



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

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June 1, 2001

TO: Internal File

THRU: Priscilla W. Burton, Reclamation Soil Specialist & Team Lead *FB*

FROM: Gregg A. Galecki, Reclamation Hydrology Specialist *GA*

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

**SUMMARY:**

On February 2, 2001, the Division received an application for a Significant Revision of the Mining and Reclamation Plan at the White Oak Complex to include Surface mining of barrier coal. Mining would occur in areas that are currently disturbed but also extend into areas that are not now disturbed but which are in within the disturbed area boundary. An Administrative Completeness Review (ACR) determined some deficiencies existed, but the proposed amendment was considered administratively complete on March 19, 2001, based on the applicants' commitment to provide the requested information.

The following technical review evaluates the application from a geologic and hydrologic prospective. The current application does not meet the requirements of the State regulations. In addition to the information requested during the ACR review, other deficiencies were observed.

**TECHNICAL MEMO**

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**TECHNICAL ANALYSIS:**

**PERMIT APPLICATION FORMAT AND CONTENTS**

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

**Analysis:**

The following list contains cited examples where the current MRP needs to be changed for accuracy and completeness based on the proposed Significant Revision:

- Page 700-42, **RECLAMATION EFFECTS**, ....Section 760 is a bad reference. Specifics are not covered there.
- Table 731.211a, not sure of edits ( - to +) and references to VC-4.
- Table 742.221e, apparently lists precipitation flow event numbers instead of peak flows for Ponds 004A and D-1.
- Table 742.310b, the need for a second header row within the table is unclear.
- Page O-8 of 14 refers to Map 527 for dugout D-1, which is not on that map.
- Page O-12 of 14 refers to Sediment Ponds 004 and D-1 as shown on Map 527 sheets 12 and 13, which is not true.

**Findings:**

**R645-300-121.100**, Correct the above-cited references to fulfill requirements of submitting an accurate application.

**ENVIRONMENTAL RESOURCE INFORMATION**

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

**ALLUVIAL VALLEY FLOORS**

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

**Applicability of statutory exclusions**

A statutory exclusion is applicable in the proposed Significant Revision because the affected alluvial valley is undeveloped rangeland, and no farming exists in the area. The statutory exclusion is based on State Regulations R645-302-324.221 and -324.222.

**Findings:**

Information in the application adequately addresses the requirements of this section of the regulations.

**GEOLOGIC RESOURCE INFORMATION**

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

**Analysis:**

As outlined in R645-301-622, the applicant will include cross sections, maps and plans showing the nature, depth, and thickness of coal seams to be mined, each stratum of the overburden, and the stratum immediately below the lowest coal seam to be mined. A map similar to Appendix R2 Figure R-11 (including more detailed geology) may be sufficient if referenced as being representative of the actual activity.

In conjunction with characterizing the overburden, Sections 624.200 through 624.320 needs to be completely revised to reflect surface mining activities. To fulfill the requirements of Section 623.100, chemical analyses characterizing any acid- or toxic-forming, or alkalinity producing materials of all overburden stratum, and the stratum immediately below the lowest coal seam to be mined needs to be included.

**Findings:**

Information in the application is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following in accordance with:

**R645-301-622**, provide updated maps describing, in detail, which coal seams are going to be mined, their relative thickness, and overburden.

**R645-301-623**, provide sufficient data to determine all potentially acid- or toxic-forming strata down to and including the stratum immediately below the coal seam to be mined.

**R645-301-624.220**, provide chemical analyses characterizing any acid- or toxic-forming, or alkalinity producing materials of all overburden stratum, and the stratum immediately below the lowest coal seam to be mined.

TECHNICAL MEMO

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## HYDROLOGIC RESOURCE INFORMATION

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

### Analysis:

#### **Sampling and Analysis**

A modification of the Sampling and Analysis is not necessary

#### **Baseline Information**

The baseline currently available is sufficient for the proposed significant revision.

#### **Ground-water Information**

A modification of the Ground-water Information is not necessary.

#### **Surface Water Information**

No additional surface water information is necessary for the proposed significant revision since the majority of the activity is within the disturbed area boundary. However, surface water sampling site VC-4, will be eliminated due to the disturbance. This change will require adjustments to other sections of the MRP outlined below.

#### **Alternative Water Source Information**

If the probable hydrologic consequences determination required by R645-301-728 indicates that the proposed surface coal mining and reclamation activity may result in contamination, diminution, or interruption of a surface water source, then the application will contain information on water availability and alternative resources.

#### **Probable Hydrologic Consequences Determination**

The current PHC does not adequately address the affects of surface mining and the relationship of disrupting the layering of the overlying stratum and the subsequent effects to surface flow quantity. With the disruption of layered overburden, flow currently surfacing in the upper reaches of Whiskey Creek, will potentially no longer surface until encountering competent/low-permeability bedrock; effectively drying up the upper reaches of Whiskey Creek.

With the use of modeling programs or other means, demonstrate the potential/anticipated alteration of surface and groundwater flow within the upper reaches of Whiskey Creek.

**Findings:**

Information in the application is not adequate to meet the requirements of this section of the regulations. Prior to final approval, the applicant must supply the following in accordance with:

**R645-301-728.100**, include a determination of the proposed reclamation operation upon the quality and quantity of surface and groundwater under seasonal flow conditions.

**R645-301-535.145**, conduct a stability analysis as outlined within this cited regulation.

**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.

**Analysis:**

**Monitoring Sampling Location Maps**

Surface sample VC-4 will be eliminated or moved because it will be located within the proposed disturbed area, and no longer represent undisturbed flow within Whiskey Creek. The Monitoring Sampling Location Map needs to reflect this change.

**Findings:**

**R645-301-731.220**, Supply a revised and updated Monitoring Location Map.

**OPERATION PLAN**

**ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES**

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

**Analysis:**

**Plans and drawings**

The Spoils Backfill & Reclamation Details map illustrates two roads (drawing Appendix R2 Figure R-11), located in the extreme southwestern portion of the disturbed area (almost due west of Dugout D-1), that exist on 2:1 and 3:1 slopes, respectively. On the plan view of the

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TECHNICAL MEMO

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proposed contours illustration, it is not clear what roads and facilities will remain upon completion of the proposed amendment.

**Findings:**

**R645-301-542.300, .310, .320**, on the plan view of the proposed contours, illustrate what roads and facilities will remain upon completion of the proposed project.

**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:**

**Surface-water monitoring**

With the proposed alteration of Whiskey Creek, Surface Sample VC-4 will no longer be a viable site since it will now be included in the disturbed area. The elimination or moving upstream of the sample site needs to be addressed.

**Acid and toxic-forming materials**

With the use of data collected from the characterization of the overburden and underlying units demonstrate that no acid and toxic-forming materials exist.

**Stream buffer zones**

A complete alteration/disruption of the upper reaches of Whiskey Creek will take place during the proposed Surface mining operation. Approximately 700-ft of Whiskey Creek, not previously disturbed will be rebuilt during the proposed revision. To determine the effects on water quantity, quality, and other environmental resources of the stream, additional detailed information needs to be provided. At a minimum, outline if any temporary diversions will be used, supply detailed cross sections and maps of the design of the temporary/permanent diversion, and demonstrate the proposed design will handle anticipated storm events. Portions of the stream proposed for alteration under the proposed plan will need a design that incorporates 'the best technology currently available (BTCA)'. The BTCA recommends the use of bioengineering, drop structures, and natural stream channel design concepts and limits the use of riprap channels. The same channel design is suggested as an alternative to the currently accepted channel design.

Zone D of the proposed Surface mining terminates activity at Whiskey Creek. Although this area (effecting approximately 200-ft) is not being diverted, mining activity is proposed within 100-ft of the channel. For the Division to authorize this activity, the applicant needs to outline what methods will be used to protect the integrity of the stream channel in this area prior to approval.

### **Sediment control measures**

To minimize erosion to the extent possible and reduce sediment load to the sedimentation pond, runoff from undisturbed areas should be routed away from disturbed areas. Many of the areas will possibly still flow through the sedimentation pond, but sediment load reporting to the pond will be minimized. This will also reduce the likelihood of flow from undisturbed areas infiltrating fill material along the backfilled headwall.

### **Diversions**

Tables 742.310a (Ditch Flow Characteristics) and Table 742.310b (Culvert Flow Characteristics) do not address the changes in flow to various culverts and ditches with the addition of ditches D-1001 and D-1002, and the elimination of Ditches UDD-2 through UDD-5. Calculations used in the sizing of ditches D-1001 and D-1002 need to be included, and the basis for the weighted curve numbers used needs to be included as well. For the weighted curve numbers, provide a map as outlined in the following Sedimentation Ponds Section. Calculations for the ditches have not been included in Appendix 742.310, as stated on Page 700-86, for ditches D-1001 and D-1002. As an example, according to Table 742.310a ditches D-30 and D-33A can handle peak flows of 4.5cfs and 5.4cfs, respectively, yet ditch D-1001, with a peak flow of 17.28cfs, will flow into both ditches.

Reduction of flow to ditch D-1001 could be reduced by altering ditch UDD-2 to continue to divert undisturbed drainage away from the disturbed area. This will potentially not exceed the current capacity of ditches D-30 and D-33A.

### **Sedimentation ponds.**

Table 742.221b, which outlines the required pond volumes for the anticipated runoff storage requirements, classifies the area sub-areas as 20.13 acres of Disturbed area and 44.82 acres of Forested/Aspen area reporting to Pond 004A. The text suggests Map R645-301-731.720d illustrates these acreages, but the map is confusing. Using a map, possibly R645-301-742-310b (scale 1"= 200'), illustrate the acreages and weighted curve numbers used to create Tables 742.221b, and Table 742.221c. Also, as the sediment pond fills with sediment, describe where the sediment is going to be retained within the disturbed area.

- Page 700-66 of 103, paragraph four (SEDIMENT DUGOUT D-1) refers to Map 731.720d as illustrating the drainage area of Dugout D-1. This is not clearly visible to the reader; either improve the map or eliminate the reference. Clearly illustrate which

TECHNICAL MEMO

weighted curve numbers are being assigned for all acreages reporting to Ponds 004 and Dugout D-1.

- Page 700-66 of 103, paragraph FILTER POND 005A should address the removal of the pond upon initiation of surface mining activities.
- Page 700-78 of 103 (Available Pond Storage section), Table 742.221d indicates the storage capacity of Pond 004 has changed in available sediment storage, decant elevation, and cleanout elevation. It is assumed this is based on the filling of the pond. Outline when this storage capacity was resurveyed. Also, Figure 731.750f needs to be changed to reflect these changes.
- Page 700-79 of 103 paragraph four (Spillway Capacity Section) the 25-year, 24-hour precipitation event has been changed from 2.92-inches to 1.80-inches. Demonstrate the basis for this change in the precipitation event. Also, for Table 742.221e, provide the calculations used to determine the 25-year, 24-hour peak flow

**Findings:**

- ✓ **R645-301-741**, Provide the design criteria necessary to evaluate ditches D-1001 and D-1002 and their effects on downstream culverts and ditches they feed into. Criteria will include sizing calculations, basis for weighted curve numbers for ditches D-1001 and D-1002, and calculations for increased flow into ditches and culverts and demonstrate the downstream ditches can handle the additional flow.
- ✓ **R645-301-742.120, -742.122**, To minimize erosion of the areas disturbed through surface mining, divert runoff from undisturbed areas away from the proposed disturbed areas with the use of a designed ditch.
- ✓ **R645-301-745.330**, surface runoff from areas adjacent to and above fill is not allowed to flow onto the fill.
- ✓ **R645-301-731.611**, with the proposed disturbance within 100-ft of the stream channel, determine the effects on water quantity, quality, and other environmental resources of the stream.
- ✓ **R645-301-731.612**, if there will be a temporary or permanent diversion, demonstrate it will comply with R645-301-742.300.
- ✓ **R645-301-731.700**, provide detailed plans, maps, and cross sections of the proposed diversions associated with the proposed stream alteration.
- ✓ **R645-301-731.300**, demonstrate, through characterization of the overburden and surrounding geologic units, that no acid and toxic-forming materials exist.
- ✓ **R645-301-731.224**, address in the Surface water monitoring Section that site VC-4 is being eliminated or moved upstream.

- ✓ **R645-301-742.221.3**, provide a better map (scale 1"= 200') illustrating the areas and weighted-curve numbers used to create Tables 742.221b and Tables 742.221c.
- ✓ **R645-301-121.200**, clarify the use of Map 731.720d on Page 700-66.
- ✓ **R645-300-133.100**, acknowledge the removal of Filter Pond 005A upon the initiation of Surface mining activities.
- ✓ **R645-301-742.221.31**, Figure 731.750f needs to be changed to reflect the changes in the 3-year storage capacity, decant elevation, and cleanout elevation.
- ✓ **R645-301-742.121**, as the sediment ponds fill with sediment, describe where sediment is going to be retained within the disturbed area.
- ✓ **R645-301-742.221.33**, demonstrate the basis for the change in the 'precipitation event' from 2.92-inches to 1.80-inches.
- ✓ **R645-301-742.221.33**, provide the calculations used to determine the 25-year 24-hour Peak Flow data illustrated in Table 742.221e.

TECHNICAL MEMO

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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.

### 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:

##### General

Reclaimed slope are designed as a generally continuous 2:1 slope. Page R-12 of 37 outlines some reclamation details. Using additional 'BTCA' incorporate slope-breaks approximately every 50-100 ft down the slope for slope-failure prevention. Also include more detail in, 'All fill material shall be placed in a controlled manner'.

#### Findings:

**R645-301-542.200, -746.410,** Provide more detail and cross-sections of the proposed backfilling and grading, incorporating 'slope-breaks' along the contours approximately every 50-100 feet down the 2:1 slopes.

## HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 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.

### Analysis:

#### General

The Runoff Conveyance Plan section, Channel Design Using Riprap section, and the Stream Alteration permit need to be updated and revised to reflect the currently proposed activities. At a minimum, outline if any temporary diversions will be used, supply detailed cross sections and maps of the design of the temporary/permanent diversion, and demonstrate the proposed design will handle anticipated storm events. Portions of the stream proposed for alteration under the proposed plan will need a design that incorporates 'the best technology currently available (BTCA)'. The BTCA recommends the use of bioengineering, drop structures, and natural stream channel design concepts and limits the use of riprap channels. The same channel design is suggested as an alternative to the currently accepted channel design. The information currently submitted is inadequate to perform the necessary review.

#### Sedimentation ponds

With the proposed Significant Revision of the Reclamation Plan, it appears the material currently in-place in Sedimentation Pond 004 will not be used as originally outlined. On page R-26 of 37, **Removal of Sedimentation Structures**, clarify the timing used in the reclamation and removal of the cited sedimentation structures. Specifically, when and how Pond 004 is going to be reclaimed.

### Findings:

**R645-301-728.333, -728.334, -731**, Provide a more detailed description of the stream alteration permit, similar to the document submitted to the Utah Division of Water Rights. Include maps and cross sections (1"-50') and a location map illustrating the location of the stream before and after the proposed alteration.

**R645-301-764**, provide an updated plan describing the timing and implementation of the removal of the sedimentation structures.

TECHNICAL MEMO

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## CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

### Analysis:

#### General

Per the State regulations concerning disposal of Excess Spoils and the installation of under-drains, the applicant needs to address how drainage from the portals, any seeps or springs encountered in the headwall, and in general any water accumulated at the base of the reclaimed areas is going to drain to ensure stability.

### Findings:

**R645-301-745.120, -745.122**, Address how any encountered springs, water courses, wet weather seeps, will be mitigated to prevent water infiltration into the fill and ensure stability.

### RECOMMENDATION:

The amendment cannot be accepted in its present form.

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