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

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October 25, 2001

TO: Internal File

FROM: Priscilla W. Burton, Soils Reclamation Specialist & Team Lead

RE: Surface Mining of Barrier Coal, Lodestar Energy, Inc., White Oak Mine,
C/007/001-SR01A-2

SUMMARY:

Underground mining at the White Oak mine ceased as of the last week of September 2001. Removal of the facilities on site has begun. A Division representative is visiting the site on October 12, 2001 to check on the Permittee's progress.

Contour Mining will be utilized to recover the coal from the Lower O'Connor Seam and the Upper O'Connor seam. Plate 5-1C illustrates the progression of coal recovery and itemizes the ratio of coal to banked spoil. The average ratio of coal to spoil that will be moved is 1:4. Production is expected to be 773,000 tons total. The contour mine should be complete within 14 months (Section 523, page 500-15).

Based upon the spot market prices for Utah as noted in the September 3, 2001 Coal Outlook¹ this coal is valued at \$23.00/Ton. At the current value, the total reserve of coal to be contour mined is worth \$17,779,000. (The range for the year was \$15.25/ton to \$23.00/ton based upon 11,800 Btu/lb and 0.8 lbs/mmBtu of sulfur dioxide.)

This submittal adds 8.28 acres to the disturbed area boundary. The change in mining method is considered a significant revision to the permit. The application supplements the existing MRP, but does not replace it. The chronology of SR01A is as follows:

¹ "Coal Outlook." V. 25 No. 36. Monday September 3, 2001. (Financial Times Energy: Arlington, VA).

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Lodestar amendment received February 2, 2001
Determination of Completeness with stipulations March 19, 2001
supplemental information received April 17, 2001
Division Technical Analysis July 13, 2001
Lodestar second submittal with soils information and drill logs September 10, 2001.
Division Technical Analysis October 12, 2001.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

Chapter 1, Section 111 explains that the Mine Complex is referred to throughout the submittal by several names: Belina Mine Complex and White Oak Complex. The complex includes two underground mines which were called Belina No. 1 and No. 2 Mines until 1994 and then White Oak No. 1 and No. 2 Mines thereafter. The Complex also includes the Valcam Loadout which is sometimes referred to as the White Oak Loadout in the Mining and Reclamation Plan. In 2001, a surface mine (called the Whisky Creek No. 1 Mine) was added to the White Oak complex.

Findings:

Information provided in the proposed amendment is considered adequate to meet the Permit Application Format and Contents requirements of the Regulations.

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

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

Analysis:

The mine is located on the northern Wasatch Plateau. Elevation at the White Oak Mine Complex is 9,200 feet. Topography of the permit area is marked by one main drainage, Mud Creek (sometimes referred to as Clear Creek and Pleasant Valley Creek), which empties into Scofield Reservoir north of the mine plan area. Several other lateral drainages flow into Mud Creek. The Belina Mina Complex is located on a tributary, Whisky Gulch, to one of these lateral drainages, Eccles Creek. These drainage areas are V-shaped valleys with very steep slopes and narrow bottoms. The Mud Creek drainage has a more U-shaped Valley with steep slopes and a broad, relatively flat bottom.

The Price River/Huntington Creek drainage divide crosses the permit area. On the east side of the divide, Mud Creek drains into the Scofield Reservoir, which releases water into the Price River. On the west side, water from Huntington Creek drains into the San Rafael River.

The slopes at the Belina Mine Complex range from 30 to 50 %. The North facing slopes are covered with Engelman Spruce and subalpine fir. Aspen communities are found on the south facing slopes. Mountain meadow communities are scattered on upper slopes and ridges. The Mine Complex is bi-sected by a perennial stream that is bordered by the spruce-fir forest.

The permit area is underlain by the Musuk Shale Member of the Mancos Shale, the Star Point Sandstone, the Blackhawk Formation and Price River Formation of the Upper Cretaceous Mesa Verde Group. The Blackhawk Formation is the coal-bearing unit. The area is cut by several faults, the largest being the north-northeast-trending Pleasant Valley Fault east of the mining area. Other important faults that influence the groundwater flow in the vicinity of the Belina Mine Complex are the O'Connor and Connelville Faults. An intrusive dike extends through the area and is believed to serve as an east-west ground water barrier through the Belina Mines Complex. Although groundwater movement primarily occurs along the zones mentioned above, numerous small seasonal springs also occur from the Blackhawk Formation.

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Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit revision.

PERMIT AREA

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

Analysis:

The permit area encompasses six and 1/2 square miles of land (Vol 2, page 1-1), plus 160 acres from the 1999 lease modification (Volume A4). Total acres within the proposed disturbed area boundary are 151.1 total with 69.2 acres within the Mine Complex boundaries (Vol 2, page 1-10). The White Oak Mine Complex is located approximately 2 miles south west of the intersection of highways 96 and 264 in the Whisky Creek Canyon. Some times the White Oak Mine Complex is referred to as the Belina Mine Complex in the MRP.

Existing surface disturbance occurs in three locations within the permit area (see page 1-10 and Plate R645-301-231.100):

* White Oak Mine Complex	60.9 acres currently 69.2 acres proposed
* ValCam loadout	33.2 acres
* General Office Area	2.6 acres
* Lower Haul Road	22.7 acres
* Upper Haul Road	23.4 acres
Total proposed	151.1 acres

Within the 69.2 acres of disturbance at the White Oak Mine Complex consists of 29.5 acres disturbed by the underground mining and an additional 17.3 acres disturbed by surface mining. The total area to be surface mined is 29.4 acres (Plate R645-301-231.100). The total area of disturbance within the Mine Complex disturbed area boundary is 46.8 acres.

Of the 29.4 acres to be disturbed by surface mining, 16.6 acres will have topsoil removed prior to disturbance.

Findings:

Information provided is adequate to meet the permit area description requirements of the Regulations.

CLIMATOLOGICAL RESOURCE INFORMATION

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

Analysis:

The application states that the average annual precipitation is near 26 inches annually (Section 357 and Page R-7 of 37). Appendix 7-1 provides data from 1984 to 2000 from the Skyline Mine in Eccles Canyon. Average monthly precipitation for all twelve months of the year and average annual precipitation is provided. On the average over the last sixteen years there has been 25.23 inches of precipitation annually at the Skyline Mine. The range was between 17.24 inches in 1989 and 32.47 inches in 1996. Seven years out of the sixteen were either at or above the required 26 inches. Weather information will be updated periodically for the purpose of applying for a shortened bond release period.

Section 724.411 refers to Jeppson et al. (1968)¹ as noting that the area has a mean annual precipitation of approximately 30 inches. The MRP states in section 724.411, "The national weather service recording precipitation gauge installed in Eccles Canyon recorded 29.8 inches of rain and snowfall during 1980." The Information provided in Table 724.411 from Coastal States weather station for the years 1985 through 1990 indicates that the average annual precipitation for the location is 22 inches.

The present information does not substantiate the claim of an excess of 26 inches of annual precipitation.

Findings:

Based on the information provided the liability period before bond release will remain ten years. The information provided in the proposed amendment is considered adequate to meet the Climatological requirements of the Regulations.

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SOILS RESOURCE INFORMATION

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

Analysis:

Soils resource information can be found in Volume 1/1, Page R-24; Volume 1/3, Section 200; Volume 2/3, Appendix 221; and Soils Map 223.100.

Soils Map 223.100 and Plate 2-1 from 1980 survey entitled, "Report of Vegetation, Threatened and Endangered Plant Species, Soils, and Reclamation Plans for Valley Camp of Utah, Inc., and Lease Area, Carbon - Emery Counties, Utah." All sample sites were located in the vicinity of the ValCam loadout and along Eccles Creek.

Soils Map 223.100 provides Order III level of information for the Belina Mine Complex. The soils within the mine pad area are labeled disturbed. The Taxonomic Classification table on pages 200-4 and 200-5 provides the map unit names for soils surrounding the disturbed area:

In Appendix R2, Plate R645-301-521.150 Sheet 4 Belina Mine Site Surface Facilities As-Built (dated 1993) illustrates the islands of undisturbed ground within the disturbed area.

Specific information for the proposed disturbance associated with contour mining is found in Appendix 2-1, "Soil Inventory and Assessment White Oak Mine Reclamation and Barrier Coal Mining Carbon County, Utah." This study is dated June 12, 2001 and was conducted by Mr. Daniel M. Larsen, Soil Scientist with Environmental Industrial Services, Helper, Utah. The soils inventory was conducted according to the standards of the National Cooperative Soil Survey.

Within Appendix 2-1 Section G contains the laboratory soil testing data; Section H of Appendix 2-1 contains soil profile descriptions; Section I contains site and soil photographs. Map J-1 is the Soil Inventory Map and Map J-2 is the Topsoil Thickness Map.

The 2001 soil survey consisted of four backhoe pits. Soil pedons in each pit were described and sampled. Laboratory analysis was conducted by Inter-Mountain Laboratories, Farmington, New Mexico and followed the 1988 Division of Oil, Gas and Mining, "Guidelines for Management of Topsoil and Overburden." In addition to the backhoe pits, the survey included 77 auger and spade sampling locations each spaced approximately 100 feet apart.

The dominant soils on the southeast facing slopes are classified as Pachic Cryoborolls.² A consociation of this soil is shown on map J-1 Soil Inventory Map as Units PC-1 and PC-2. Unit PC 1 has topsoil from 16 - 30 inches in depth and Unit PC 2 has topsoil from 30 - 40 inches in thickness. Map Unit PC1 and PC2 soils support stands of aspen. An inclusion in this unit is the sparsely vegetated slump Zone (Map Unit S2) soils which lack a defined topsoil layer.

On the north facing slopes Cryoboralf³ (Map Unit CBF) soils were mapped. The topsoil depth in these soils is 10 - 15 inches. They support spruce-fir vegetation. An inclusion of wetland soils (Map Unit AV) supports sedge vegetation.

Other map units that were noted were Typic Cryoborolls⁴ (Map Unit TC) with a topsoil layer of 12 - 16 inches supporting the grass-forb vegetation type. An inclusion of disturbed soils (Map Unit DZ) is mapped within the Typic Cryoborolls.

Table D1 outlines the soil depth in each map unit and the topsoil thickness along with soil texture, vegetation, slope and aspect and the estimated K values. Table F1 in Appendix 2-1 estimates 59,824 cubic yards could be salvaged from 20 acres prior to surface mining. This estimate was made in June 2001 before the September 2001 proposal to add 8.28 acres to the surface mining boundary.

Estimates of the Present and Potential productivity of the existing soils have been made by Leland Sasser of the NRCS after comparison of the Order 1 Soil Survey report and Order III soils information for the County. Mr. Sasser's estimate of present productivity was made without a field visit. Site specific information was gathered by Dr. Stanley Welsh of Endangered Plant Species, Inc. and is found in Appendix 321.

Findings:

Information provided is considered adequate to meet the environmental soil resource requirements of the Regulations.

ALLUVIAL VALLEY FLOORS

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

² "Pachic" for thick SubGroup, "Cryo" for icy cold Great Group, "bor" for cool SubOrder, "oll" for Mollisol Order. Mollisol soils are deep soils formed under grassland.

³ "Cryo" for icy cold Great Group, "bor" for cool SubOrder, "alf" for Alfisol Order. Alfisol soils have ochric (thin, light colored and low in organic matter) and argillic (clay accumulations) horizons, moderate to high base saturations and have plant available water for at least three months of each year.

⁴ "Typic" for typical of the Cryoboroll Great Group.

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Analysis:

Alluvial valley floor determination

The Division's March 1984 Technical Analysis provides a summation of the history of the alluvial valley floor determination. In 1984, the Division stated that Whisky Canyon and Pleasant Valley above the Utah No. 2 facilities were observed by the Office of Surface Mining in August of 1983 to be too narrow for flood irrigation or subirrigation agricultural activities. Also in 1984, it was noted that the pastures below the Utah No. 2 Mine (ValCam Loadout) are flood irrigated and the grasses on the valley bottom may be subirrigated. Map R645-301-411.100 Premining Land Use Map shows the land use down stream of the Belina Mine Complex. Shown on this map, are two pastures along Mud Creek in Pleasant valley below the Utah No. 2 Mine (ValCam Load Out).

Thus, in accordance with R645-302-321.300, the Division finds that Whisky creek does not lie within the Alluvial Valley Floor. Furthermore, the Division finds as per R645-302-232.100 that this surface mining operation will not interrupt farming in the alluvial valley downstream of the surface mining activity.

Findings:

The Division's 1984 determination that an alluvial valley floor exists in Pleasant Valley below the mine site remains unchanged. In accordance with R645-302-321.300, the Division finds that Whisky creek does not lie within the Alluvial Valley Floor. Furthermore, the Division finds as per R645-302-232.100 that this surface mining operation will not interrupt farming in the alluvial valley downstream of the surface mining activity.

PRIME FARMLAND

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

Analysis:

Section 221 of the application indicates that there are no prime farmlands within the mine area and refers to documentation from Mr. George D. Macmillan, State Conservationist, USDA Soil Conservation Service (May 28, 1982) in Appendix 2-2. This 1982 letter from Mr. George McMillan (signed by Harold Brown, in Mr. McMillan's absence) does not reference the site location.

The Division concurs that there are no prime farmlands at the Belina Mine site, due to the Land use capability classification of Class VIII – wherein use for plant production is precluded

due to steepness of slope. The use of the land is limited to recreation, wildlife, water supply or aesthetic purposes.

However, the Division recognizes that prime farmlands do exist immediately downstream of the Valcam Loadout.

Findings:

The Division concurs with the Natural Resources Conservation Service (formerly the Soil Conservation Service) that the land within the permit boundary is not prime farmland.

OPERATION PLAN

COAL RECOVERY

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

Analysis:

Contour Mining will be utilized to recover the coal from the Lower O'Connor Seam and the Upper O'Connor seam. Plate 5-1C illustrates the progression of coal recovery and itemizes the ratio of coal to banked spoil. The average ratio of coal to spoil that will be moved is 1:4. Production is expected to be 773,000 tons total. The contour mine should be complete within 14 months (Section 523, page 500-15).

Based upon the spot market prices for Utah as noted in the September 3, 2001 Coal Outlook⁵ this coal is valued at \$23.00/Ton. The range for the year was \$15.25/ton to \$23.00/ton based upon 11,800 Btu/lb and 0.8 lbs/mmBtu of sulfur dioxide. At the current value, the total reserve of coal to be contour mined is worth \$17,779,000.

Underground mining at the WhiteOak No. 2 Mine was completed in September 2001. Portal access is presently blocked by a chain link fence. During surface mining, the debris from the demolition of structures will be pushed into the openings and then overburden will be pushed over to cover the debris, exposing the first two rows of pillars. Coal from these pillars will be recovered. Access to the underground portion of the mines will be restricted during surface mining. (The final seals on the No. 2 mine will be constructed after surface mining is completed.)

⁵ "Coal Outlook." V. 25 No. 36. Monday September 3, 2001. (Financial Times Energy: Arlington, VA).

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Coal will be loaded into tandem belly-dump coal trucks and transported to the Valcam Loadout Facility storage pad (Section 528).

The logistics of snow removal and storage during coal recovery have been addressed in on page 500-13.

Findings:

Information provided in the proposed amendment is considered adequate to meet the Coal Recovery requirements of the Regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Removal and Storage

The application indicates in Section 232, Topsoil and Subsoil Removal, that the entire depth of the topsoil horizon will be removed or if the topsoil is less than six inches in depth, then a layer that is six inches will be removed. The application further states that clearing and grubbing operations will precede the topsoil salvage.

The application indicates in Section 523, Mining Methods, that the topsoil salvage operation will be dependent upon the weather. Initial topsoil storage will start with the VSM material and a portion of the topsoil above the bathhouse. The remaining topsoil will be recovered in the spring and early summer for storage ahead of the mining process.

The Permittee is reminded that soil aggregate structure is impacted by three factors: handling, compaction and moisture. Care should be taken to limit the number of times that the soil is traversed during grubbing of vegetation. To avoid excessive compaction and loss of structure, soils should not be handled when they are too wet or too dry. Generally the following two rules apply:

- If the soil sticks to the equipment, wait until the soil has dried to a friable state (readily crumbled when crushed)
- If the soil is too dry and hard to handle, add water until the soil is wetted to a loose and friable condition.

For previously undisturbed ground, topsoil removal will be conducted according to Map J-2 of Appendix 2-1, Topsoil Thickness, where the range and the average thickness of topsoil is

outlined for each soil map unit. Projected recovery volumes are reported in Table 232a. The total approximate volume to be recovered is 65,359 cubic yards. The total capacity of the six topsoil storage locations is 102,350 cubic yards (Section 231.400).

The Permittee is reminded to salvage the entire depth of the topsoil horizon. If topsoil volumes in excess of 60,000 cubic yards or in excess of 67,870 cubic yards are salvaged, alternative locations for storage have been identified on Map R645-301-521.150, Whisky Creek Surface Mine Surface Facilities.

Storage

Topsoil storage areas are discussed in section 231.400, 232 and 234, and page R-9 of the Reclamation Plan and locations and cross-sections are shown on Map 521.165 Potential Topsoil Storage Piles and Cross Sections (and in less detail on R645-301-231.100).

Section 232 indicates that topsoil will be divided into three storage piles based upon its origin. The three types are

1. aspen zones (PC-1, PC-2, TC and VSM)
2. conifer zones (CBF and AV)
3. Whisky Creek stream channel.

Plate R645-301-521.165 shows topsoil pile storage locations and topsoil pile cross-sections. All piles will have 2h:1v slopes or less. Section 231.400 of the application describes the dimensions of the probable locations of topsoil storage.

- Pile #1. The roadway above the surface mine has a capacity for 6,500 cubic yards. Average dimensions = 39' wide X 815' long X 5.53' thick.
- Pile #2. The coal storage pad has the capacity of 26,800 cubic yards. Average dimensions = 130' wide X 25' long X 24.4' thick.
- Pile #3. The truck loop has the capacity for 26,800 cubic yards. This pile will lean against the spoil also stored on the site and extend to the first bench on the spoil, fifty feet in height. Average dimensions = 100' wide X 250' long X 28.94' thick.
- Pile #4. Adjacent to Sediment Pond 004a, there is a capacity of 25,250 cubic yards. Average dimensions = 220' wide X 200' long X 15.49' thick.
- Pile #5. West of the coal storage pad there is the space to hold 14,200 cubic yards. Average dimensions = 100' wide X 200' long X 19.17' thick.
- Pile #6. The current spoil storage pile located on the slope north of the administration buildings has a capacity for 2,800 cubic yards. Average dimensions = 50' wide X 180' long X 8.4' thick.

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A total storage capacity of 102,350 cubic yards exists in the six proposed storage locations.

In accordance with R645-301-234.200, all topsoil storage areas will be located to be stable and to protect the soil from contamination, compaction and erosion (as stated in Section 231.400 of the application).

Section 231.400 specifically outlines the protection that has been afforded topsoil stored at site #1 (the 975 cubic yards of topsoil presently on site). (By the way this topsoil pile is not designated as site #1 in any other location in the plan or on any map.) Methods of protection are listed as straw bales and silt fencing. Perhaps the best protection has been the forest surrounding the stockpile.

Specific performance standards for topsoil protection are stated in Section 251 through 252. They include:

- The presence of a qualified soil scientist during topsoil stripping (Section 232).
- Topsoil stripping with the control of pedestals (Section 232).
- Installation of a berm or silt fence along the perimeter of the stockpiles.
- Surface roughening and slash.
- Seeding with the interim mix found on page 16 of the operations plan.
- Seeding with an annual grain at the rate of 100 PLS/acre when the topsoil pile is formed in a season other than fall. Followed by seeding with the interim mix in the first fall season.
- Filling rills and gullies and seeding with the interim mix.

Topsoil will be identified with signs and marker.

Substitute Topsoil

A substitute topsoil storage pile of 975 cu yards is stored at the Belina Mine Complex. The material is intended for use at the Belina Mine Site (Vol 1/3, Section 231, page 200-21 and Vol 1/1, page R-4). The application states in Section 251 through 252 that this topsoil stockpile will be used to reclaim the conifer zones

Section 231.300, Section 232 and Map 231.300, Suitability of Topsoil Substitutes (Sheet 4 of 4) and the Reclamation Plan (App R-1) discuss the use of soil from the slopes of the Belina Mine Complex that have been seeded and stabilized as substitute topsoil. As discussed on page R16 of 35, prior surface mining, approximately 4,300 cubic yards of this Vegetation Supporting Material (VSM) located above the No. 2 Mine portals will be salvaged (nine inches from 3.6 acres).

To support the use of spoil as substitute topsoil material, analysis of the soil is provided in Appendix 623.100. Drawing A5-0075 in Appendix 623.100 shows the location of holes #1, #2 and B5 adjacent to the truck turn-around on the pad above Pond 004A. Plans in the approved MRP are to salvage this material from the surface to a depth of eight feet in this location to generate 984,000 cu ft or 36,444 cubic yards of substitute topsoil (cross-section provided on Drawing A5-0075).

The soil was sampled down to a depth of 8 feet at sites number 1 and 2. At location B-5, the soil was sampled to a depth of 30 feet. A clay texture was encountered at several depths through the profile at location B-5. The clay layer was determined unsuitable for use as substitute topsoil.

Although this location will be covered by the spoil removed from the initial mining of pits 1, 2 and 3 shown on Figure 9-3, Temporary Spoil Storage, this source of substitute topsoil may yet be used during reclamation of the haul road.

Findings:

A qualified soil scientist will be on site during topsoil stripping. Information provided in the proposed amendment is considered adequate to meet the Operations plan Topsoil and Subsoil requirements of the Regulations.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 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.

Analysis:

Excess spoil

Spoil storage is noted on Figure 9-3 and Map R645-301-521.150 Sheet 4a and is described in the Surface Mine Spoil Management Plan section of Operational Plans and Sections 526.300 and 528.

The spoil from the development of the first pit will be stockpiled on the coal stockpile pad. The projected volume of spoil to be stored in this location is 305,049 loose cubic yards (LCY). This spoil will remain until the final pit is reclaimed (Section 528.200).

The 'life of mine' spoil pile will be stabilized with an interim seeding of barley at the rate of 100 PLS/ac which will be hand broadcast on the slopes and inactive areas of the pile (see Surface

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Mine Spoil Management Plan). The 'life of mine' spoil pile will also be stabilized by a grade break at fifty feet. The lowest elevation of the pile will be 8,925 feet and the highest elevation of the spoil pile will be 9025 feet.

Findings:

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

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Acid and toxic-forming materials

Utah's chief coal producer is the Blackhawk formation, an interbedded formation of sandstones and shales (Section 621). Three types of shale occur in the Blackhawk formation: common clay shale, carbonaceous shale, and smoke-gray shale. A summary of the geologic mapping included within the permit is shown in Table 622a. Selected drill hole log information has been included with the permit as Appendix 622.100 (marked confidential). Well 75-30-3 is in close proximity to the area of proposed barrier coal removal. Core BCC-1 was taken specifically for the purposes of surface mining as per R645-301-623.100. The results are in Appendix 6-1. The pH of all strata was between 6.8 and 7.4. For all samples, the EC was less than 2.2 mmhos/cm and the SAR was calculated at less than 0.7. Boron was reported at less than 1.1 mg/kg for all samples. Soluble selenium was less than 0.07 mg/kg in all but one sample interval (175.5 – 181 feet) where a value of 0.12 mg/kg was reported. During reclamation, this layer will not be placed in the root zone during final reclamation or in drainages or stream channels (Section 623.100).

The chemical make-up of overburden sampled during the face-up of the Belina Mines is presented in Table 623.100a. Sample locations are indicated in Appendix 623.100a. In early 1983, roof and floor boreholes BP-1 and BP-2 were analyzed and extreme concentrations of boron and copper levels were reported. Subsequent analysis of the same boreholes did not duplicate the elevated numbers (page 600-6, Section 623.100). Calcium and sodium were reported, but magnesium was not. It is impossible, therefore, to calculate the SAR value. Test

holes drilled from the surface down to 30 feet did not report elevated boron and SAR values were within the Division's guidelines for suitable substitute topsoil material.

A sample of coal has been shipped from the Valcam Loadout Facility biannually for analysis of acid-toxic forming potential. The results of the 1993 analysis were inserted into the Appendix 623.100b. In 1993, the coal sampled was not an acid generator and did not contain elevated levels of boron, selenium or sodium.

The "Disturbed Area Spoil Management Plan" described on page O-14 of 14 indicates that if any acid or toxic forming materials are encountered, disposal will be in accordance with the Regulations. Furthermore, in Chapter 7 (page 700-57 of 105) testing of the rough graded spoil for acidity or toxicity is explained. One sample per five acres will be taken and one sample per drainage will be taken. Where acid forming or toxic forming materials are found, they will be covered to a depth of four feet with spoil. This sampling program will be undertaken with cooperation from the Division.

Findings:

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

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Topsoil piles will be labeled with signs during the barrier coal removal operation.

Findings:

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

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RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The reclamation of white oak haul road will utilize the pad material underneath the loadout facility (Page R-3 of 37). Haul road reclamation will begin during year 2 of reclamation. Work will proceed from the bottom of the road up, because fill materials used will be generated from the mine site (page R35 of 37). There appear to be two conflicting statements on page R35 of 37: "During Year 1 of final reclamation, Sediment Pond 004A will be removed " and "During Year 2 initial phases of fill removal from the coal storage pad and sediment pond 004A and construction of runoff control channels."

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. As a stipulation to the permit, the Permittee must provide the following in accordance with:

R645-301-541.400, Details of the reclamation sequence of the Belina Haul Road and the White Oak Complex coal pad and Sediment Pond 004A are requested as a stipulation of the permit.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

The sequence of surface mining is shown in Plate 5-1C. Each subsequent pit will be drilled and blasted and spoil will be pushed into the preceding pit (Section 528).

TECHNICAL MEMO

Appendix R2 summarizes that a total of 3,538,118 loose cubic yards of spoil will be moved during operations and 3,416,498 bank cubic yards of total backfill is required. The application states that 96.6% of the available material will be used for backfilling.

The total bank cubic yards to be removed during operations is illustrated in Plate 5-1C and calculated in Appendix R2. An assumption is made in Appendix R2 that the density of the coal is 1.08 Tons/cu yd.

Reclamation areas A – F are identified on Figure R-11, Spoil Backfill & Reclamation Details, in Appendix R2. Figure R-11 designates areas A through F as opposed to operations pit numbers 1 - 13 shown on Plate 5-1C. The Division notes the approximate relationship between areas A through F and pits 1 - 13 in the table below. The figure of 29.2 acres is comparable with the figure of 29.4 acres given on Map R645-301-231.100.

Operations Areas (Plate 5-1C)	Reclamation Areas (Figure R-11) sq ft	acres
Pit #10	Area A	24,107 0.55
Pit #9, 10 & 11	Area B	206,175 4.73
Pit #4, 5, 6, 7, 8, & 9	Area C	312,879 7.18
Pit # 6 & 7	Area D	134,136 3.08
Pit # 4 (south portion)	Area E	56,254 1.29
Pit # 1, 2, 3, & 4	Area F	539,000 12.37
	TOTAL AREA	1,272,551 29.2

Backfilling and rough grading of each pit will occur contemporaneously with coal removal from adjacent pits (Section 532.100). However, in Section 553, Backfilling and Grading, the Permittee has requested additional time from the 60 days or 1500 linear feet requirement of R645-301-553. The reasons for this request are that the first three pits will be 90 days in the making and at the end of coal removal, probably the fourth month, overburden from the fourth pit will begin to fill the first three pits. (The mining sequence is shown on Plate 5-1C.) Grading of the fill will be done to create access to adjacent areas. Grading of the first three pits and of the fill against the highwall will not meet the 60 day requirement.

Findings:

The Permittee has requested additional time under R645-301-553 for rough grading of the backfill in the first three pits and against the highwall. The Permittee estimates that 120 days will be required for rough grading of the first three pits. The highwall will be roughgraded at the time of final reclamation which is estimated to be in 12 to 14 months from the start of surface mining.

TECHNICAL MEMO

TOPSOIL AND SUBSOIL

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

Analysis:

The regraded surface will not contain more than 35% rock fragments in the top two feet of fill (Section 242 and Surface Mine Spoil Management Plan portion of the Operational Plan).

Extreme surface roughening as described in the Division's reclamation manual (page R12 of 35) will be used on all slopes after the distribution of topsoil in accordance with R645-301-242.200 and R645-301-553.230 and R645-301-553.240.

In section 242 of the variable re-application of topsoil is explained, such that nine inches (+/- 25%, or 6.75 – 11.25 inches) of topsoil will be placed in areas "where pine trees are prevalent;" sixteen inches (+/- 25%, or 12 – 20 inches) of topsoil will be placed "in the aspen areas;" and a minimum thickness of six inches will be placed "in the shrub/grassland zones." These zones of topsoil replacement depth are identified in Table 242a Topsoil Redistribution and outlined on Map R645-301-242 Topsoil Redistribution.

A qualified soil scientist will be on site during the redistribution of topsoil. Stakes will be utilized to provide quality control of topsoil replacement (Section 242).

On page R22 of 35, under Soil Characteristics, the application describes soil sampling to be conducted after grading which includes sampling for a long list of parameters. Likewise, page R-23 of 35 in the Reclamation Plan, states that "After the earthwork has been completed the soils will be tested as described and fertilizers, nutrients, and conditioners will be applied as needed." It is the Division's understanding after talking to Dave Miller of Lodestar Energy that these portions of the application apply to the ValCam Loadout and the haulroad and other areas where a large portion of the substitute topsoil is spoil that has been previously seeded and called throughout the plan, "Vegetation Supporting Material.

Findings:

Information provided in the proposed amendment is considered adequate to meet the Reclamation Topsoil requirements of the Regulations.

STABILIZATION OF SURFACE AREAS

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

Analysis:

Fill slopes will generally not exceed 2h:1v except at points of intersection with the existing hillsides (page R11 of 35). Cross-sections are shown on Maps R645-301-521.160 and Maps 527 Sheets 1 through 14. Slopes will be graded to concave and complex shapes (Page R11 of 35).

The Permittee has stated that the saturation of the fill will be minimized due to the seam dip and the gradation of the spoil placed against the highwall. A partial saturation slope stability analysis is included in Appendix R2.

The reclamation plan indicates that surface roughness will be important in retaining moisture and reduce erosion. Topsoil and certified weed free alfalfa hay (1 to 2 tons per acre) will be incorporated into the slope by extreme surface roughening (page R12 and R23 of 35). After seeding, additional straw (1 ton/acre) and wood fiber mulch (500 lbs/acre) with tackifier (80 lbs/ac) will be applied (also page R12 of 35).

Timely revegetation and straw bales will be utilized as well as other appropriate sediment control devices downstream of all construction (page R-9 and R-21 of 37).

Erosion pins on slopes (R28 of 37) used to monitor erosion. All slopes will be monitored. Rills or gullies which disrupt the postmining land use or the re-establishment of vegetative cover or degrade water quality (Page R31 of 37) will be corrected within 60 days. Erosion monitoring will follow the 1990 Office of Surface Mining publication entitled "Erosion Condition Classification System - Technical Note - Method for Evaluation of Erosion of Reclaimed Coal Lands in Western United States."

Findings:

Information provided in the proposed amendment is considered adequate to meet the Reclamation Stabilization requirements of the Regulations.

TECHNICAL MEMO

STEEP SLOPE MINING

Regulatory Reference: 30 CFR Sec. 785.15; R645-302-230 et. seq.

Analysis:

Surface mining described in this application is being conducted on slopes of 3h:1v or greater and by R645-100 definition is Steep Slope Mining. The Division required additional information of the Permittee and has conducted three rounds of review to be assured that mining will be conducted in accordance with the requirements of R645-302-234 Backfilling and Grading.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of Steep Slope Mining.

RECOMMENDATION:

The surface mining plans received from Lodestar Energy are recommended for approval, with further explanatory information on reclamation of the sediment ponds and haul road requested as a stipulation of the permit.