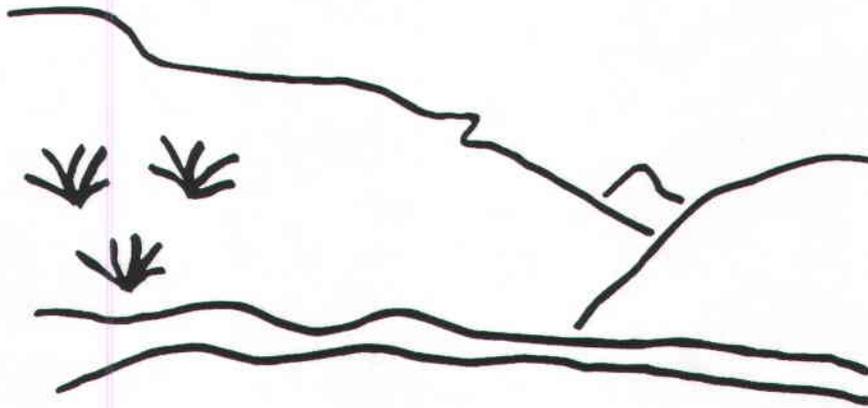


State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Des Bee Dove Mine
Upper Pad Reclamation
C/015/017-AM01A-2
Technical Analysis
March 6, 2002

File in:

- Confidential
- Shelf
- Expandable

Refer to Record No. 0004 Date 0306/2002
In C 0150017 2002 Designing
For additional information



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

Michael O. Leavitt
Governor

Kathleen Clarke
Executive Director

Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

801-538-5340

801-359-3940 (Fax)

801-538-7223 (TDD)

COPY

March 6, 2002

Chuck Semborski, Environmental Supervisor
Energy West Mining Company
P.O. Box 310
Huntington, Utah 84528

Re: Conditional Approval of Upper Pad Reclamation, PacifiCorp, Des Bee Dove Mine,
C/015/017-AM01A, Outgoing File

Dear Mr. Semborski:

The above-referenced amendment is conditionally approved upon receipt of three additional clean copies prepared for incorporation. Please submit these copies by March 29, 2002. Reclamation activities for the Upper Pad (Phase 1) may proceed at this time.

Once we receive these copies, final approval will be granted and a stamped incorporated copy of the approved plans will be returned to you for insertion into your copy of the Mining and Reclamation Plan. A copy of our Technical Analysis is enclosed.

If you have any questions, please call me at (801) 538-5268 or Susan at (801) 538-5258.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

sm

Enclosure:

cc: Price Field Office

O:\015017.DBD\FINAL\CON01A(A).DOC

File in: c:\0150017 2002 Outgoing
Refer to:
 Confidential
 Shelf
 Expandable
Date: 3/6/02 additional information

TABLE OF CONTENTS

INTRODUCTION.....	1
GENERAL CONTENTS.....	3
PERMIT APPLICATION FORMAT AND CONTENTS	3
MAPS AND PLANS	3
ENVIRONMENTAL RESOURCE INFORMATION	5
HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION	5
CLIMATOLOGICAL RESOURCE INFORMATION.....	6
VEGETATION RESOURCE INFORMATION	6
FISH AND WILDLIFE RESOURCE INFORMATION	7
SOILS RESOURCE INFORMATION.....	7
LAND-USE RESOURCE INFORMATION.....	10
GEOLOGIC RESOURCE INFORMATION	11
MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION	12
Affected Area Boundary Maps	14
OPERATION PLAN	15
AIR POLLUTION CONTROL PLAN.....	15
TOPSOIL AND SUBSOIL.....	15
Removal and Storage	17
VEGETATION.....	18
SPOIL AND WASTE MATERIALS	19
RECLAMATION PLAN.....	27
POSTMINING LAND USES.....	27
PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES...	28
APPROXIMATE ORIGINAL CONTOUR RESTORATION.....	29
BACKFILLING AND GRADING.....	32
MINE OPENINGS.....	36
TOPSOIL AND SUBSOIL.....	38
Redistribution.....	39
HYDROLOGIC INFORMATION	39
General.....	39
Acid- and Toxic-Forming Materials	40
Diversions	41
Siltation Structures.....	42
REVEGETATION.....	45
General Requirements.....	47
Timing.....	47
Mulching and Other Soil Stabilizing Practices	47
Standards for Success	48
STABILIZATION OF SURFACE AREAS	48
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS	49
Reclamation Backfilling and Grading Maps.....	51
Final Surface Configuration Maps.....	51
BONDING AND INSURANCE REQUIREMENTS.....	52
Determination of Bond Amount	53

TABLE OF CONTENTS

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT 55
RULES INDEX 57

INTRODUCTION

TECHNICAL ANALYSIS

INTRODUCTION

The mines in the Des-Bee-Dove area pre-date SMCRA, mine operations having been documented by the USGS in 1922. As the Beehive Mine and Little Dove Mines were developed, overburden was excavated and graded to make the mine pads and disturbed soils but neither were classified nor salvaged. Overburden was used to expand the pad area for the two mines and to divert a small drainage at the south end of the pad. In the 1970's, bin walls and large boulders were placed below the pad to stabilize it and protect the Deseret Mine below. A narrow road was developed off the East Mountain Cattle Access Trail to provide access to a substation and water tank.

Utah Power and Light purchased the mines in 1972. The mines were temporarily sealed in 1987 and went into temporary cessation at that time. In 1999 the portals were backfilled and - except for guardrails, a large drop-inlet structure, and several culverts - the surface facilities were removed.

The Phase 1 disturbed area is the Beehive and Little Dove pad and portal area, the tank - substation access road, and the road to the Deseret Mine pad. Reclamation of this Phase 1 area will involve removal of remaining structures, restoration to approximate original contour (AOC), revegetation of the recontoured surface, and reestablishment of four minor drainages - three at the mine pad and one near the water tank pad.

Protection of stockpiled topsoil was not specifically mentioned in this submittal. The Permittee will be held to the performance standard of protection afforded to topsoil stockpiles as described in the MRP for existing topsoil stockpiles at the sediment pond of the Des Bee Dove Mine site.

Page 2
C/015/017-AM01A-2
March 6, 2002

INTRODUCTION

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

Appendix XIV, Phase 1 Reclamation Plan, describes the reclamation of the Beehive and Little Dove Mines portal pad and access roads. Some of the information in Appendix XIV contradicts information in the Mining and Reclamation Plan (MRP). The Permittee states in a letter dated September 15, 2001 that the contradictions would be immediately amended after approval of Phase I. As a temporary measure, a statement is placed at the beginning of Appendix XIV and Part 4 and Volume 2 Part 4 of the approved MRP that in the event of contradiction between Appendix XIV and Part 4 of the MRP Appendix XIV will take precedence.

Findings:

The information provided in the application meets the requirements of the Permit Application Format and Contents section of the regulations.

MAPS AND PLANS

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

Analysis:

Drawing #: CS1813E, Surface Yard Area Pre/Post SMCRA Development Map shows aerial photographs from 1977, 1978, and 1999. The photographs are marked to show current disturbance and pre-SMCRA disturbance. Post-SMCRA disturbances are not marked. The only post-SMCRA disturbance is the parking lot extension at the bathhouse pad. It is difficult to compare one photograph to the next and determine disturbance since the photographs were not taken from the same location but they are sufficient to determine pre and post-SMCRA disturbances.

The photo dated 1999 does not show the permit disturbed area to include the entire area of disturbed area drainage until it passes through the UPDES discharge point. In a letter dated August 29, 2001 to the Permittee the Division allowed the Permittee to not permit this drainage. However, all drainage must be treated prior to leaving the permit area.

Findings:

The information provided in the application meets the minimum Maps and Plans requirements of the regulations.

ENVIRONMENTAL RESOURCE INFORMATION

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.

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 Des Bee Dove Mines operated from the early 1900's until the 1980's. The Beehive Mine was developed in the 1950's and the Little Dove Mine was developed in the mid-1970's. These two separate mines were developed in the Blind Canyon (upper seam) and each mine had three portals.

Section R645-301-411.140 states that historical structures will be retained to document the early development of coal mining in the area. R645-301-400 Figure 1 shows several rock walls used to support the old road and the old LDS tipple location. Mr. Semborski stated in a phone conversation on April 5, 2001 that all of these structures are located outside the disturbed area. These structures are not listed or eligible for listing on the National Register of Historic Places according to a study by Hauck and Weder in 1980. There is a possibility these structures are eligible for listing in 2001 but they are outside the disturbed area boundary and should not be effected by this action.

Findings:

The information provided in the application meets the minimum Historic and Archeological Resource Information requirements of the regulations.

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:

The average annual precipitation is 6 – 8 inches (page 2-153, Volume 1 of the approved MRP).

Findings:

The requirements of this section of the regulations are considered adequate.

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:

A Pinyon-juniper vegetative community surrounds the Little Dove and Beehive portals. Dominant species in this community are pinyon, juniper mountain mahogany, serviceberry, low rabbitbrush, shadescale and salina wildrye. Vegetative cover is 30 percent with pinyon and juniper providing most of the cover. Palmer penstemon and shadescale were the visual dominants on the outslope of the Little Dove and Beehive portal areas prior to disturbance for reclamation.

Findings:

The information provided meets the minimum Vegetation Resource Information requirements of this section.

ENVIRONMENTAL RESOURCE INFORMATION

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:

Appendix A of Section R645-301-300 is a map titled Des-Bee-Dove Mines Phase 1 Reclamation Raptor Location Map. The map shows Golden Eagle nest #952 and #937 are both within the half-mile buffer zone radius of the proposed work area.

Findings:

The information provided in the application meets the minimum Fish and Wildlife Resource Information requirements of the regulations.

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

ENVIRONMENTAL RESOURCE INFORMATION

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:

Field work to collect soils from the Phase I and Phase II (AM01D) reclamation areas was conducted by Mr. Dan Larsen, Soil Scientist, EIS Environmental & Engineering Consulting, 31 North Main Street, Helper, Utah 84526, during the first week of December 2001. Soils were selected for analysis by Energy West personnel and analyzed by InterMountain Laboratories in Sheridan, Wyoming. Field and Laboratory reports are located in Appendix C of Chapter 2.

Elevation is 7,800 feet on a south to southeast exposure and slopes of 1 ½ H:1V to 2H:1V. The plant community is Utah juniper and pinyon pine. Plants within this community include Salina wildrye, western wheatgrass, and Indian ricegrass.

Soils have been described in the MRP as either

- Typic Ustochrepts (50%) which are characterized by a 35 cm thick (13 inches) sandy loam surface layer with 25% coarse fragments. Underlying this layer is a stony loam layer 100 cm thick (39 inches) with up to 50% coarse fragments.

or

- Lithic Ustorthents (25%) which are characterized by rock within 50 cm or 19 inches.

Also present are small areas of Mollisols on the north and east facing slopes. In general, Mollisols are deep, well drained, with a well developed A horizon. See the General Soil Map of the Permit Area, Drawing #CE-10502-DS.

Soil and Refuse sample sites are shown Drawing CS1814D. The following samples have been taken of the soils outside of the disturbed area boundary and represent undisturbed soil quality: SS5A, SS7A, SS8A, SS10A collected in 1990 and SS1, SS3, SS10 collected in 2001. Laboratory Data Sheets for these sites are found in Appendix A. The 1990 soil samples were collected by Val Payne in April 1990 and analyzed by ACZ Laboratories in Steamboat Springs, CO. The 2001 samples were collected by Dennis Oakley and Chuck Semborski in March 1990 and analyzed by Inter-Mountain Laboratories in Sheridan, WY.

Sample depths were not reported for the 1990 samples and profile descriptions are not available. Two samples taken by Mr. Val Payne, SS6A and SS9A could not be located on Plate CS1814D and therefore were not included in the following discussion. Generally, the undisturbed soils have pH values between 7.3 and 7.6; Electrical Conductivities (EC) between 0.42 and 1.06 mmhos/cm; Sodium Adsorption Ratios (SAR) between 0.2 and 1.7; Nitrate Nitrogen between 1.1 to 3.5 ppm; Extractable Phosphorus between 1 and 2 ppm; Neutralization Potentials between 16 and 18 % CaCO₃ ; Texture of sandy loam or loam with the sand content varying from 49 to 54%; and Saturation percent of 30 to 39%. Soils in the location of SS10A

ENVIRONMENTAL RESOURCE INFORMATION

were found to have much less sand (23%) than the other sites with texture bordering on clay loam (27% clay and 50% silt). As expected, this site had the highest saturation percentage. Coarse fragments (greater than 2mm) in the soils were 35 to 40%.

In 2001, samples were taken of undisturbed soils to a depth of 18 inches and samples were analyzed from 0 – 6 inches, 6 – 12 inches and 12 – 18 inch depths. No field notes were taken and it is not known whether a lithic contact was encountered at eighteen inches. The undisturbed soil sample sites (SS1, SS3, and SS10) were generally in the same physio-chemical parameters described for the 1990 soils above. With the soils in the vicinity of SS10 again exhibiting higher clay contents and higher saturation percentage. Electrical Conductivity at site SS1 and SS3 were noticeably higher than 1990 sampling, values over 2.0 mmhos/cm were recorded. SAR values remained below 1.0 with some noticeable increase in SAR with depth (from 0.24 to 0.96 at SS1). Phosphorus levels at SS 1 and SS 10 were over 3 ppm in the top six inches, similar to earlier sampling. Phosphorus levels at SS 3 were 0.41 ppm in the top six inches, much less than other sites.

A soil survey of the Des Bee Dove mine site by Dr. A.R. Southard, Soil Scientist, Utah State University is referred to in this amendment. A portion of the Southard soil survey is found in Appendix B of Chapter 2, details of soils analyses as referred to in the Overview of the survey are missing however. In the introductory comments, Dr. Southard pointed out that the disturbed mine soils may be suitable for use as growth medium for selected plant species with the aide of terracing and irrigation. Dr. Southard cautioned the Permittee about “hot spots” or areas that have high SAR or acidity.

Drawing CS1814D shows locations Dr. Southard’s soil sampling. Sample sites 1107, and 1110 were collected from pre-SMCRA fill slopes in 1980 and 1983 (Table 1 of Section 200). The pre-SMCRA fill slope was sampled from 0 - 4, 4 - 12, and 12 - 24 inches in depth. The soils are sandy loam in texture with a pH of 8.0 to 8.3. The EC's and SAR were both less than 1.0. Except the subsoil in the wash (sample 1111, depth unknown) where the EC was 2.1 and the SAR was 1.0. Calculation of SAR on these samples is debatable since the sodium is reported in meq/L and the Ca + Mg is reported as a percentage.

Findings:

Information in the proposed amendment is adequate to meet the environmental soil resource reporting requirements of the Regulations.

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:

The statement in section R645-301-410 that all parties concurred with the proposed reclamation activities at an on-site meeting May 19, 2001 with the Forest Service, BLM, Water Rights, and DOGM is correct, but only to the extent the information was presented. At that time, the detail provided in Appendix XIV was not available. The Division expressed concern with the drainage reclamation, extent of highwall coverage, and lack of identified substitute topsoil.

The postmining land use for the mine site will be the same as the premining land use and that is wildlife and livestock grazing. The East Mountain allotment of the Ferron Ranger District is approximately 21,000 acres and supplies about 2500 animal unit months of grazing. Twice a year local ranchers use the mine access road to drive cattle to and from the East Mountain grazing area.

Findings

The information provided meets the minimum regulatory requirements of this section.

ENVIRONMENTAL RESOURCE INFORMATION

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
- (1) 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:

Volume 8 of the Des-Bee-Dove MRP covers the geology of these mines in detail, but a brief section (600-Geology) describing the geology of the immediate area is included in Appendix XIV.

The Beehive and Little Dove Mines were developed in the Blind Canyon Seam. Dip of this seam is approximately 2° to the west or west-northwest in the Des-Bee-Dove area. The Des-Bee-Dove Mines lie in an area with complex series of normal faults that strike roughly north-south. The Beehive Mine removed coal between the Stump Flat fault on the east and the Maple Gulch fault on the west, and the Little Dove Mine exploited the coal between the Maple Gulch and Deer Creek Canyon faults: the Deer Creek fault separates the Des -Bee-Dove Mines from the Deer Creek and Wilberg Mines.

Samples collected from mines operated by PacifiCorp in both East and Trail Mountains indicate very low pyritic sulfur and high neutralization potential, so acid-mine drainage will not be a problem: analysis results are tabulated in Appendix A of section 600-Geology of Appendix XIV. Furthermore, because of the dip of the beds, the orientation of the portals and entries, and the dryness of the mines (these mines were dry and water from an outside source was required for dust suppression), post-mining gravity discharge will not occur.

The Permittee states on page 7 of section 600 that there has been no exploration drilling within the area of the Des-Bee-Dove Phase I Reclamation.

Findings:

The geologic resource information in Volume 8 of the MRP and in Appendix XIV is considered adequate to meet the requirements of this section of the regulations.

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.

ENVIRONMENTAL RESOURCE INFORMATION

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 known 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.

ENVIRONMENTAL RESOURCE INFORMATION

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

Currently, the mine area disturbed drainage leaves the disturbed area and permit area below the Tipple Valley Fill and then re-enters the permit area and the disturbed area for treatment in the sediment pond. In a letter dated August 29, 2001 to the Permittee, the Division allowed the Permittee to not permit this drainage. However, all drainage must be treated prior to leaving the permit area.

Findings:

The information provided in the application meets the minimum Maps, Plans, and Cross Sections of Resource Information requirements of the regulations.

OPERATION PLAN

OPERATION PLAN

AIR POLLUTION CONTROL PLAN

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

Analysis:

State air quality regulations at R307-205-5 Mining Activities requires mining activities to control fugitive dust by watering, paving, restricting speed, restricting travel, or by other methods. The applicant states that they will meet the requirements of the Clean Air Act. The permit states that dust will be controlled by reducing the rate of vehicle travel to 10 mph and watering except during freezing conditions.

Findings:

The information provided in the application meets the minimum Air Pollution Control Plan requirements of the regulations.

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

OPERATION PLAN

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:

Topsoil Substitutes and Supplements

Recent sampling of the disturbed area included sites SS7, SS7A, SS7B, SS8, and SS9. These samples were bagged at six inch intervals to a depth of 18 inches by Dennis Oakley and Chuck Semborski and analyzed by Intermountain Laboratories of Sheridan WY in March through May of 2001 (Table 3 and laboratory analyses are attached at the end of Section 200). Soils from sample area SS8 are among the best available and are proposed as a source of substitute topsoil for Phase I and would generate 1,065 cubic yards if a depth of three feet is harvested from the 0.22 acre outslope. Soils at SS9 will be utilized to reclaim the access road. Soils from SS7, SS7A and SS7B will be pushed against the cut slope.

The soil represented by SS8 was successfully reclaimed by an interim seeding in 1988. The SS8 soil has a pH of 7.3 and very low EC between 0.55 and 0.88. The SAR ranges between 0.86 and 0.95. The texture is a loam with between 45 and 55% sand. The Saturation Percent is between 29 and 32%. Total Organic Carbon is less than 14% and falls with depth. Phosphorus is between 2 and 3 ppm. Boron levels are between 1.4 and 1.8 ppm. Plans are to salvage all available topsoil from the Little Dove/Beehive outslope to a depth of three feet. Potentially amassing 1,065 cubic yards of substitute topsoil.

Results of sampling at SS7, were discouraging due to the SAR value over 6 in the top six inches, combined with a percent sand of 62% both of which would lower the available water holding capacity. (Saturation percent was 21 to 31%.) Nitrogen, phosphorus and Total Organic Carbon were all elevated suggesting that this soil sample was mixed with refuse.

Re-sampling at sites SS7A and SS7B, dispelled this worry as SAR values to a depth of eighteen inches were less than 2.0. At sites SS7A and SS7B the texture was very different, much less sand was reported (27 - 37%). Silt content (38 - 48%) and clay content (22 - 26%) increased to make a soil that has a loam texture with a Saturation Percentage between 30 and 37%. The pH is near neutral between 6.9 and 7.3. Less sandy soil is preferable for use as substitute topsoil.

Soils along the access road are represented by SS9. Here the pH is a uniform 7.1 and EC rises from 1.96 to 3.02 mmhos/cm with depth. The SAR climbs from 0.81 to 1.76 with depth. The soil has a loam texture with sand decreasing from 51 to 35% with depth. Saturation percent is 34 - 35%. Total organic carbon values are over 25% in the top foot and drop to 14% below twelve inches. Phosphorus is between 0.6 and 0.8 ppm. Interestingly, Boron is elevated over

OPERATION PLAN

background levels (about five times) and is between 1.4 to 1.7 ppm. Even at these levels, Boron is not a cause for concern. This soil will be suitable for use as substitute topsoil.

In addition, four trenches (T1, T1A, T2, T2A and T3) were dug in December 2001 to evaluate the Phase I soils. The quality of the soils in these trenches is described in Appendix C Substitute Topsoil Assessment, (E.I.S. 2002). Trench locations are shown on Drawing CM-10336-DS. Soil Descriptions are located in Exhibit A of Appendix C. Laboratory testing of composite samples of the soils is provided in Exhibit B of Appendix C. Phase I soils are represented by the following six samples: DBB 10601, DBD10701, DBD10801, DBD11001, DBD11101, and DBD11301.

In a discussion of the information provided in Appendix C and its Exhibits, Mr. Dan Larsen (consulting Soil Scientist with E.I.S. Environmental Engineering) recommends that the most suitable soil for the Phase I area is the "the upper 36 inches on the outslope near the Beehive Mine (T2A); some of the surface soil at the Little Dove and Beehive mine pad; colluvial fill material at the Little Dove and Beehive mine site (T1A, T2A)" (Appendix C Substitute Topsoil Assessment, page 11). Mr. Larsen further states on page 11 that "Any variegated clayey material of reddish and yellowish colors such as noted at the Little Dove mine pad site (T1, sample DBD10801) should be buried and not allowed to be used as surface (topsoil) material due to physical and chemical characteristics." Mr. Larsen specified that the mix of coal and soil represented in Trench T1 by sample DBD110701 (15-28 inch depth) is unsuitable due to Total Organic Carbon content (16%).

Removal and Storage

Based upon a six inch cover depth of the 2.13 acre Phase I reclamation area, maximum volume of substitute topsoil required is reported as 2,100 cubic yards (Chapter 2, Soil Trenching and Management Plan, Phase 1 and 2 Estimated Soil Distribution Acreage table).

The outslope of the Little Dove/Beehive pad will be excavated down to three feet to provide a stockpile of substitute topsoil (potentially amounting to 1,065 cubic yards) for use either in Phase I or Phase II. Use of the substitute topsoil in Phase I area will depend upon the quality of the subsoils unearthed at the Phase I site during reconstruction of the slopes and drainages.

Protection of stockpiled topsoil was not specifically mentioned in this submittal. The Permittee will be held to the performance standard of protection of topsoil stockpiles as described in the MRP.

The remaining outslope subsoils will be excavated to bedrock and the material will be used for final slope construction ((Chapter 2, Soil Trenching and Management Plan, Itemized sequences of soil management and slope construction). Mr. Dan Larsen, Soil Scientist with E.I.S. Environmental and Engineering Consulting, reports that the soil in the fill of the outsoles

OPERATION PLAN

is marginally suitable. The submittal indicates that the Permittee will consult with the Division as to whether to utilize the stockpiled substitute topsoil as cover over the subsoils or save the stockpiled soil for use at the Phase II (AM01D) site. Final placement of the substitute topsoil would be dependent upon the quality of the unearthed subsoil.

Findings:

Information in the proposed amendment is adequate to meet the operational topsoil and subsoil requirements of the Regulations. Protection of stockpiled topsoil was not specifically mentioned in this submittal. The Permittee, however is held to the performance standard of protection afforded to topsoil stockpiles as described in the MRP for existing topsoil stockpiles at the sediment pond of the Des Bee Dove Mine site.

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:

Fill slopes were vegetated with an interim seed mixture in 1981 through 1988. Given the arid climate, the vegetative cover on most of these fill sites was very good after 13 to 20 years of plant establishment. Slopes on these fills are considered very steep and are comparable to the slopes to be reestablished in reclamation. The active rooting zone of the fill material should be suitable as a growth medium in reclamation.

Findings:

Information provided in the application meets the minimum requirements of this section.

OPERATION PLAN

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

OPERATION PLAN

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.

OPERATION PLAN

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, retention 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

OPERATION PLAN

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 of 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 riprappd 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.

OPERATION PLAN

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

OPERATION PLAN

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:

The reclamation of the Des-Bee-Dove site will generate asphalt material which was used for road surfacing and diversion construction along those roads. The Permittee is proposing to dispose of the Phase I asphalt material at the Beehive Mine fan location highwall. Here it is to be buried under several feet of noncombustible earth material.

Analysis of drawings #CM-10368-BH, Beehive/Little Dove Mines (B.C. Seam) Mine Permit Area with Mine Workings and CE-10537-DS, Surface Ownership Map of the Des-Bee-Dove Mine Permit Area, as they currently exist within the approved mining and reclamation plan, reveals that the proposed disposal area exists on the surface of lands owned by PacifiCorp.

Numerous discussions between the Utah Department of Environmental Quality (DEQ), Division of Solid and Hazardous Waste (DSHW) and DOGM have established a "permit by rule" criteria by which a Permittee may dispose of asphalt material if the proper steps are followed. These include;

1. the Permittee must apply for a "permit by rule" determination through the DSHW (as permitted by Utah Administrative Code R315-318-1). Approval of this "permit by rule" criteria by the DSHW essentially grants DOGM jurisdiction to control the disposal of the material within the Mines permit area, as regulated by the Division through the mining permit and the mining and reclamation plan for the site in question.
2. The owner of the solid waste disposal facility will change the record of title, within 60 days that the property is used as a solid waste disposal site. The record of filing will be provided to the Executive Secretary of DEQ.

PacifiCorp applied for and received "permit by rule" consent from the DSHW on March 22, 2001. That consent grants the Permittee the right to pursue disposal of the Des-Bee-Dove asphalt disposal through the mines mining and reclamation plan/permit, as regulated by the Division. The letter requests notification of the location of the disposal site when completed. The Division requests that PacifiCorp include a copy of this letter in section R645-301-500.

OPERATION PLAN

The Permittee committed to remove and dispose of asphalt curbing (installed along the Little Dove Mine/Beehive Mine pad area) at the base of the backfill against the Beehive Mine fan highwall, (See page 8, Des-Bee-Dove Mine, Phase 1 Area, Section 553.100, Backfilling and Grading). This area is east, southeast of the main Beehive portals and is removed from any of the drainages, which will have to be established as part of the reclamation. DEQ has determined that this meets the requirements of the Utah Code at R315-318-1 and is permitted by rule (500 Engineering, Appendix D).

Findings:

The information provided in the application meets the minimum Solid and Waste Materials requirements of the regulations.

RECLAMATION PLAN

RECLAMATION PLAN

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.

RECLAMATION PLAN

- 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 landowner for Phase I of the reclamation is PacifiCorp, the Permittee. Because the landowner and applicant are the same no requirements for landowner concurrence is required.

A cattle trail will be established from the county road to access the grazing allotments on East Mountain. The trail will follow the county road to the pre-law waterline and then to the reclaimed mine access road. Photo 1 and Drawing # CS1818B show the "Forest Development Trail" and the "Proposed East Mountain Access Trail" in two close but separate locations. It is assumed that these two trails are the same thing. This discrepancy will need to be addressed in an as-built map.

Findings:

The information provided meets the minimum regulatory requirements of this section.

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.) Their 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.

RECLAMATION PLAN

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:

Golden eagle nest #952 is within the half-mile buffer zone suggested by the U. S. Fish and Wildlife Service (USFWS). Restricted dates are January 1 to August 31, although these dates vary according to region. The Permittee began activity on site in early February 2002. This activity is recommended through the eagle courtship and nesting time periods. If the eagles choose to nest near the activity then they are obviously acclimated to the disturbance and should not compromise nest production. Chris Colt, UDWR, and Laura Romin, USFWS, were consulted concerning golden eagle nest #952 and the proposed reclamation construction activities

Findings:

Information provided in the application meets the minimum requirements of this section.

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.

RECLAMATION PLAN

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 Permittee, at the request of the Division, provided information relative to the location of various highwalls in a survey conducted during the spring of 1997. Highwalls, as they relate to underground coal extraction, are defined by regulation (See page 14 of Appendix XIV) as areas whose purpose is to provide "entry to underground mining activities". Information included with the 1997 highwall survey included drawing # CS1660B, Des-Bee-Dove Mines, Surface Facilities Map Highwall Survey which depicts the six portal areas associated with the Little Dove and Beehive Mines.

Although the highwalls are depicted as the immediate area at the opening in the coal seam on drawing # CS1660B, large contour cuts were necessary to access the selected portal areas due to the extreme steepness of the terrain. These cuts were made prior to the passage of SMCRA and therefore, no consideration was given relative to the reclaimability of the areas. Had the selected portal areas been accessible from a perpendicular or near perpendicular approach, the massive bankcuts could have been avoided. The steepness of the terrain prevented this.

Topsoil, as well as overburden, was side cast and from the edge of the area and used as pad material to gain access to the coal seam. Page 15 of the Engineering section of Appendix XIV indicates that it was determined during a site review on March 19, 2001 that sufficient fill existed to reclaim the access road and portal pad area to approximate original contour, however:

- 1) There are no surface configuration maps or photographs available to establish the pre-mining surface configuration in the Little Dove/Beehive portal area.
- 2) Without knowledge of the pre-mining surface configuration, even an engineering analysis using predicted cross sections is a "best guess" analysis. This is more accurate than merely looking at the site, as was done on March 19, 2001 by the various representatives of the USFS, and the UDNR/OGM.
- 3) Other fills at this site utilized large volumes of coal fines. This may or may not be the case in the Little Dove/Beehive terrace pad. In a photo dated 1978 of the Little Dove portal pad area it appears that coal fines were not used in pad development.

Thus, it is impossible to know if sufficient fill will be available to reclaim the Little Dove/Beehive portal areas and access road until the contractor is actually well into the

RECLAMATION PLAN

extraction/placement/compaction process of backfilling the area. The Permittee anticipates that approximately 15,000 cubic yards of fill are required to accomplish the backfilling requirements.

Any bank cuts which remain above the portal areas will exist due to the impossibility of trying to backfill nearly vertical areas with fine materials and have them remain stable. This remaining highwall will be more stable in an unfilled status than it would be if attempts were made to push material to the top of the cut. The Little Dove and Beehive Mine portals will not pose a hazard to public health or safety, or to the environment due to the remoteness of their location.

Photograph #'s 8, 9, 10, and 11 (Appendix A of Appendix XIV) show the upper limits of backfilled material in each photo. The photos provide verification that it is not the Permittee's intent to fully backfill the highwalls, but rather to leave the upper portion unfilled. This constitutes a "remaining highwall". However, the reclaimed surface will meet AOC because:

1. the postmining topography will closely resemble the premining topography;
2. all spoil piles are eliminated;
3. all drainage channels are being restored;
4. the postmining land use is the same as the premining land use.

The requirements for achieving the approximate original contour requirements are conched in the backfilling and grading requirements. The Division's Technical Memo 002 contains guidelines to help evaluate compliance with AOC.

The term "**Approximate Original Contour**" means that surface configuration achieved by backfilling and grading of the mined areas so that the reclaimed area, including any terracing or access roads, closely resembles the general surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain with all highwalls, spoil piles, and coal refuse piles having a design approved under the R645 Rules and prepared for abandonment.

The Division does not have any specific requirements defining how well a site blends into the surrounding terrain. The general requirements are that the slopes of the reclaimed area are of similar length and steepness of the surrounding area and that the reclaimed topography merges into the surrounding area. The Division's staff have analyzed the proposed reclamation topography and cross-section and determined that the reclaimed site will blend into the surrounding area.

Although highwall retention under some circumstances may provide certain environmental benefits, both federal and state regulations require complete elimination of all highwalls. In Utah, the rules indicate that Permittees must eliminate all highwalls, except in previously or continuously mined areas and when cliffs existed in the highwall area before mining. Under the general requirements and within the meaning of the AOC directive,

RECLAMATION PLAN

elimination of highwalls means backfilling, regrading and reshaping highwalls in a manner that meets AOC requirements and the requirements of the postmining land use.

All highwalls at the Des-Bee-Dove mine were developed prior to SMCRA and therefore do not have to be eliminated if the Permittee can demonstrate that 1) the highwall will be compatible with the postmining land use, 2) provide adequate drainage, 3) be stable (safety factor of 1.3), and 4) there is not enough spoil on site to completely reclaim the highwalls. The compatibility issues are discussed in the postmining land use section of the TA. The drainage issues are discussed in the hydrology section of the TA. The slopes in the area have been analyzed and determined that they meet (assuming the requirements of the RG&B specifications are followed during backfilling and grading) the 1.3 safety factor (see Appendix C) of the submittal.

The main reason why the highwalls cannot be completely eliminated is the restricted site configuration. Reconstruction of the three drainages will dictate the actual extent to which fill can be placed (Section 553.110, page 15) The Permittee could place enough spoil to cover the highwalls, however, the spoil would have to be placed at an angle that would cause the slope to have a safety factor of less than 1.3 and could potentially saturate the fill because of the drainages. This a major concern at the Division, especially in drainage #3 (Drawings CS1817C and CS1814D) where the dip of the sandstone ledge above the Beehive portals will naturally divert water towards the placed fill and the drop from the ledge will concentrate erosive power at the base of the ledge. No purpose will be served in covering the entire cut to the top if water erodes the fill or saturates the fill and causes it to slide.

All spoil piles and coal refuse piles will be eliminated.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

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

RECLAMATION PLAN

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

RECLAMATION PLAN

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:

Appendix XIV makes the commitment to reclaim the portal areas and portal terrace and its associated access road to approximate original contour. However, the Des-Bee-Dove Mine meets the criteria of a "continuously mined area, (CMA)", as defined by the R645 coal rules. Thus, R645-301-553.610 gives the Division authorization to not require the Permittee to completely eliminate the highwalls in the area, if insufficient spoil exists on site or the safety factor requirements cannot be met.

The Permittee has submitted a slope stability analysis for the upper pad portals and their associated reclamation. The Phase 1 Reclamation Plan contains a study performed by Rollins, Gunnell and Brown at Profile B and longitudinal cross section 3+00, as depicted on drawing # CS1817C. The toe of Profile B intersects Profile A at cross section 3+00. Thus Profile B is for the upper pad area as it is situated between the Beehive portals and the Little Dove portals. The analysis contains two options for the backfilling of Profile B.

Option 1 (See Figure 2) assumes that a layer of foundation soil exists below the present surface elevation, and that these soils consist of loose to medium dense granular fill weighing 125 pounds /ft³ with an inherent internal angle of friction of 32 degrees. A cohesion factor of 0 psf is assumed. A recommended vertical radius of seventy-two feet (concave slope surface) will provide a long term static factor of safety of 1.33, which meets the minimum requirements of R645-301-553.130. The area to be backfilled may consist of either rock fill or earth fill, varying from 1.25H:1V to 2H:1V or flatter. The characteristics of the suggested rock fill are that the material be less than thirty inches in diameter, with less than 20% of the volume being minus one inch. Rock fill material should also have a total unit weight of 140 pcf with an internal friction angle of 45 degrees. Earth fill material should have a gradation of minus six inch, with less than thirty percent consisting of minus 200 mesh material. Earth fill material should consist of material having a total unit weight of 125 pcf with an internal friction angle of 34 degrees.

RECLAMATION PLAN

Option 2 for Profile B, (Figure 5), consists of backfilling the slopes on bedrock material having a total unit weight of 140 pcf with an internal angle of friction of 45 degrees and a cohesive strength of 1000 psf. This option requires a much greater volume of material to reach the 2H:1V proposed slope than is required by Option 1. A minimum long term static safety factor of 1.38 has been calculated for the vertical radius fill line of 103 feet. Other design criteria include the placement of ten feet of loose to medium dense granular fill (total unit weight of 125 pcf, internal friction angle of 32 degrees).

The slope stability analysis conducted by Rollins, Gunnell and Brown contains specific design criteria which are recommended to ensure the long term static safety factors calculated for the various backfill designs for Profile B. These include the following;

- 1) The RB&G report suggests that the material which currently exists at the site can be used as backfill material for the slope restoration. However, the stability analysis also recommends that this material be processed by separating the minus 4" to 8" material from the oversize material prior to placement. This will require additional hauling and handling costs.
- 2) The RB&G report recommends that all minus 4" to 8" granular material be placed in lifts not exceeding one foot in thickness. A compaction requirement of at least 90% of the maximum laboratory density as determined by ASTM D 1557-91 for the fill material has been recommended. The resulting granular fill will obtain a resulting friction angle equal to or greater than 34 degrees.
- 3) The RB&G report recommends that all rockfills utilizing +4" to 8" material be placed in lifts not exceeding three feet in thickness. Maximum material size must be limited to thirty inches with less than 20% smaller than one inch. The recommended compaction on this type of fill is to be accomplished by conducting "at least 4 passes of a D-9 (crawler compaction) or equivalent dozer. The friction angle of the rockfill after this is completed will be equal to or greater than 45 degrees.
- 4) The RB&G report recommends that all earth fills be constructed to be equal to or greater than 2H: 1V. Rockfill fills can be constructed at 1.25H: 1V.
- 5) The RB&G report indicates that the safety factors which have been calculated for greater than 1.3 assume that no pore pressures will develop within the fill. Thus it is recommended that all earth fill embankments be constructed with rock fill or drain fill beneath them.

Recommendation #5 is of particular importance where drainages must be constructed through areas that have been backfilled. Three drainages will require construction through the Phase 1 reclamation area of the Des-Be-Dove Mine.

In closing, the RB&G report states that conservative shear strength parameters were estimated to analyze the proposed finished slopes. The estimates were based upon visual classification of the surface materials. Thus, the RB&G report recommends that a geotechnical

RECLAMATION PLAN

engineer observe the fill during construction, and that compaction testing be performed under that engineer's supervision. This is necessary to ensure that the design requirements previously mentioned are adhered to, such that the minimum long term static safety factor of 1.3, as required by the R645 coal rules, can be met.

The Permittee commits to meeting adequate compaction and lift thickness requirements as recommended by the RB&G slope stability analysis. Appendix XIV, section 500 ENGINEERING (R645-301-500), pages 9, 10 and 11 commits to utilizing a geotechnical engineer to verify and certify that adequate compaction requirements and lift thickness are implemented during the reclamation of Phase 1. This will ensure that design requirements have been met, which will ensure that the designed static safety factor will be implemented in the field.

Findings:

Information provided in the application is considered adequate to meet the minimum Backfilling and Grading requirements of the R645 regulations.

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:

RECLAMATION PLAN

Mining in the Des-Bee-Dove area predates SMCRA, going back to the late 19th century. It's not clear when the Beehive Mine was initially developed, but a shaft from the Deseret Mine up to the Beehive was constructed sometime in the 1950's to transport coal from the Beehive Mine to the surface by way of the Deseret Mine. Little Dove was constructed in the mid-1970's. The Beehive and Little Dove Mines each had three portals. The mines were temporarily sealed in 1987. In 1999 the portals were backfilled and the surface facilities removed. The planned reclamation will place additional fill and growth medium over the sealed portals. Water will not drain towards the sealed portals. The Little Dove portals and main entries are aligned almost directly downdip and no portion of the mine is at a higher elevation than the portals. The Beehive Mine portals and main entries are oriented close to strike of the coal seam but have a slight downward slope; most of the mine is at an elevation lower than the portals and there is no direct flowpath from the higher areas to the portals.

On February 26, 1997, PacifiCorp filed a Notice of Intent with the Division to reclaim the Mines. The currently approved mining and reclamation plan for the Des-Bee-Dove Mine shows Figure 1, Des-Bee-Dove Coal Mines, Typical Portal Seal, drawing # CM-10319-WB, (See Volume 2, Part 4, Appendix 1) which depicts a keyed double course concrete block seal hitched into the coal ribs and mine floor, with twenty five feet of noncombustible backfill placed and compacted out by the seal. This method was approved as part of C/015/017-98BR, as approved for incorporation into the mining and reclamation plan on September 1, 1998.

As observed on the March 19, 2001 site visit by DOGM personnel, and as can be seen from Photos #9, #10, and #11 included in Appendix A, "Pre-Reclamation Site Photos", noncombustible fill does exist out to the surface contour of the highwall. In order to meet the requirements of R645-301-551, Casing and Sealing of Underground Openings, and 30 CFR 75.1711-2, Sealing of Slope or Drift Openings, it was necessary for the Permittee to provide adequate verification that the six mine openings associated with the Little Dove and Beehive Mines were permanently sealed.

The Permittee submitted a reclamation plan for the Phase 2 area for the lower pad areas associated with the Deseret Mine portals, and the tipple and bath house facilities. That submittal, which has been designated as C/015/017-AM01D, includes drawing # CS1660B, "Des-Bee-Dove Mines", Surface Facilities Map Highwall Survey, which shows that the three portals associated with the Little Dove Mine and the three portals associated with the Beehive Mine were sealed with double block wall seals and backfilled at least twenty-five feet. The drawing also contains a note that "all seals were backfilled and constructed to MSHA regulations at least 25' in by opening". The drawing is P.E. certified by Mr. John Christensen, who is Utah registered professional engineer. Drawing #CS1660B adequately addresses the requirements of R645-301-551.

Findings:

RECLAMATION PLAN

The information provided in the application 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:

Phase I:

- The Little Dove/Beehive pad (2.13 acres) will require 15,000 cubic yards of backfill (Section 240 Reclamation Plan - Portal Pad Area).
- The substation and water storage area (0.75 acres) will require 2,500 cubic yards of backfill (Section 240 Reclamation Plan - Substation and Water Storage Area).
- The access road down to the Desert pad (0.97 acres) will require 3,000 cubic yards of backfill (Section 240 Reclamation Plan - Access Road).

Together, these three areas of Phase I will require 2,100 cubic yards of substitute topsoil ((Chapter 2, Soil Trenching and Management Plan, Phase 1 and 2 Estimated Soil Distribution Acreage table), based upon a six inch replacement depth and all slopes equal to or less steep than 2h:1v.

All slopes will be created between 1.5h:1v and 2h:1v. Substitute topsoil will be graded over slopes of 2h:1v. Slopes greater than 2h:1v will have isolated pockets of soil placed in the

RECLAMATION PLAN

rock slope, as required by the R, B, &G Engineering Inc, Slope Stability Report dated September 2001 (Section 540, Appendix C).

Redistribution

The outslope of the Little Dove/Beehive pad will be excavated down to three feet to provide a stockpile of substitute topsoil (potentially amounting to 1,065 cubic yards) for use either in Phase I or Phase II. Use of the substitute topsoil in Phase I area will depend upon the quality of the subsoils unearthed at the Phase I site during reconstruction of the slopes and drainages.

Findings:

Information in the proposed amendment is adequate to meet the Reclamation topsoil/subsoil requirements of the Regulations.

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

RECLAMATION PLAN

The Phase 1 Reclamation Area for the Beehive and Little Dove Mines is in a small, unnamed canyon that is tributary to Grimes Wash and part of the Cottonwood Canyon Creek drainage. Hydrologic resources of the entire East Mountain area, which includes the Cottonwood/Wilberg, Deer Creek, and Des-Bee-Dove Mines, are described in Volume 9 - Hydrologic Section.

No ground-water resources have been documented in the Phase 1 Reclamation Area, the strata east of the Deer Creek Canyon fault being essentially dry. There are some small springs farther down the canyon that will not be affected by this phase of the reclamation.

The pad for the Beehive and Little Dove Mines was built across three small, ephemeral channels at the head of this drainage. These drainages normally flow only in response to storm events. The channel at the south end was diverted around the Beehive and Little Dove pad by a berm. Flow from the other two channels crosses the Beehive and Little Dove pad, enters a 48-inch culvert that carries the flow down to the main tipple pad, and from there reports to the sedimentation pond below the minesite. Another small drainage by the water tank was disturbed but not diverted by construction of the road to the tank pad.

For reclamation of this Phase 1 area, channel and slope stability are more important than getting the fill all the way to the top of the cut slope. The channel and the filled slopes should be designed and built so that water cannot get from the channel into the fill and destabilize it. The proposed plan states that, because of the restricted site configuration, reconstruction of the drainages will dictate the actual extent to which fill can be placed (Section 553.110, page 15). This is a major concern at the Division, especially in drainage #3 (Drawings CS1817C and CS1814D) where the dip of the sandstone ledge above the Beehive portals will naturally divert water towards the placed fill and the drop from the ledge will concentrate erosive power at the base of the ledge. No purpose will be served in covering the entire cut to the top if water erodes the fill or saturates the fill and causes it to slide.

Materials used to construct the channels will be gradational from fine material at bottom to coarse at top, as shown in Drawing CS1819A, and on Plate 4 - 1 - sheet 2 of 5 in Volume 4. The engineered channels will be embedded into the fill. The plan states several times that boulders will be removed from fill materials so that proper compaction can be obtained, but beyond merely separating out boulders, some method will be needed on site to obtain adequately graded materials. Boulders and coarse materials need to be placed so as to be stable, not just dumped.

Acid- and Toxic-Forming Materials

The Southard Soils report provided in Appendix B indicates that some of the spoils are rich in pyrite (16% pyrite). Soil testing indicates that variegated red/gray clayey soils noted at the Little Dove mine pad site (T1, sample DBD10801) should be buried and not allowed to be used as surface (topsoil) material due to physical and chemical characteristics (Table 1,

RECLAMATION PLAN

Appendix C Substitute Topsoil Assessment, pages 5 and 10). The limiting chemical characteristics of this red/gray soil is extremely low carbonate content (1.4%) which translates into limited buffering capacity (-16 Total Sulfur Acid Base Potential and 12 Pyritic Sulfur Acid Base Potential). The clay loam texture (36% clay) is also undesirable.

Soils in Trench T3 along the access road were also described as being unsuitable for use although they were not sent for laboratory testing. However, soils along the access road were tested in March of 2001 (sample SS9). SS9 soils are described earlier in this Technical Analysis under Operations Topsoil and Subsoil. The Division's conclusion as a result of the March 2001 testing was that SS9 soil is suitable for use as substitute topsoil.

Straight coal refuse was not sampled from the Phase I site. A mix of coal, gravel and soil was sampled and is represented by DBD 10701 (Table 1 and Exhibit B of Appendix C). This material is not toxic or acid forming, but is not suitable as surface material due to the 16% TOC.

Diversions

All diversions and drainage control structures constructed for mine operations will be removed. Flows will be returned to reconstructed channels at the approximate locations of the original, natural channels.

Calculations for peak storm discharge and volume used to design these constructed channels are in Appendix A. Calculations were done using the STORM program, which is available through OSMRE's TIPS program. An SCS Upland Curve 7 - ephemeral channel - was used. The rest of the parameters are given in pages 22 to 26 and in Appendix A. Results are summarized in Table 7-1 on page 26.

Calculations for channel design, including filter design and riprap sizing, were done using FlowMaster (version 5.13), based on Manning's equation. Calculation methodology for the filter design and riprap-sizing is explained on pages 26 through 32, and the results of the calculations are in Appendix A. The best combination of water velocity and channel width and depth was sought through an iterative process that tried to balance the costs of constructing narrower but deeper channels against installing additional riprap in shallower but wider channels. Channel dimensions, expected flow characteristics, and D50 riprap requirements are summarized in Table 7-2 on page 29, and trapezoidal channel designs results are in Appendix A.

Channels 2 and 3 are to be lined with riprap, except where they lie on bedrock. The equations used for the filter design and riprap-sizing are on page 30, and the results of the calculations are at the end of Appendix A. The Procedural Steps of Reclamation Table in Section 540 states that sieve analysis will be done to assure riprap gradation meets design criteria. Materials for constructing these channels are to be obtained on-site. Riprap sizes should be varied rather than uniform. Riprap should be angular rather than rounded: boulders that will be excavated on-site may be more rounded than is desirable and a method of breaking them into

RECLAMATION PLAN

more angular material may be needed. The permittee states in the September 15, 2001 cover letter that they do not anticipate a need to crush or break boulders available on site to obtain appropriate angular material because most available boulders are the result of recent weathering and tend to be angular rather than rounded.

Drawing CS1819A (Appendix A) shows schematic cross-sections of channels 2 and 3. The soil immediately adjacent to the channel will overlap the uppermost riprap and cover the upper edge of the engineered channel. This will provide a transition from the constructed channel to soil and avoid a visible, hard edge. This transition will not only be visually more like the existing channels, but will promote vegetation growth in the coarser material, which helps anchor it; and eliminate an edge that could facilitate and concentrate erosion parallel to the channel.

The plan states that boulders, acquired on-site, will be placed along the channels as erosion protection. Consideration should be given to using the largest boulders to create ledges to break the uniformity of the channel gradient. These should be imbedded into the fill with the filter and riprap placed around them, rather than placing these large boulders on top of the filter material, which would allow flow to go under them. Using these large boulders as artificial ledges would require extra attention to the construction of the streambed on the downstream side, and such measures as extra riprap or drop-pools might be needed.

Channel designs are based on an average gradient along the length of the designed channel; however, the gradient down the face of the sandstone ledge immediately above the head of channel 3 is much greater than that used in the calculations (profile A - Drawing CS1817C), and flow may even form a waterfall under extreme conditions. A transitional apron has been designed and certified by a professional engineer, based on design criteria from Hansen, Allen and Luce, Inc. The design and calculations are in Appendix A and are discussed on pages 28 and 29. D50 for the apron will be 4.5 feet (pages 29 and 30)

Experience has shown that channels built on fill are subject to many problems, including failure, if not constructed correctly. Acknowledging that it is the permittee who has the authority to control, direct, and supervise construction of the reclamation channels, the Division would like to have a hydrologist or other Division representative present during placement of the filter and riprap. The permittee has stated, in the cover letter dated September 15, 2001, that they expect division representatives to be at the site as much as possible during construction to facilitate communication, and that they will make every effort to keep the Division informed on progress and timing of construction.

Siltation Structures

Basins, traps, straw bales, etc. are proposed for sediment control during the construction phase of reclamation. Weed-free alfalfa will be incorporated into the soil. When reclamation is complete, pocking or roughening of the surface and rock litter and boulders will assist in

RECLAMATION PLAN

sediment control. When vegetation has become established, the sedimentation pond will be removed with the Division's approval (R645-301-541). (Seed mixture and seeding and planting techniques and methodologies are outlined in Volume 2, Part 4. Methods for maintenance and monitoring for the ten-year responsibility are in Section R645-301-300.)

Sediment levels above background levels are not expected (R645-301-242.130). Background levels for this site are not known. The USDA's Revised Universal Soil Loss Equation (RUSLE) or similar methods can provide a calculated estimate of sediment contribution from reclaimed and undisturbed watersheds (as was done at the nearby Deer Creek Mine). The accuracy of predicting sediment yield diminishes with increasing slope, and research has not been done on slopes exceeding 50 to 60 percent: PacifiCorp discussed this with the program authors and was told output from RUSLE is considered acceptable if comparison between areas is based on similar criteria.

In Tables 1 and 2 of Appendix 700-B of the amended Des-Bee-Dove Reclamation Plan, the permittee has provided the values for the parameters used in RUSLE to estimate annual sediment contributions from undisturbed and reclaimed watersheds. Appendix 700-B includes a 3.5" computer disc with version 1.06 of RUSLE and the information used to determine sediment loss for the undisturbed and disturbed areas.

The nearby Deer Creek Mine and Des-Bee-Dove are at similar elevations, so cover management factors from undisturbed areas at Deer Creek were used: this information is in Volume 1, Part 2 of the Deer Creek Mine MRP. The vegetative community at Des-Bee-Dove and Deer Creek is best described as cold-desert shrubs, so the cold-desert shrub community was used to calculate effective root mass in RUSLE.

The R-factor was determined using the data in the CITY database within RUSLE for the nearby Hiawatha area. Hiawatha is #44399 in the applicant's data base, found on the 3.5" disc (Hiawatha is not in the standard database that comes with RUSLE: PacifiCorp used twelve years of precipitation and temperature data from the town of Hiawatha to approximate conditions similar to those at Des-Bee-Dove).

The estimation of the K-factor for the undisturbed areas was based on characteristics of the Kennilworth series (KeE2) of the Soil Survey of the Carbon-Emery Area. Soils samples collected at the Des-Bee-Dove site were used in determining values for K for the disturbed areas. The size analyses for silt plus very-fine sand that were not initially reported have been included in Exhibit B of the Soils section and used in calculating the K-values for the disturbed areas.

Determination of the C-factor for the undisturbed and disturbed areas is not described. At nearby Deer Creek Mine, values ranging from 0.027 to 0.042 were obtained for the disturbed areas. These values were based on using maximum roughness from the planned pocking, no root mass, no canopy cover, no interception of rainfall by vegetation, and conservative entries for ground covers such as rock fragments and vegetative residue. The values used at Des-Bee-Dove

RECLAMATION PLAN

are an order of magnitude smaller for the undisturbed areas (0.0016 to 0.0020) but are comparable for the disturbed areas (0.038 to 0.042).

The hillslope lengths and gradients used in determining the LS-factor for input to RUSLE are shown on Drawing CS-1854D in Appendix B.

The P-factor calculations in RUSLE yield not only the conservation planning value of the system (the P-factor itself), but also the Sediment Delivery Ratio (SDR). Both values are calculated in RUSLE and shown in the Spreadsheet Table generated by RUSLE. P is to be used for conservation planning, while the SDR is to be used to estimate off-slope impact. When $R * K * LS * C$ are multiplied by P, the result is the A value (estimated soil loss) in the RUSLE Spreadsheet Table, while multiplying $R * K * LS * C$ by SDR gives an estimate of the sediment yield (SY).

$R * K * LS * C * P$	= A (estimated soil loss)
$R * K * LS * C * SDR$	= SY (estimated sediment yield)

A value of 1 was calculated for both P and SDR for the undisturbed areas at Des-Bee-Dove because no control practices are used to modify or reduce the amount of runoff: this also results in a A and SY being equal. For the disturbed areas, 0.029 was calculated for P and 0.002 for SDR. These values are comparable to those used at Deer Creek, and indicate the pocking and other treatments are expected to greatly modify runoff characteristics and reduce the amount and rate of runoff.

Tables 1 and 2 tabulate the input and calculation results for both SDR and SY. The largest value for A is 0.09 tons/acre/year (Table 2) at disturbed area A11D, at the south end of the Beehive and Dove pad. Values for other reclaimed areas are 0.03 to 0.05 tons/acre/year, comparable to the 0.05 tons/acre/year calculated for the undisturbed areas (Table 1),

RECLAMATION PLAN

There is a commitment on page 33 in Section 763 to retain and maintain all temporary sedimentation structures, including the berm along the access road, until completion of sequenced reclamation beginning at the south end of the pad, proceeding north to the main portal pad area, and finally to the access road.

Reclaimed areas will continue to report to the sedimentation pond (R645-301-553.100, p. 12). The sedimentation pond will remain until vegetation is established (R645-301-541) and the Division approves its removal.

Henry Austin of OSM has expressed his opinion that if the sedimentation pond is to be used for sediment control, the entire drainage between the mine-site and the pond needs to be permitted. The Division maintains that the unpermitted reach from the disturbed area boundary to the sedimentation pond was allowed when the mine was permitted by OSM over twenty years ago, that the site has been regulated and inspected for over twenty years with this gap in the permit area, and that the sedimentation pond is and will continue to be the primary sediment control method until it can be demonstrated that sediment is retained on-site and the pond is no longer needed.

Findings:

The information in this section is sufficient to meet the requirements of the coal mining rules.

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.

RECLAMATION PLAN

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

RECLAMATION PLAN

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

A total of 3.85 acres will be seeded in this Phase I reclamation as shown outlined in green on Drawing #CS1818B. This acreage amount may need to be adjusted in an as-built when actual seeding disturbance is known. At that time actual seeding dates can also be added to the map.

The greatest revegetation concern at this site is stabilizing the very steep slopes, which are commonly 2h:1v. The seed mixture (section R645-301-353.120) was designed to establish and provide some erosion control on these slopes. Annual reports detailing prevalent species established were reviewed for species seed mix selection. All species in the mixture are native and most are native to this specific area. Unfortunately, Salina wildrye, the dominant grass, is not commercially available for reclamation. The application rate is 61 seeds /ft². This rate is consistent with recommendations for the Utah area. Aggressive species were used because of the concern with soil stabilization. Diversity of the native area is low and the reclaimed vegetative cover should meet the baseline diversity. Transplants will be used to aid in the visual attributes of the area during vegetation establishment.

Seed will be broadcast using a hurricane spreader or applied using a hydroseeder. The seed will be rake to cover the seed if using a hand spreader. Generally raking is not necessary unless the soil has crusted. Crusted soil should be raked even if hydroseeding. Covering the seed with hydromulch does not substitute for soil seed coverage.

All noxious weeds will be eradicated either chemically or physically if they become established on site (Maintenance and Monitoring (R645-301-357.320 thru R645-301-357.332)).

Timing

The site will be seeded immediately after the soil is roughened. This likely will be a late spring seeding. Late spring seedings are not generally recommended. The Permittee may need to reseed in subsequent years which could prolong the period of extended liability for more than 10 years.

Mulching and Other Soil Stabilizing Practices

RECLAMATION PLAN

One ton per acre noxious weed free alfalfa hay will be incorporated into the soil during roughening. This will provide a slight organic component to the soil and may reduce crusting for seed germination. A hydromulch with tackifier will be applied at the rate of 1500 lbs./acre. Tackifier will be added to the hydromulch slurry at a rate recommended by the manufacturer. Care must be taken to not leave the seed in the hydromulcher for longer than 30 minutes.

Rocks, shrub and tree debris, and other organic on site materials should also be used as a top covering for the seeded surface.

Standards for Success

Vegetation success of the reclaimed Des Bee Dove mine area will be compared to the pinyon-juniper reference area established in 1980. Success will be judged on production, shrub density and cover of the reclaimed site as compared to the reference area. The Operator commits to tree and shrub numbers similar to the reference areas life forms. Slopes steeper than 2v:1h will be constructed of rock with no soil growth material. These areas are not exempted from being included in vegetation sampling for all success standards.

This site is very steep, exposed and dry. Soil resources were not salvaged during initial construction and during the valley fill excavation. The period of extended responsibility will likely exceed the minimum 10 year requirement.

Findings:

Information provided meets the minimum Revegetation requirements of the regulations.

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:

Slopes will be 1 1/2 H: 1V or 2H:1V. According to the Slope Stability Report (Reclamation Plan, Appendix C) the fill should be sorted so that all minus 4" to minus 8" material can be compacted in lifts no greater than 1 foot thickness. And all rock 4" to 8" can be compacted in lifts not exceeding three feet. Large boulders will be segregated and used as

RECLAMATION PLAN

erosion protection, by nesting the boulder into the slopes at various locations (items 5 and 6 in Procedural Steps of Reclamation Table).

The soil will be moved by means of a trackhoe and spread and compacted with a dozer. The R, B, &G Engineering Inc, Slope Stability Report dated September 2001 (Section 540, Appendix C) recommends that at least 4 passes of a D-9 dozer are made over the rock fill.

An erosion control plan incorporating best management practices is critical. Concave and complex slopes erode less than convex or uniform slopes. A commitment should be provided to use these types of slopes. The primary means of sediment control on the site will be gouging (page 12, Section 540), which will be limited to the slopes of 2h:1v where soils are available to gouge. Steeper slopes will consist of rock with isolated pockets of soil placed in the rock slope, as required by the R, B, &G Engineering Inc, Slope Stability Report (Section 540, Appendix C).

Extreme surface roughening or gouging can occur during topsoil placement or while incorporating organic materials (i.e. hay). Proper roughening is very important to the site stabilization and revegetation. Roughening is described in the technique sheets in the Division's reclamation manual, The Practical Guide to Reclamation in Utah, found at: ftp://dogm.nr.state.ut.us/PUB/MINES/Coal_Related/RecMan/Reclamation_Manual.PDF. The technique sheets are also useful to give to equipment operators to illustrate the degree of roughness required. One ton per acre of certified weed free alfalfa hay will be incorporated into the soil when roughening.

A hydromulch with tackifier will be applied at the rate of 1500 lbs./acre. Tackifier will be added to the hydromulch slurry at a rate recommended by the manufacturer (Section R645-301-340).

The area will be monitored annually for rills and gullies (page 7, Section 350 Performance Standards). Should rills and gullies be noted, the plan indicates that they will be repaired according to R645-301-357.360 through 357.365. R645-301-357.360 through R645-301-364 outlines the requirements for restarting the bond clock. R645-301-357.365 requires that any treatment practices used for rill and gully repair will be approved by the Division. The Permittee should expect some rills and gullies during the initial site establishment period that may be as long as 5 years in this arid area.

Findings:

The information provided in the application meets the minimum Stabilization of Surface Areas requirement of the regulations.

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

RECLAMATION PLAN

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:

Reclamation Backfilling and Grading Maps

Appendix XIV includes several maps that show the Permittee's intent relative to the reclamation of the Beehive/Little Dove portals, the terrace pad, and the associated access road, (Phase 1). Drawing # CS1814D, Des-Bee-Dove Coal Mines 2001 Reclamation Phase 1, shows the operational topography as well as the final reclamation topography for the Blind Canyon seam. The map is certified by Mr. John Christensen, who is the applicant's resident professional engineer.

Final Surface Configuration Maps

Drawing #CS1817C, Des-Bee-Dove Mine's Phase 1 Reclamation, Plan View and Cross

RECLAMATION PLAN

Sections also shows the existing topography and final reclamation topography. Reclamation profiles and cross sections are also depicted, which show the depth of cut/fill being made at each section location to achieve the desired reclamation effect. Most of the fill areas approximate a maximum ten-foot depth. Reclaimed slopes will average twenty to twenty-five degrees from horizontal in the cut areas. Based on the two drawings, a large volume of fill material should be left over to be utilized in the reclamation of the access road.

Findings:

The information provided meets the minimum regulatory requirements of this section.

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

RECLAMATION PLAN

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:**Determination of Bond Amount**

The Des-Bee-Dove Mine site is currently bonded in the amount of \$1, 837,712.00 with the State of Utah and OSM through surety bond # 400 JN 6139 issued by St. Paul Fire and Marine Insurance Company. This amount was last reviewed prior to the August 2000 permit renewal, and is determined to be adequate.

Appendix XIV briefly discusses bonding on the last page included with the submittal. Included text indicates "upon completion of the reclamation project, PacifiCorp will revise the bond estimation by eliminating items related to the Beehive/Little Dove Mines. Bond reduction will not be requested until Phase 2 is complete (scheduled for the Fall of 2002).

Findings:

RECLAMATION PLAN

The information provided meets the minimum regulatory requirements of this section.

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.

A CHIA for the East Mountain area was updated in 1994. This modification of the Reclamation plan does not require modification or updating of the CHIA because the reclamation will not change their hydrologic balance.

Page 56
C/015/017-AM01A-2
March 6, 2002

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

RULES INDEX

30 CFR

701.5.....	19
777.11.....	3
777.14.....	3
783.....	5
783.12.....	5
783.18.....	6
783.19.....	6
783.21.....	7
783.22.....	10
783.24.....	12
783.25.....	12
784.14.....	39, 55
784.15.....	27, 29
784.19.....	19
784.200.....	27
784.21.....	7
784.22.....	11
784.23.....	50
784.25.....	19
784.26.....	15
784.29.....	39
785.15.....	32
785.16.....	27, 29
785.18.....	45
800.....	52
817.102.....	29, 32
817.107.....	29, 32
817.111.....	45
817.113.....	45
817.114.....	45
817.116.....	45
817.13.....	36
817.133.....	27, 29
817.14.....	36
817.15.....	36
817.200(c).....	7
817.22.....	38
817.22.....	7, 15
817.41.....	39
817.42.....	39
817.43.....	39

817.45.....	39
817.49.....	39
817.56.....	39
817.57.....	39
817.71.....	19
817.72.....	19
817.73.....	19
817.74.....	19
817.81.....	19
817.83.....	19
817.84.....	19
817.87.....	19
817.89.....	19
817.95.....	15, 48
817.97.....	28
823.....	7
R645-	
100-200	19
301-120	3
301-140	3
301-210	19
301-211	19
301-212	19
301-220	7
301-230	15
301-234	29, 32
301-240	38
301-244	15, 45, 48
301-270	29
301-271	29
301-320	6
301-322	7
301-323	12, 50
301-330	18
301-331	18
301-332	18
301-333	28
301-342	28
301-353	45
301-354	45
301-355	45
301-356	45
301-358	28
301-411	5, 7, 10, 12
301-412	19, 27, 29
301-413	27, 29

301-414	27
301-512	19, 29, 39, 50
301-513	19, 36, 39
301-514	19, 39
301-515	39
301-521	12, 19, 50
301-526	19
301-528	19
301-529	36
301-531	29
301-532	39
301-533	29, 39
301-535	19
301-536	19, 29
301-537	32
301-542	19, 29, 39, 50
301-551	36
301-552	32
301-553	19, 29, 32
301-622	12
301-623	11
301-631	36
301-632	50
301-722	12
301-723	39
301-724	6, 11, 39
301-725	39
301-726	39
301-728	39
301-729	39
301-730	55
301-731	12, 29, 39, 50
301-732	29
301-733	29, 39
301-742	39
301-743	39
301-745	19
301-746	19
301-747	19
301-748	36
301-750	39
301-751	39
301-760	39
301-761	39
301-764	29

301-765	36
301-800	52
302-230	32
302-231	32
302-232	32
302-233	32
302-270	27
302-271	27
302-272	27
302-273	27
302-274	27
302-275	27
302-280	45
302-281	45
302-282	45
302-283	45
302-284	45

O:\015017.DBD\FINAL\TA\TA_01A-2.doc