0012

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)

June 1, 2001

TO: Internal File

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

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

SUMMARY:

The permittee submitted an amendment on February 2, 2001 to remove the barrier coal using surface mining techniques (supplemental information arrived on April 17, 2001). Removal of the facilities on site would precede the surface mining. Reclamation of the western half of the mine site would ensue. Although the surface mining activity remains within the confines of the disturbed area boundary, undisturbed ground within the disturbed area will be affected. The change in mining method is considered a significant revision to the permit. The application supplements the existing MRP, but does not replace it.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

Plate 341.300 shows areas where vegetation is encroaching, however Plate 341.300 could not be found.

The location of spoil was not found on Sheet 4 of R645-301-231.300 as indicated in Volume 1/1 on page O-14.

Coal recovery boundaries on Plate 5-1C vary slightly from those on Plates R645-301-231.100, and R645-301-527 Sheets 12 and 13.

Volume 1/1, Page R-8 indicates, "No spoil and/or waste materials are presently known to exist within the Permit Area." However the existing MRP makes provisions for spoil in Volume 1/1 on page O-14 at the top of the page. The spoil storage area is shown on Map R645-301-527, Sheet 12 and also on Map R645-301-231.300, Sheet 4. (The location was not found on Sheet 4 of R645-301-231.300 as indicated in Volume 1/1 on page O-14.) The area is large enough for 22,500 CY (Operations Plan page O-14).

Appendix R2 relies on cross-sections generated by Figure R11, but Figure R11 is never mentioned.

The application in Section 537.100 indicates that "slopes which appear to be a problem" will be reviewed through geotechnical analysis just prior to final reclamation. Areas which might fall into this category are depicted on Map 521.150 Sheets 1 through 4." The Division did not notice any areas specifically noted as such on Sheets 1 through 4.

Areas, which have been significantly stabilized, may not be redisturbed during reclamation. Such as: cut and fill slopes on roads, operation pads, and outside slopes of sediment ponds (Page R-4 of 37).

Findings:

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

R645-301-522 and R645-300-133.100, Verify boundaries of coal recovery shown on Plates R645-301-231.100 and R645-301-527 sheets 12 and 13 with those found on Plate 5-1C.

R645-301-121.100 and R645-301-535, Update page R-8 to correct the statement, "No spoil and/or waste materials are presently known to exist within the Permit Area." And make other corrections to the Reclamation Plan in Volume 1/1 as appropriate and locate the spoil storage area on Map R645-301-231.300, Sheet 4 to show the spoil storage area as noted on page O-14, Vol 1/1.

R645-301-121.100, Please reference Figure R11 as a source of information for calculations in Appendix R2.

R645-301-121.100 and R645-301-537, Update Map 521.150 Sheets 1 through 4 to reflect information discussed in Section 537.100.

R645-301-353, Delete the unacceptable statement on page R-4 of 37.

ENVIRONMENTAL RESOURCE INFORMATION

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

GENERAL

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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, Whiskey 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.

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 ½ square miles of land (Vol 2, page 1-1), plus 160 acres from the 1999 lease modification (Volume A4). Total acres within the disturbed area boundary are 142.8 total with 60.9 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:

- White Oak Mine Complex ..... 29.5 acres increasing with contour mining to 43 acres (information from Plate R645-301-231.100)
- ValCam load out.....18 acres
- Haul road from Eccles Creek to the White Oak Mine Complex, 1.79 miles.....25 acres

Total area to be reclaimed at the White Oak Mine Complex is 25.7 acres according to Figure R-11. This figure does not appear to correlate with the projected acres of disturbance as described on Plate R645-301-231.100.

Findings:

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

R645-301-121.100 and R645-301-511.100, Provide in Chapter 1, Legal and Financial, current information on the disturbed area boundary at the White Oak Mine Complex as compared with the area of ground presently disturbed with underground mining and ground to be disturbed with surface mining at the White Mine Complex and the total acreage to be reclaimed.

CLIMATOLOGICAL RESOURCE INFORMATION

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

Analysis:

The application states that the average annual precipitation is in excess of 26 inches annually (Section 357 and Page R-8 of 37)) and 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." 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.

Information in this section requires updating. The present information does not substantiate the claim of an excess of 26 inches of annual precipitation. Please update the information provided for this site with the past twenty years of data from the National Weather Service station in Eccles Canyon.

Due to the steepness of the reclaimed slopes and the anticipated snow loading of those slopes, additional data is requested under R645-301-724.420.

Findings:

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

R645-301-357, Provide current, supporting information to verify the average annual precipitation stated in Section 357 and on Page R-8 of 37.

R645-301-724.420, Summarize the past twenty years of National Weather Service station information for Eccles Canyon into average monthly precipitation for all twelve months of the year and average annual precipitation.

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:

1 Jeppson, R.W., G.L. Ashcroft, A.L. Huber, G.V. Skogerboe, and J.M. Bagley. 1968. Hydrologic Atlas of Utah. Utah Water Research Laboratory and State of Utah Department of Natural Resources. PRWG35-1. Utah State University. Logan, Utah.

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." During this survey, pits were dug at each vegetation site, the soil was described and samples were sent for analysis to the laboratory. Soils Map 223.100 provides sample site locations and outlines soil map units. .

Unfortunately, none of the sample sites shown on Soils Map 223.100 corresponds to the Belina Mine Complex. All sample sites were located in the vicinity of the ValCam loadout and along Eccles Creek. Plate R645-301-521.150 Belina Mine Site Surface Facilities As-Built (dated 1993) illustrates the islands of undisturbed ground within the disturbed area. No specific information has been provided to date on the 13.4 acres of disturbance where topsoil removal will be requires prior to surface mining.

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

a – Loamy-skeletal, mixed, mollic cryoboralfs on the north facing slopes
A – a mix of "a" and Fine-loamy, mixed Typic Cryoboralfs on the north facing slopes
D – a complex of Fine loamy, mixed Argic Pachic Cryoborolls; Loamy-skeletal, mixed Typic Argiborolls; Loamy-skeletal, mixed Argic Cryoborolls; and Fine-loamy, mixed Argic Cryoborolls on the north - facing slopes.
B – Fine loamy mixed Argic Pachic Cryoborolls and Loamy-skeletal, mixed Typic Argiborolls; Loamy-skeletal
f - similar to B with 30% of the soils having a slope greater than 60% and as much as 50% rock fragments less than 12 inches.

The general description of the soils (a, A, B, & f) provided by this survey is a loam with a mollic epipedon 8 – 14 inches thick (page 200-7). An argillic horizon is found at approximately 12 inches. The C horizon is found below two feet and bedrock at a depth of four or five feet. The erosion hazard is severe (after disturbance) due to steep slopes of 35 – 50%. A description of soil type D was not found in the MRP perhaps because it was not encountered in the survey.

Findings:

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

R645-301-222, Provide soil survey information for those portions of the permit area to be affected by surface operations incident to underground coal mining and

reclamation activities and for the permit area of surface coal mining and reclamation activities consisting of the following: a map delineating different soils; soil identification; soil description; and present and potential productivity of existing soils. The survey will meet the standards of the National Cooperative Soil Survey. The survey could utilize Map R645-301-521.150 (dated 1993) for locations of undisturbed ground within the Belina mine facilities area.

ALLUVIAL VALLEY FLOORS

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

Analysis:

Alluvial valley floor determination

The Division's March 1984 Technical Analysis provides a summation of the history of the alluvial valley floor determination. There it is written that the Whiskey 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. And, it is confirmed that the pastures below the Utah No. 2 Mine (ValCam Loadout) are flood irrigated and that 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).

Findings:

The information provided is adequate for the purposes of this regulation.

PRIME FARMLAND

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

Analysis:

Section 221 of the application indicates that documentation from Mr. George D. Macmillan, State Conservationist, USDA Soil Conservation Service (May 28, 1982) stating that there are no prime farmlands within the permit area was placed in Appendix 221. However, the communication referred to could not be found in Volume 2/3, Appendix 221.

Findings:

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

R645-301-221, Please locate the SCS prime farmland determination letter dated May 28, 1982 or contact the SCS for a new letter of prime farmland determination.

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 moved is 1:4.4. Production is expected to be 600,000 tons annually. The contour mine should be complete within 14 months (Section 523, page 500-15).

On Plate 5-1C, the sequencing of mining does not occur in a linear fashion. The installation of French drains will be difficult under this scenario. Please explain the reason for the proposed sequencing.

Coal recovery will occur after underground mining at the WhiteOak No. 2 Mine is completed. The final seals on the No. 2 mine will be constructed after surface mining. Access to the underground portion of the mines will be restricted during surface mining.

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

Please address the logistics of snow removal and storage during coal recovery and the effects of snow saturation on the backfilling and compacting reclamation grading.

Findings:

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

R645-301-522, On Plate 5-1C, the sequencing of mining does not occur in a linear fashion. The installation of French drains will be difficult under this scenario. Please explain the reason for the proposed sequencing.

R645-301-528, Please address the logistics of snow removal and storage during coal recovery.

R645-301-542.200 and R645-301-553.210, Please address the effect of snow saturation on the backfilling, soil stabilization, compacting and grading plan.

TOPSOIL AND SUBSOIL

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

Analysis:

Removal and Storage

Removal of the A & B horizon or six inch depth or all unconsolidated material if less than 6 inches (Section 232) will be conducted on the area shown on Map 231.100. The application indicates that gaining access to an area, clearing and grubbing operations may damage the topsoil. When topsoil is significantly damaged it will not be recovered and stored. This kind of disturbance will be kept to a minimum. The Division recommends that all topsoil is recovered and stored. The Division does not accept the idea that gaining access, clearing and grubbing will significantly damage the topsoil (Section 231.100). Please review these statements and revise them accordingly.

Topsoil storage areas are discussed in section 234, and page R-9 of the Reclamation Plan and are shown on Map 231.100. (One area shown is in an area to be surface mined.) Additional areas will be chosen as the need develops. (Utah Regulation 645-301-521.165 requires that each topsoil pile be clearly shown on a map of the proposed permit area.) 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. Topsoil will be seeded and signed.

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 ValCam Loadout (Vol 1/3, Section 231, page 200-21 and Vol 1/1, page R-4). The application states on page R16 of 37, "Upon reclamation this substitute topsoil will be placed along the access road to the storage area." The Division does not know whether to interprete this statement as the topsoil will be spread over the access road to the storage area or whether the pile will be relocated along the access road. Please address the disposition of this substitute topsoil, which is intended for the ValCam Loadout.

Section 231.300 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. By Division calculations, approximately 4.5 acres hold substitute topsoil material in interim reclamation at the Belina Mine Complex. Page R-16 of 37 indicates that soil from these areas will be salvaged down to three inches below the root zone and temporarily stockpiled or immediately replaced on reclaimed areas. What volume of material will be generated? (How deep is three inches below the root zone?) Stockpiling will occur on the lower pad area near the No. 1 fan or on the storage yard area (page R17-37).

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. According to the cross-section provided on Drawing A5-0075, topsoil substitute material will be salvaged from the surface to a depth of eight feet in this location to generate 984,000 cu ft or 36,444 cu yds of substitute topsoil. This same 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 in Chapter 9 of the application. Please advise the Division of Lodestar Energy's intent with regard to the disposition of the soil reported upon in Appendix 623.100.

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 which limited the suitability of the material. The soil sampled and reported in Appendix 623.100a has not been indicated on Map 231.300 as vegetation supporting material. Again, please advise the Division of Lodestar Energy's intent with regard to the disposition of the soil reported upon in Appendix 623.100.

As further evidence of the reclamation potential of the spoil, the application states (Section 231.100, page 200-22) that Plate 341.300 shows areas where vegetation is encroaching, however Plate 341.300 could not be found.

Plate 5-1C illustrates that the first three mining segments will affect the substitute topsoil stored on the slope (shown on Map 231.300, Suitability of Topsoil Substitutes, Sheet 4 of 4). The application indicates that during surface mining, this substitute topsoil material will be salvaged and segregated (Section 233). The depth of substitute topsoil salvage was not indicated. Therefore yardage to be stored cannot be calculated.

Map R645-301-231.100 illustrates areas of topsoil recovery. The Division notes that the areas to be mined on this map are not exactly the same as that shown on Plate 5-1C (areas 1 & 2). Substitute topsoil salvaged from the operations pad outslope should be indicated on Map R645-301-231.100. Plate 5-1C should be used in conjunction with Plate R645-301-521.150 (dated 1993) to determine islands of undisturbed ground within the Belina Mine site facilities area.

Findings:

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

R645-301-231.300 and R645-301-232.100 and R645-301-232.100, The Division requires that all topsoil is recovered and stored. The Division does not accept the idea that gaining access, clearing and grubbing will significantly damage the topsoil (Section 231.100). Please review these statements and revise them

accordingly.

R645-301-234.200, Please address the disposition of the substitute topsoil (Section 231, page 200-21 and Page R16 of 37 that is intended for the ValCam Loadout and please advise the Division of Lodestar Energy's intent with regard to the disposition of the soil reported upon in Appendix 623.100a.

R645-301-232.200, Indicate the depth of substitute topsoil salvaged from mining locations 1, 2, and 3 as shown on Plate 5-1C and calculate the cubic yards of substitute topsoil to be stored and indicate storage location and indicate all areas of substitute topsoil salvage on the R645-301-231.100, Topsoil Salvage Areas map.

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:

Disposal of noncoal waste

Disposal in state approved landfill (page R-8 of 37).

Coal mine waste

Placed in a controlled manner to prevent combustion and ensure stability and protect the environment (page R-7 of 37).

Refuse piles

No refuse will be generated and no refuse piles will be stored on the surface (page R-8 of 37).

Excess spoil

The existing MRP makes provisions for spoil in Volume 1/1 on page O-14 at the top of the page. The spoil storage area is shown on Map R645-301-527, Sheet 12 and also on Map R645-301-231.300, Sheet 4. (The location was not found on Sheet 4 of R645-301-231.300 as indicated in Volume 1/1 on page O-14.) The area is large enough for 22,500 CY (Operations Plan page O-14).

Surface mining of the barrier coal will create additional spoil. The spoil from the development of the first pit will be stockpiled on the coal stockpile pad as described in Sections 526.300 and 528 and shown on Figure 9-3, Temporary Spoil Storage in Chapter 9 of the application. This spoil will remain until the final pit is reclaimed (Section 528.200). The initial cell development will generate a "life of mine" temporary spoil storage pile of 305,049 cubic yards as indicated in Chapter 9. This spoil pile will not be utilized until final reclamation of the last pits and therefore must be vegetated and stabilized in the interim. A temporary revegetation mix is provided on Page O-14 of 14. However, the plan does not specifically state that this mix will be used on spoil stored on the surface. A definite plan of action for stabilizing the spoil on the surface is required.

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). Appendix R2 summarizes that a total of 2,921,024 cubic yards of spoil will be moved during operations and 2,836,189 cubic yards of total backfill is required; therefore approximately 84,835 cubic yards of excess spoil will be generated. Excess spoil will be used to fill the openings in the mine workings uncovered by the barrier coal removal. Mine workings in the area are shown on Map R645-301-521.141b.

Findings:

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

R645-301-535 and R645-301-731.312 and R645-301-244.100, Describe plans for interim stabilization and reclamation to be conducted on the 305,049 cubic yards of spoil temporarily stored in the excess spoil pile.

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.

Section 624.200 thru 624.230 of the application indicates that no test borings have been conducted because open pit mining will not occur. Section 623.100 indicates, "There have been no data assembled for the rock units above, between and below the coal seams at the Belina Mines." The requirements of R645-301-624.200 must be met for this proposed barrier coal mining application.

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 high concentrations of boron and copper levels were reported. Subsequent analysis of the same boreholes did not duplicate the elevated numbers (page 600-7, 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 seems to be outdated for the surface mining activity. Over the course of surface mining, how will Lodestar Energy identify spoil materials which may be detrimental to water quality or vegetation or public health and safety?

Findings:

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

R645-301-624.200, Meet the requirements of R645-301-624.200 for this proposed barrier coal mining application.

R645-301-731.311, Update the disturbed area spoil management plan (Page 0-14 of 14) for the surface mining activity.

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.

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. Prior to approval, 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 is requested.

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 total bank cubic yards to be removed during operations is illustrated in Plate 5-1C and calculated in Appendix R2. These two references for spoil volumes do not agree. The table below compares figures given in Appendix R2 with those of Plate 5-1C. An assumption is made in Appendix R2 that the density of the coal is 1.08 Tons/cu yd.

	Plate 5-1C	Appendix R2	**Difference**
Total Bank Yardage	2,626,000	3,121,223	
Minus Coal	(665,200 Tons*) - 615,926 cu yds	(742,000 Tons) - 687,037 cu yds	
Estimated Spoil cu yds	2,010,074	2,434,186	**424,112 cu yds**

* An assumption is made in Appendix R2 that the density of the coal is 1.08 Tons/cu yd.

Appendix R2 summarizes that a total of 2,921,024 cubic yards of spoil will be moved during operations and 2,836,189 cubic yards of total backfill. This figure was arrived at after multiplying the 2.4 million figure in the table above by a swell factor of 1.2%. Appendix R2 also indicates that 2,836,189 cubic yards are required for backfill of reclamation areas A – F, 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.

Operations Areas (Plate 5-1C)	**Reclamation Areas (Figure R-11)**	**sq ft**	**acres**
Pit #10	Area A	21,626	0.5
Pit #9, 10 & 11	Area B	131,946	3.03
Pit #4, 5, 6, 7, 8, & 9	Area C	316,052	7.26
Pit # 6 & 7	Area D	134,136	3.08
Pit # 4 (south portion)	Area E	62,680	1.44
Pit # 1, 2, 3, & 4	Area F	454,315	10.43
	TOTAL AREA	1,120,755	25.7

The mining sequence is shown on Plate 5-1C. Backfilling and grading of each pit will occur contemporaneously with coal removal from adjacent pits (Section 532.100). The backfill operation will stabilize the material and regrading will prepare the final graded surface for replacement of the Vegetation-Supporting Material (Section 532.200). Fill material will be

machine compacted and slopes of 3h:1v will be ripped to 14 inches (pg R-12 of 37). Ripping depth will be determined at the time of reclamation (Page R17-37). "No slope equal to or greater than 2h:1v will be ripped since ripping may create a higher potential for slope failure..." (page R-12 of 37). Small depressions will be left to enhance water collection (pg R-12 of 37). "Terraces are planned for areas currently associated with the stockpile yard..." (page R16 of 37). "At present the Operator does not propose the use of cut-and-fill terraces..."(page R-2 of 37).

The Division has reviewed the above statements and found the plan lacking in detail of the treatments that will be applied to slopes of 2h :1v or greater. The Division requests that in accordance withR645-301-242.200 and R645-301-553.230 and R645-301-553.240 information is provided in the plan which describes the treatments afforded to the steep slopes of 2h:1v to prepare them for cover and topsoil material.

Prior to seeding, the Division recommends the following treatments, based upon successful practices in the AMR, Coal and Minerals program:

- Concave slopes
- Contour breaks
- Ripping of subsoil (even on 2h:1v slope prior to applying topsoil)
- Apply topsoil
- Apply straw
- Gouge straw and mulch to create uneven pock marks and to incorporate straw.

Findings:

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

R645-301-528, Reconcile the information provided in Appendix R2 with that provided in Plate 5-1C and adjust the bonding costs accordingly.

R645-301-553, Provide Figure R-11 on the same scale as Plate 5-1C.

R645-301-553.230 and R645-301-242.200, Describe the treatments afforded to the steep slopes of 2h:1v (or greater) to prepare them for cover and topsoil material.

R645-301-553.240, Evaluate the prospect of using terraces to reduce runoff velocity and avoid a catastrophic slope failure.

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution depth of six inches, somewhat roughened (Section 231), Section 233 and Reclamation Plan (App R-1) Temporary reveg of soils (Page O-15 of 15 and Reclamation Plan chapter.

This redistribution depth will be modified due to additional topsoil recovery from the undisturbed ground.

Findings:

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

R645-301-242, Design the redistribution depth based upon the information provided with the Order I soil survey of the undisturbed land with in the disturbed area.

STABILIZATION OF SURFACE AREAS

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

Analysis:

Straw bales will be utilized as well as other appropriate sediment control devices downstream of all construction (page R-9 and R-22 of 37).

Revegetation will occur promptly (page R-9 and R-22 of 37). Fill material will be machine compacted and slopes of 3h:1v will be ripped to 14 inches (pg R-12 of 37). Small depressions will be left to enhance water collection (pg R-12 of 37). A surface bonding agent may be used to reduce slippage of the material (page R-12 of 37). Slopes less than 10h:1v will be disced and harrowed (page R24 of 37). Slopes between 10h:1v and 3h:1v will be mulched with straw (page R24 of 37) and slopes greater than 3h:1v will be hydro-mulched. If required, matting will be installed on steeper slopes. Mulch will be applied at a rate of 1 to 1.5 Tons/acre with approximately 60 lbs of tac per acre if needed (Page R24-37).

The Division recommends the following treatment of seeded slopes:

- Application of straw mulch to seeded surface
- Cover seed and straw mulch with hydromulch and tackifier.

Erosion pins on slopes (R31 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 not considered adequate to meet the requirements of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-244, Outline specific practices in sequence taken to ensure that all exposed seeded surface areas will be protected and stabilized.

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 will not approve the operation until it is assured that mining is conducted in accordance with the requirements of R645-302-234 Backfilling and Grading. For the purposes of this contour mining operation, "spoil piles are comprised of overburden that is disposed of in the pit area after the coal is removed. Such overburden is not considered excess spoil and must be placed according to the provisions of 30 CFR 816.102 – 816.105.... Under 30 CFR 816.102(a)(3), the disturbed areas must be backfilled and graded to 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." (48FR23358 May 24, 1983).

Findings:

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

R645-302-233, Further information as requested inthis technical analysis is required before the operation can be considered in compliance with the R645-301 regulations.

RECOMMENDATION:

More detail is required in the plans received from Lodestar Energy before approval of surface mining operations.

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