



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

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June 19, 2002

TO: Internal File

THRU: *BB* Priscilla Burton, Senior Soils Scientist, Team Co-Lead
DD Dana Dean, PE, Team Co-Lead

FROM: Susan M. White, Senior Reclamation Biologist *SMW*

RE: Lila Canyon Extension, Utah American Energy Inc., Horse Canyon Mine, C/007/013-PM02B, Internal File

SUMMARY:

The Division received an application to include the Lila Canyon Mine area into the Horse Canyon Mine permit on February 11, 2002. There are deficiencies and the application should not be approved until all deficiencies noted in this Technical Analysis have been addressed.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

REPORTING OF TECHNICAL DATA

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

Analysis:

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.

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Findings:

Information provided in the application is not considered adequate to meet the minimum Reporting of Technical Data requirement 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 South Lease vegetation study and the Mexican spotted owl surveys.

ENVIRONMENTAL RESOURCE INFORMATION

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

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

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

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.

VEGETATION RESOURCE INFORMATION

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

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 through 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)

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- 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", Rabbitbrush (*Chrysothamnus viscidiflorus*), and "Lichen". Interestingly, rabbitbrush (*Chrysothamnus viscidiflorus*), and "Lichen" were not encountered in the sampling of the

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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.

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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

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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.

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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

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			(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.

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- 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.

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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.

LAND-USE RESOURCE INFORMATION

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

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.

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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.

OPERATION PLAN

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

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, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$
Section 24, NE $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ NE $\frac{1}{4}$

Township 16 South, Range 14 East
Section 19, SE $\frac{1}{4}$ SW $\frac{1}{4}$, Lots 3 and 4
Section 30, SW $\frac{1}{4}$ NE $\frac{1}{4}$

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.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

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

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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 to 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.

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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.

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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 requirements (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.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

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.

RECLAMATION PLAN

POSTMINING LAND USES

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

Analysis:

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

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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 Sec. 817.97; R645-301-333, -301-342, -301-358.

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.

REVEGETATION

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

Analysis:

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

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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 thicketleaf penstemon and sulfur 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.

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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.

RECOMMENDATION:

Do not approve the application until all deficiencies have been addressed.