtains prior approval from the Director as a State Program Amendment that the practices are normal husbandry practices, without extending the period of responsibility for revegetation success and bond liability, if such practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success. Approved practices shall be normal husbandry practices within the region for unmined lands having land uses similar to the approved postmining land use of the disturbed area, including such practices as disease, pest, and vermin control; and any pruning, reseeding, and transplanting specifically necessitated by such actions.

Analysis:

General Requirements

The following general clarity corrections are required:

- Page 25 of the PAP repeats several paragraphs on page 22. Provide a clear and concise description of the proposed work.
- "Contemperance" seed mixture (page 29) and "contemperance" (contemporaneous?) revegetation (page 30) must be clarified.
- The entire section 356 is confusing and contradictory compared to other statements in section 341.250. The success standards to be used as bond release standards are unclear.

It is vital for plants to have adequate soil rooting depth. Studies of plant phenology have clearly shown plants in arid areas use soil water from increasing depths as the growing season continues, and if there is inadequate rooting depth, production and vegetative cover will decrease.

Any soils not salvaged and protected are subject to contamination from mine operations, compaction, and mixing with unsuitable materials. Some of the deeper subsoils, below the roots, have very high (>65%) rock contents, and some are derived from marine shales that could severely limit vegetation establishment and growth. If these materials were in the rooting zone, it would be difficult or impossible to achieve revegetation success.

Following topsoil redistribution, the soil will be tilled until large clods on the surface are diminishing. Tilling the soil to reduce the number and size of clods has not been necessary at other Utah mines because clods are broken up as the soil is redistributed. Reference to disking must be removed because disking could be detrimental to the soil surface.

Surface preparation will include gouging on the contour (Section 341.220) to minimize the potential for erosion and to enhance vegetation establishment. Because of the limited precipitation, the Division considers surface roughening to be essential at this site. In conjunction with roughening, the track hoe can cast any vegetation, dead trees, and large rocks back onto the reclaimed surface (Appendix 5-8). This debris provides solar protection but also increases available moisture in small areas and increases topographic and vegetation diversity.

The seed mixture for final reclamation is shown in Table 3.4/3.5. It consists of 22 species, 19 of which are native to the area. The introduced species are yellow sweetclover, alfalfa, and prostrate kochia, and the application discusses the reasons for using these species. Section 353.100 describes yellow sweetclover as a nurse crop. The uses of nurse crops are not known to be beneficial in precipitation zone of less than 14 to 16 inches and especially a 9 inch (section 357.220) precipitation zone such as Lila Canyon. This proposal must be changed unless otherwise demonstrated to work, and yellow sweetclover must be removed from the seed mixture. Likewise, alfalfa and forage kochia are non-native species and must be replaced with species native to the area. The BLM signed the Federal Native Plant Conservation Committee Memorandum of Understanding that recognizes the benefits of native plants and promotes the reestablishment of native plants. Thus, the landowner would likely be in agreement with such changes.

The seed mixture does not replace the diversity found on site. The seed mixture must be modified not only to remove the introduced species but also to increase diversity. Some suggestions are: to replace green rabbitbrush with Mormon tea; replace yellow sweetclover and alfalfa with white evening primrose; and add thickleaf penstemon and sulfer flower buckwheat.

The seeding rate shown in Table 3.4/3.5 is about 125 seeds per square foot. This is higher than the rate recommended by the *Interagency Forage and Conservation Planting Guide for Utah* and *The Practical Guide to Reclamation in Utah* and should be reduced when developing the adjusted seed mixture.

Bareroot or containerized seedlings will be planted at a rate of approximately 200 per acre (Appendix 5-8). The BLM and the DWR will determine the ratio and species. The application gives adequate details of when and how seedlings will be planted. Using transplants in a 9 inch precipitation zone is desirable and necessary to achieve the success standards required. The application must remove the comment concerning species and ratios to be determined by the BLM and DWR. The species and ratios must be provided in Chapter 3 of the PAP.

Section 341.220 says seed will be broadcast with a hydroseeder. Fertilizer is to be broadcast, but the application does not give a specific application method. Fertilizer should not be included with seed during hydroseeding operations

SUWA commented that the Permittee should not use lethal means of control for weeds and wildlife. There will be no irrigation, and no pest or disease control measures are planned. The Division does not anticipate irrigation will be necessary as long as water-harvesting methods are used. There are no serious pest control problems in the area of which the Division is aware, so no control measures will be necessary. The only chemical use at the site after reclamation could be for the control of state listed noxious weeds.

Section 357.301 says the Permittee would like to reserve the right to apply for augmentation of reclaimed areas, thus extending the bond liability period on a site specific case scenario. This statement is acceptable but unnecessary. The regulations in R645-301-357 are designed to allow a limited amount of reseeding and other work for specific purposes without lengthening the extended liability period.

Timing

Table 3-3 in Chapter 3 is a general reclamation timetable. According to this timetable, seeding and mulching will begin about October 1, depending on the weather. Seedlings will be planted about November 1. Except as discussed below, these are the normal times for planting, and the schedule is acceptable.

Blue grama and galleta are two of the dominant grasses in the area proposed to be disturbed, and they are both warm season grasses. Other mines in Utah have found it difficult to establish these species on reclaimed sites, and this may be because they are often seeded in the fall. Mines in New Mexico and Arizona usually seed these species in the summer to take advantage of late summer rains, but, to the Division's knowledge, no Utah mines have attempted to establish these species by planting them in the summer.

The Permittee has committed to establish demonstration plots to test whether summer seeding will increase establishment of the warm season species. With this commitment, the Division is willing to accept the plan to seed in the fall.

Mulching and Other Soil Stabilizing Practices

The site will be mulched with 2000 pounds per acre of wood fiber mulch with 100 pounds per acre of a tackifier. Appendix 5-8 says 500 pounds per acre of wood fiber mulch and 100 pounds per acre of tackifier will be applied with the seed followed by application of an additional 1500 to 2000 pounds per acre of mulch and 100 pounds of tackifier. While Appendix 5-8 presents detail not included in Chapter 3, the Division considers the plans to be consistent.

Prior to disturbance, the area is currently stabilized, not only with vascular vegetation but also with biological soil crusts referred to as cryptogamic soil crusts. The use of mulch is only a temporary soil stabilizer. Reestablishing biological soil crusts is needed for long term stabilization and plant community restoration. The Division recognizes the recovery rates for

biological soil crusts are slow and will not occur completely within the period of extended liability; however, the Permittee can accelerate that recovery through best management practices (BMP) known today. Some of the BMP we do know are to salvage the crustal organism as a separate layer and respread on the surface of the topsoil pile to allow photosynthesis. Biological soil crust organisms require moisture and prefer cool temperatures for growth. Other details are provided in the Soil Resources section of this TA. The PAP must describe practices used to reestablish biological soil crusts.

Standards for Success

This section cannot be addressed until confusing and contradictory statements in the PAP, as referenced above, are resolved. The disturbed area and reference area sampled must be addressed, as described in the Vegetation Resources section of this TA.

Findings:

Information provided in the application is not considered adequate to meet the minimum Revegetation requirements of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-120, (1) Page 25 of the PAP repeats several paragraphs on page 22, the plan must be revised to be clear and concise. (2) "Contemperance" seed mixture (page 29) and "contemperance" (contemporaneous?) revegetation (page 30) must be described or clarified. (3) The entire section 356 is confusing and contradictory compared to other statements in section 341.250. The PAP must be modified to make the revegetation success standards clear and concise. (4) The process requires that DOGM must consult with DWR concerning shrub species and ratios to be transplanted. The statement concerning transplanted species and ratios are to be determined by the BLM and DWR is confusing to the process and must be modified. The species and planting rates must be provided.

R645-301-341, All references to disking as a seedbed preparation method must be removed from the PAP.

R645-301-353.120, The final reclamation seed mixture must be modified to replace the diversity found on site and remove the introduced species.

R645-301-353.140, The PAP must describe practices used to reestablish biological soil crusts.

R645-301-356, The PAP must describe success standards that will be used to judge the success of the reclamation. This requirement can only be met once all the resource data is complete.

STABILIZATION OF SURFACE AREAS

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

Minimum Regulatory Requirements:

All exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion. Rills and gullies which form in areas that have been regraded and topsoiled and which either disrupt the approved postmining land use or the reestablishment of the vegetative cover, or, cause or contribute to a violation of water quality standards for receiving streams, shall be filled, regraded, or otherwise stabilized; topsoil shall be replaced; and the areas shall be reseeded or replanted.

Analysis:

For this site, the Order 1 Soil Survey identifies microbial crusts on the surface of the soil. Microbial crusts stabilize the soil through protection of the soil from water and wind erosion.

The plan recognizes the need to re-introduce microbial life in Section 241, but does not specify a method. The best technology for re-introducing microbial life should be researched. An attempt to reestablish biologic soil crusts should be made on the reclaimed soil surface. The internet site www.soilcrust.org provides excellent references. Introduction of biologic soil crusts may be as simple as sprinkling the crushed organisms over the surface and irrigating as described by Jayne Belknap in the publication, "Cryptobiotic Soil Crusts: Basis for Arid Land Restoration (Utah)," Restoration and Management Notes 12:1 Summer 1994. The Division recommended earlier in this technical review (Operations Plan Topsoil Subsoil) that the growth of biologic soil crusts be encouraged on the surface layer of topsoil pile so as to be a source of inoculum during reclamation.

Appendix 5-8 Reclamation and Enhancement Plan describes the means of soil stabilization including: gouging of the site to encourage a roughened appearance as shown in Figure 1; and placement of large rocks and boulders and vegetation; application of 500 lbs/acre wood fiber mulch and 100 lbs/acre of tackifier with seeding and then a second over spray of 1500 – 2000 lbs/acre of wood fiber mulch with 100lb/ac of tackifier and 200 lb/ac of 16-16-8fertilizer. Appendix 5-8 further describes the use of wood fiber mulch over topsoil.

In accordance with R645-301-244.300, rills and gullies that contribute to a violation of water quality or that disrupt the post-mining land use will be filled, regraded or stabilized.

Findings:

The information in the PAP does not meet the requirements of the Regulations with regard to stabilization of the soil surface and control of erosion and air pollution attendant to erosion. Prior to approval and in accordance with:

R645-301-244.200, The PAP should describe the inoculation of the site with biologic soil crusts.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

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

Minimum Regulatory Requirements:

Each application shall contain maps, plans, and cross sections which show the reclamation activities to be conducted, the lands to be affected throughout the operation, and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown and described as an existing structure.

The permit application must include as part of the reclamation plan information, the following maps, plans and cross sections:

Affected area boundary maps

The boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for reclamation design purposes shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Bonded area map

The permittee shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

Reclamation backfilling and grading maps

Contour maps and cross sections to adequately show detail and design for backfilling and grading operations during reclamation. Where possible, cross sections shall include profiles of the pre-mining, operations, and post-reclamation topography. Contour maps shall be at a suitable scale and contour interval so as to adequately detail the final surface configuration. When used in the formulation of mass balance calculations, cross sections shall be at adequate scale and intervals to support the mass balance calculations. Mass balance calculations derived from contour information must demonstrate that map scale and contour accuracy are adequate to support the methods used in such earthwork calculations. Detailed cross sections shall be provided when required to accurately depict reclamation designs which include, but are not limited to: terracing and benching, retained roads, highwall remnants, slopes requiring geotechnical analysis, and embankments of permanent impoundments.

Reclamation facilities maps

Location of each facility that will remain on the proposed permit area as a permanent feature, after the completion of underground mining activities. Location and final disposition of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, disposal areas for underground development waste and excess spoil, and water treatment and air pollution control facilities within the proposed permit area to be used in conjunction with phased reclamation activities or to remain as part of reclamation.

Final surface configuration maps

Sufficient slope measurements to adequately delineate the final surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall

extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the post-reclamation configuration of the land; and, slope measurements shall take into account variations in slope, to provide accurate representation of the range of slopes and reflect geomorphic differences of the area disturbed through reclamation activities.

Reclamation monitoring and sampling location maps

Elevations and locations of test borings and core samplings. Elevations and locations of monitoring stations used to gather data on water quality and quantity, subsidence, fish and wildlife, and air quality, if required, to demonstrate reclamation success.

Reclamation surface and subsurface manmade features maps

The location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current or proposed use of the buildings at the time of final reclamation. The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, fences, and agricultural drainage tile fields. Each public road located in or within 100 feet of the proposed permit area and all roads within the permit area which are to be left as part of the post-mining land use. Buildings, utility corridors, and facilities to be used in conjunction with reclamation or to remain for final reclamation.

Reclamation treatments maps

The location and boundaries of any proposed areas for reclamation treatments including but not limited to: location, extent and depth of materials used for resoiling; location, extent and types of treatments for revegetation including soil preparation, soil amendments, mulching, seeding, variations in seed mixtures, and other revegetation treatments. Each water diversion, collection, conveyance, treatment, storage and discharge facility to be used during reclamation. Each facility to be used to protect and enhance fish and wildlife related environmental values. other treatments or applications which are specifically designed or required as part of phased or final reclamation activity.

Certification Requirements.

Cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Analysis:

Affected Area Boundary Maps

Plate 1-1, Permit Area Map, shows the affected areas for the Horse Canyon Mine. The areas are divided into Part A, the Horse Canyon Project and Part B, the Lila Canyon Extension.

Bonded Area Map

The Division bonds for activities that will occur within the disturbed area boundaries. The disturbed area boundaries are shown on several maps including Plate 5-2, Surface Area.

Reclamation Backfilling and Grading Maps

Several maps and cross-sections will be used during backfilling and grading. The general cross-sections are on Plate 5-7A-1 through Plate 5-7A-4 and Plate 5-7B-1 through Plate 5-7B-3. Cross-sections on Figure 1 and Figure 2 in Appendix 5-7 show the final backfilling and grading plan for the refuse pile. Plate 5-6 shows the postmining contours. Those maps are adequate to insure proper backfilling and grading.

New reclamation maps are needed with the changes identified in the operation plan concerning removal of the undisturbed drainage culverts and adjusting the sedimentation pond.

Final Surface Configuration Maps

Plate 5-6 shows the postmining contours for the disturbed area.

Reclamation Surface and Subsurface Manmade Features Maps

The Permittee states that no manmade features in the reclaimed area remain, other than the 60-inch culvert section that will under lie the county road in the south fork of Coleman Wash.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-542 The Permittee will submit reclamation maps portraying reclamation at Phase I to illustrate the reclaimed surface area configuration after all mining structures are removed, and at Phase II to illustrate the reclaimed surface area configuration after all hydrologic structures are removed.

BONDING AND INSURANCE REQUIREMENTS

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

Minimum Regulatory Requirements:

General

After a permit application has been approved, but before a permit is issued, the applicant shall file with the Division, on a

form prescribed and furnished by the Division, a bond or bonds for performance made payable to the Division and conditioned upon the faithful performance of all the requirements of the Act, the regulatory program, the permit, and the reclamation plan.

The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments.

The operator shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

An operator shall not disturb any surface areas, succeeding increments, or extend any underground shafts, tunnels, or operations prior to acceptance by the Division of the required performance bond.

The applicant shall file, with the approval of the Division, a bond or bonds under one of the following schemes to cover the bond amounts for the permit area as determined: a performance bond or bonds for the entire permit area; a cumulative bond schedule and the performance bond required for full reclamation of the initial area to be disturbed; or, an incremental-bond schedule and the performance bond required for the first increment in the schedule.

Form of bond

The Division shall prescribe the form of the performance bond. The Division may allow for: a surety bond; a collateral bond; a self-bond; or a combination of any of these bonding methods.

Performance bond liability shall be for the duration of the surface coal mining and reclamation operation and for a period which is coincident with the operator's period of extended responsibility for successful revegetation or until achievement of the reclamation requirements of the Act, regulatory programs, and permit, whichever is later.

With the approval of the Division, a bond may be posted and approved to guarantee specific phases of reclamation within the permit area provided the sum of phase bonds posted equals or exceeds the total amount required. The scope of work to be guaranteed and the liability assumed under each phase bond shall be specified in detail.

Isolated and clearly defined portions of the permit area requiring extended liability may be separated from the original area and bonded separately with the approval of the Division. Such areas shall be limited in extent and not constitute a scattered, intermittent, or checkerboard pattern of failure. Access to the separated areas for remedial work may be included in the area under extended liability if deemed necessary by the Division.

The bond liability of the permittee shall include only those actions which he or she is obligated to take under the permit, including completion of the reclamation plan, so that the land will be capable of supporting the postmining land use approved. Implementation of an alternative postmining land use which is beyond the control of the permittee, need not be covered by the bond. Bond liability for prime farmland shall be specific to include productivity requirements.

Determination of bond amount

The amount of the bond required for each bonded area shall: be determined by the Division; depend upon the requirements of the approved permit and reclamation plan; reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology, hydrology, and revegetation potential; and, be based on, but not limited to, the estimated cost submitted by the permit applicant.

The amount of the bond shall be sufficient to assure the completion of the reclamation plan if the work has to be performed by the Division in the event of forfeiture, and in no case shall the total bond initially posted for the entire area under 1 permit be less than $10,000.

An operator's financial responsibility for repairing material damage resulting from subsidence may be satisfied by the liability insurance policy required in this section.

Terms and conditions for liability insurance

The Division shall require the applicant to submit as part of its permit application a certificate issued by an insurance company authorized to do business in the United States certifying that the applicant has a public liability insurance policy in force for the surface coal mining and reclamation operations for which the permit is sought. Such policy shall provide for personal injury and property damage protection in an amount adequate to compensate any persons injured or property damaged as a result of the surface coal mining and reclamation operations, including the use of explosives, and who are entitled to compensation under the applicable provisions of State law. Minimum insurance coverage for bodily injury and property damage shall be $300,000 for each

occurrence and $500,000 aggregate.

The policy shall be maintained in full force during the life of the permit or any renewal thereof and the liability period necessary to complete all reclamation operations under this Chapter.

The policy shall include a rider requiring that the insurer notify the Division whenever substantive changes are made in the policy including any termination or failure to renew.

The Division may accept from the applicant, in lieu of a certificate for a public liability insurance policy, satisfactory evidence from the applicant that it satisfies applicable State self-insurance requirements approved as part of the regulatory program and the requirements of this section.

Analysis:

Form of Bond (Reclamation Agreement)

The Permittee did not submit a rider to the bond as part of the application. The Division allows the Permittee to submit a bond separately after the Division determined the bond amount, which can be done only after the TA has been completed. Before the Division issues a permit the Permittee must post a bond; see the requirements of R645-301-820. Upon receipt of the bond, the Division then makes a finding about whether or not the bond is in the proper form; see R645-301-860 for the requirements for the proper form of the bond. The Division cannot issue the permit until an adequate bond has been posted.

Determination of Bond Amount

The Permittee currently has a reclamation bond for $2,809,000 in 2003 dollars. The bond for the Horse Canyon project is $1,253,00 in 2003 dollars. The Permittee has posted $1,556,000 for the Lila Canyon Extension additional area.

The Division calculated the bond based on the structures listed in the PAP. Since the Permittee did not list all of the structures in the bond calculations the Division cannot complete the bond calculations at this time.

The Permittee needs to include all costs associated with reclamation in the bond calculations. Items missing from the revegetation cost estimate include, but are not limited to, seedlings and fencing.

The Division has received comments from SUWA about calculating reclamation costs for the repair of subsidence related damage. The reclamation costs would be used in determining the bond amount. R645-301-830.130 requires that the reclamation cost estimate take into account the probable difficulty of reclamation, considering such factors as topography, geology, hydrology and revegetation potential.

The Division bases the reclamation cost estimate on the Office of Surface Mining's Reclamation Cost Handbook. The handbook does not mention estimating subsidence repair

costs. The reason are 1) the Permittee is assumed to be in compliance with all regulations including repair of subsidence damage at the time of bond forfeiture and 2) the damage amount is unknown at the time of bond calculation. Because subsidence is a expense that cannot be calculated before hand the Division assumes that such costs will be covered by the contingency factor.

The one exception to the "no bonding for subsidence" rule is for subsidence damage to State appropriated water rights that are damaged by subsidence but not repaired within 90 days. See R645-301-525.550. Since no damage has occurred, or is expected to occur, to State appropriated water rights the Division will not require the Permittee to include subsidence damage as a line item in the bond calculations.

The Division has received comments from SUWA about errors in the reclamation cost estimates. The Division has corrected those errors

The Division has received comments from SUWA about the use of outdated cost estimates and equipment handbooks. The Division calculated the reclamation cost using updated handbooks and cost reference manuals in 2001. Before the permit is issued, the Division will update the reclamation costs with the latest cost information.

Terms and Conditions for Liability Insurance

The Permittee is required to submit a certificate issued by an insurance company authorized to do business in Utah to demonstrate that the Permittee has a public liability policy in force for the coal mining and reclamation activities in the permit area. The policy will provide a minimum insurance coverage for bodily injury and property damage of $300,000 for each occurrence and $500,000 aggregate.

The Permittee has an ACCORD form in Appendix 8-2 and 8-3 from the Federal Insurance Company stating the policy limits. However, the policy expiration date is June 1, 2001. The information in the Division's insurance files shows that the policy was renewed and expired on June 1, 2002. The amounts of the policy are as follows:

- General aggregate limit $2,000,000
- Products/completed operations aggregate limit $1,000,000
- Advertising injury and personal limit $1,000,000
- Each occurrence $1,000,000
- Medical expense limit $10,000

The policy amounts are adequate to meet the minimum regulatory requirements.

The policy must be maintained in full force during the life of the permit or any renewal thereof, including the liability period necessary to complete all reclamation operations. The

policy will include a rider requiring that the insurer notify the Division whenever substantive changes are made in the policy including any termination of failure to renew. The ACCORD form, in Appendix 8-2 and Appendix 8-3, states that the issuing company will notify the Division at least 45 days before cancellation.

The Division has received some comments from SUWA about bonding/insurance for subsidence damage. The R645-301-890 rules only require insurance for bodily injury and property damage.

Before the Division issues an approval for the Lila Canyon Extension, the insurance policy will be analyzed to insure that it meets the minimum regulatory requirements.

R645-301-525.520 allows the Permittee to purchase premium-prepaid insurance policy to cover the cost of repairing or replacing subsidence caused damage to non-commercial buildings, dwellings, and related structures. Since no non-commercial buildings, dwellings, and related structures are located in the subsidence zone, the Permittee does not need to purchase subsidence related insurance.

Even if such structures were in the subsidence zone the Permittee is not required to purchase subsidence insurance but has the option to do so.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-830.140, The Permittee must list every proposed structure in the bond calculations, and all revegetation costs.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Minimum Regulatory Requirements:

The Division must provide an assessment of the probable cumulative hydrologic impacts (CHIA) of the proposed operation and all anticipated mining upon surface- and ground-water systems in the cumulative impact area. The CHIA shall be sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The Division may allow the applicant to submit data and analyses relevant to the CHIA with the permit application. An application for a permit revision shall be reviewed by the Division to determine whether a new or updated CHIA shall be required.

SUWA has raised concerns that the regional aquifer is not covered in the CHIA. The CHIA for this submittal has not been prepared yet. When sufficient information is supplied to describe the surface water quality, quantity, characterize the stream channels and identify the probable hydrologic consequences the Division hydrologists will draft a CHIA.

SUWA has raised concerns that there are insufficient data to prepare the CHIA. Data are available from federal, state, and a number of sources. The Permittee is not required to provide data unless none is available from other sources. The Division is not limited to information in the PAP in preparing the CHIA; however, it is anticipated that data in the PAP will undoubtedly be used along with other information in preparation of the CHIA.

SUWA has raised concerns that the discharge area for the regional aquifer is not identified. The potential for discharge from a regional aquifer will be considered in the CHIA.

The Division will provide an assessment of the probable cumulative hydrologic impacts (CHIA) of the proposed operation, and all anticipated mining, upon surface- and ground-water systems in the cumulative impact area. The CHIA will be sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The Division will use data and analyses from several sources, including those submitted by the Permittee in the Lila Canyon Extension PAP.