



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)

May 15, 2002

**TO:** Internal File

**THRU:** Pam Grubaugh-Littig, Permit Supervisor *AGL*

**FROM:** James D. Smith, Sr. Reclamation Specialist/Hydrology *JDS*  
Priscilla W. Burton, Sr. Reclamation Specialist/Soils *PB*

**RE:** Request for Bond Release, Phase I Reclamation at the Cottonwood Fan Portal (CFP), Energy West Mining Inc. Cottonwood/Wilberg Mine, C/015/019-BR00D-3

**SUMMARY:**

The 6.1 acre Cottonwood Fan Portal (CFP) site is located directly across Cottonwood Canyon from the Trail Mountain Mine in Emery County. The area was cleared of vegetation and topsoil in 1980 in anticipation of construction of fan portals for the Cottonwood/Wilberg Mine, but the portals were never built. The soils cast aside from the disturbance were seeded in 1981. These reclaimed, side-cast soils remain on the slope above the Cottonwood Canyon Road as the final configuration of the site. Backfilling, grading and seeding of the remaining area were done in 1998.

The CFP site was not returned to a contour similar to adjacent areas because of slope-stability concerns. Vegetation supplies good cover in spite of the dryness of the past four years. The Division's hydrologist recommended removal of ditch UD-3 (see the paragraph at \* on page 3 of the attached copy of the February 4, 1998 memo), but this undisturbed ditch was retained as a permanent diversion to protect stability of the reclaimed site. Runoff has breached ditch UD-3 in several places. Energy West is now of the opinion that the revegetated site will not be jeopardized by overland flow from UD-3 and therefore, have not repaired the berm of UD-3. Because ditch UD-3 has not been maintained to perform as described in the MRP (Plates 4-8 CM-10828-CP and 4-9 CM-10827-CP), the Division requests that the MRP reflect this change in thinking and that UD-3 be reclaimed.

Erosion of the hillside at the south end of the undisturbed ditch UD3 was discussed on April 2, 2002 during a field inspection of the site. Energy West indicated that steps to reclaim the gully had been taken once before, but seemed open to taking further corrective action while the AML work at the Johnson Mine is in progress.

**TECHNICAL MEMO**

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**TECHNICAL ANALYSIS:**

Drainage control is not in accordance with the approved reclamation plan (R645-301-880.310 and R645-301-761). The Mining and Reclamation Plan should be modified to relate that there will not be an undisturbed drainage collection ditch above the site and to describe reclamation of ditch UD-3. Damage from erosion at the south end of UD-3 should be repaired (R645-301-742.311).

**RECLAMATION PLAN**

**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**

Erosion of the hillside near the south terminus of undisturbed ditch UD-3 was discussed with Energy West personnel on April 2, 2002 during a bond inspection of the site. They indicated that in 1998, ditch UD-3 was extended to convey water above the eroded gully over to a natural rock outcrop. At that time, slash was placed in the gully along with a silt fence to repair the erosion of the hillside. It was apparent to those in attendance that these measures were not successful. Energy West representatives were non-committal, but seemed open to the possibility of taking further corrective action while labor and equipment are on-site during the AML work at the Johnson Mine during the summer of 2002.

**Findings:**

The reclamation performed is not sufficient to meet the requirements of the coal mining rules. Prior to approval for Phase 1 bond release, the applicant must respond adequately to the following deficiency:

**R645-301- 553.100**, The gully near the end of Ditch UD-3 must be filled, regraded, or otherwise stabilized, then reseeded or replanted.

## 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:

#### Diversions

Drainage control is not in accordance with the approved reclamation plan. According to the reclamation plan, undisturbed ditch UD-3 is to be retained as a permanent diversion to prevent disturbance of the steep-slope reclamation in the area revegetated in 1981 (Volume 11: Plate 3-13 and Section R645-301-762.100, page 25). Ditch UD-3 has not been maintained to perform as described in the MRP (Plates 4-8 CM-10828-CP and 4-9 CM-10827-CP). In several places sediment has accumulated and reduced the capacity of the ditch to the point that water has either overflowed or breached the ditch. Energy West representatives believe the ditch will reclaim itself with time and that flow will eventually form natural channels down the hillside. The Division is in agreement with the concept of reclaiming rather than maintaining this ditch. The Mining and Reclamation Plan should be modified to relate that there will not be an undisturbed drainage collection ditch above the site and to describe reclamation of ditch UD-3.

Surface runoff - mainly sheet flow - and seepage from the french drains report to ditch DD-4 and a small sedimentation pond, which is generally dry. There is no planned maintenance for this ditch. Energy West asserts that the county has requested the ditch remain as a terrace to stop debris from rolling down the slope and onto the road. Information on the status of ditch DD-4 is supposed to be in an attachment to Chapter 7, but this attachment could not be found. When the pond is removed, Energy West intends to salvage the organic-rich sediment from the pond for use as a surface covering in reclamation of the pond area.

#### Sediment control measures

Damage from erosion at the south end of UD-3 should be filled, regraded, or otherwise stabilized, then reseeded or replanted. See discussion under Reclamation Backfilling and Grading (above).

#### Siltation structures

Silt fences in ditch DD-4 are full to capacity with sediment. Energy West indicated that these silt fences would be removed when the pond is taken out, probably during 2002

**TECHNICAL MEMO**

**Sedimentation ponds**

Surface runoff - mainly sheet flow - and seepage from the french drains report to ditch DD-4 and flow to a sedimentation pond, which is generally dry. Energy West has indicated a desire to remove the pond during 2002. When the pond is removed, Energy West intends to salvage the organic-rich sediment from the pond for use as a surface covering in reclamation of the pond area.

**Findings:**

The information in this section is not sufficient to meet the requirements of the coal mining rules. Drainage control is not in accordance with the approved reclamation plan. Prior to approval for Phase 1 bond release, the applicant must respond adequately to the following deficiencies:

**R645-301-880.310, -761**, Modify the Mining and Reclamation Plan to relate that there will not be an undisturbed drainage collection ditch above the site and to describe reclamation of ditch UD-3.

**R645-301-121.200**, Include the information concerning the county's request that ditch DD-4 remain as a terrace to stop debris from rolling down the slope and onto the road and provide the Attachment to Chapter 7 with descriptive information on DD4.

**MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

**Analysis:**

**Affected area boundary maps**

The sedimentation ponds have been included in the boundary of the area that is being reclaimed for bond release, which helps clarify the sequence and timing of phased reclamation activities, and affected and permit area boundaries are clearly shown in reference to the reclamation work being accomplished.

**Bonded area map**

The sedimentation ponds have been added to the area that is being reclaimed for bond release, so that the initial and successive areas or increments for bonding are identified and the bond amount to can be specified for each area or increment of reclamation.

**Findings:**

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

**RECOMMENDATION:**

Prior to approval for Phase 1 bond release, the applicant must respond adequately to the deficiencies identified in this technical memorandum.



State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
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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)

February 4, 1998

TO: File

THRU: Daron Haddock, Permit Supervisor *DH*

FROM: Sharon Falvey, Senior Reclamation Hydrologist *SF*

RE: Fan Portal Reclamation Round III, PacifiCorp, Cottonwood/Wilburg Mine, ACT\015\019-97MT(3), Folder #2, Emery County, Utah.

**SUMMARY:**

As part of a midterm permit review, information contained in the existing MRP was examined to determine whether the plan meets the requirements of the R645 regulations for reclamation at the Cottonwood Wilburg Mine, Cottonwood Fan Portal Site. This submittal responds to the deficiencies noted in the September 1997, and the December 1997 Technical Analyses that followed the response to the Midterm Review. The operators response is determined to meet the minimum regulatory requirements.

***RECLAMATION PLAN***

**HYDROLOGIC RECLAMATION 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.

**Ground-water Monitoring**

No ground water monitoring plan is specified for the fan portal reclamation area. A number of seeps along the contact between the Blackhawk and Star Point formations occur but, none are at a rate sufficient to collect water samples based on the seepage rates observed in 1997. The source of this water is stated to be from local snowmelt that is transported through vertical fractures. No ground water monitoring is specifically tied to reclamation of this area.

The Hiawatha coal seam near the fan portal area dips 2 degrees to the northwest. The disturbance is along the west face of the coal out crop. This suggests, that changes in

seepage following mining may occur. However, the dip of the strata in the central portion of East Mountain dips into the Straight Canyon Syncline, generally 2 to 3 degrees plunging to the northeast. The axis of this syncline lies north of the cottonwood fan portal area and would flow away from the fan portal outcrop. A major portion of the mined area to the north would not drain toward this outcrop location. Future observations should be made to determine if increases in seepage does occur at the Blackhawk/Star Point contact zones.

### **Surface-water Monitoring**

The monitoring plan states that water monitoring will be conducted at the Cottonwood Fan Portal above and below the mine. The surface water monitoring program will be conducted quarterly through the reclamation period according to the monitoring schedule in Appendix A.

Drainage from the Cottonwood Fan Portal area will be monitored at the sedimentation pond outfall according to the UPDES permit. The UPDES permit only measures treated outflow; therefore, no monitoring is presented which will demonstrate that vegetation is adequate to control erosion on this site. Information that demonstrates that adequate erosion control exists is required prior to removal of the pond and prior to bond release.

### **Acid And Toxic-forming Materials**

The plan states that all acid and toxic forming materials will be buried with at least four feet of material. No sites were identified as acid and toxic in this location.

### **Transfer Of Wells**

No transfer of wells are proposed associated with the reclamation of the Cottonwood Fan Portal area.

### **Discharges Into An Underground Mine**

No mine opening was developed at this site. No discharges into the mine will occur associated with the reclamation activity.

### **Gravity Discharges**

No surface entries or access was developed at this site. Gravity discharge could occur from flow accumulated in mine and reaching the out crop. See the discussion under "Ground Water Monitoring" in this T.A.

## Water Quality Standards And Effluent Limitations

The permittee will be required to show that ground and surface water at the site meet the requirements of the R645 regulations prior to bond release.

### Diversions

The diversion ditch, UD-3, located above the disturbed area is proposed to remain as a permanent structure. Contour map CM-10828-CP "Cottonwood Fan Portal Diversion Ditch #UD-3" and, cross-section detail on CM-10827-CP provides the ditch design information as it existed on the 1989 survey map. The plan states that some modifications would be necessary to provide and maintain the drainage along the terrace. R645-301-761 requires that all permanent diversions meet the requirements of the approved reclamation plan. Existing ditch designs were not reviewed. **It is recommended the applicant be sure the drainage configuration designs can be met by modifying the existing site configuration.**



The applicant has proposed to change the existing drainage at the south end of the permit area. This proposal will decrease the gradient at the junction of a natural drainage. Natural rock outcrops at this location should aid in decreasing the erosion which is occurring in the existing drainage location. An earlier recommendation by this hydrologist suggested a grading plan that distributes the flow over the slopes and concentrates water beneath areas of upstream concentration points be proposed. However, during a site visit company representatives stated that flow over the face could jeopardize the revegetated embankment that lies below and is adjacent to the road. With that concern in mind the proposal to retain this ditch is reasonable.

The diversion DD-4, at the top of the reclaimed bank adjacent to the road, is constructed to drain to the sedimentation pond. The plan states that county official request the ditch be retained so that the ditch would continue to provide a buffer zone to absorb rock fall and, to minimize impacts to the road. This statement does not adequately justify retention of the ditch for the following reasons:

- If this slope has a significant increased potential for rock fall beyond the rock fall potential of other road cuts in this region, it probably does not meet stability requirements of the R645-301 regulations.
- If the ditch is to function as a rock catch then the ditch is not able to function as designed.
- The base width of the slope provides a rock fall barrier.

In conversations with Bill Malnencik, DOGM inspector no rock falls have been observed in this ditch in his experience inspecting this site. However, any rock fall or debris that may fall into this ditch during reclamation construction activities should be cleared so the ditch can function as designed.

This drainage can be re-established to promote flow over the slope and would continue to provide a buffer for rock fall. However, the permittee is concerned that promoting overland flow will encourage rill and gully formation over the well vegetated slope below the existing ditch (discussion during site visit on December 16, 1998). Although, re-grading and promoting overland flow has been completed successfully in other steep slope sites with small drainage areas in Utah, the regrading of this ditch would not greatly increase visual appearance of the site. The trade-off in erosion occurring across the ditch v.s. what may occur due to overland flows is probably minimal. Therefore, because little would be gained by regrading this ditch, the cost benefit ratio is low, and due to the economics this design is considered BTCA for this area. Existing ditch designs were not reviewed and are assumed to meet minimum requirements. Calculations to verify the original designs we located in volume 11, appendix XIII, pages 1 through 8.

The final configuration and ditch location following removal of the pond is presented on the Phase II reclamation map 5-5A.

The applicant has committed to provide a french rock drain at the seep locations the size and design is dependent on topographic constraints and seep size.

### **Stream Buffer Zones**

The Cottonwood Fan Portal is within 100 feet of the Cottonwood Canyon Creek stream channel. The adjacent Trail Mountain Mine diverted the Cottonwood Canyon Creek into a culvert thus, diverting the stream. The reclamation of this site is expected to be completed prior to reclamation at the Trail Mountain Mine. Based on this information, a specific buffer zone variance is not necessary.

### **Sediment Control Measures**

The plan states that final grading and preparation of overburden will be conducted along the contour to minimize erosion. If grading along the contour is hazardous to equipment operators, grading will be conducted in a direction other than parallel to the contours.

Disturbed areas are presently proposed to drain to the sedimentation ponds. Additional measures such as; a silt fence along DD-4 and rock gabions are also used.

### **Siltation Structures**

Other than the Alternate Sediment Control Measure in place in Area 3-7, the sedimentation ponds will be retained to treat runoff from the site during Phase I reclamation. Measures used following sediment pond removal include silt fence controls in conjunction with the roughening and mulching techniques.

### **Sedimentation Ponds**

Under section 500 the Engineering section, the plan states "Once the bonding period is complete and revegetation is satisfactory the sedimentation ponds/basins at Cottonwood/Wilberg and Proposed Cottonwood Canyon Fan Portal will be back filled and graded". This meets the requirements for removal of siltation structures.

### **Other Treatment Facilities**

No other treatment facilities are associated with the Cottonwood Fan Portal area.

### **Siltation Structure Exemptions**

No exemption from using siltation structures were granted associated with reclamation of the cottonwood fan portal area.

### **Discharge Structures**

No discharge structures are proposed for retention as permanent structures.

### **Impoundments**

No impoundments are proposed to be retained as permanent structures at the reclaimed cottonwood fan portal site.

### **Casing And Sealing Of Wells**

No casing and sealing of wells are directly associated with the cottonwood mine portal reclamation.

### **Findings:**

The permittee has met the minimum requirements of this section.

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February 4, 1998

**Recommendations:**

This amendment can be approved as it meets the minimum regulatory requirements.

tt:  
cc: Bill Malencik  
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