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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

March 31, 2010

TO: Internal File

FROM: James D. Smith, Environmental Scientist III, Team Lead *DS 06 Apr 2010*

RE: Lila Canyon Detailed Design Changes, UtahAmerican Energy, Inc, Horse Canyon Mine, Permit C/007/0013, Task ID # 3498

SUMMARY:

The applicant submitted design changes to the current mining and reclamation plan for the Lila Canyon Mine on July 28, 2008. Deficiencies were identified in a Letter of Deficiency dated January 26, 2009, which included deficiencies from the hydrology Tech Memo dated December 11, 2008. The Permittee responded to those deficiencies on July 115, 2009, and this Tech Memo addresses the changes in the hydrology sections of the application.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

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

Analysis:

The C2 form states that all of Appendix 7-4 is being replaced. The currently approved Appendix 7-4 includes eight figures, Figures 1, 2, 3, 4, 4A, 5, 6, and 8 and the Table of Contents lists Figure 7 as "Removed". The March 2010 submittal contains Figures 1, 2, 3, 4, 4A, 5, 5.4, 5.15, and 7.26. The following table shows the figures in the currently approved Appendix 7-4 and those that are in the March 2010 submittal.

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	App. 7-4 of Current MRP (5/18/2007)			App. 7-4 of March 3, 2010 Submittal		
	Listed in Table of Contents	Figure in App. 7-4 of MRP?	Referred to on page -	Listed in Table of Contents	Figure in App. 7-4 of MRP?	Referred to on page -
Figure 1	Yes	Yes	8	p. 3	Yes	8
Figure 2	Yes	Yes		p. 3	Yes	
Figure 3	Yes	Yes	11	p. 3	Yes	11
Figure 4	Yes	Yes	9, 35	p. 3	Yes	9, 56
Figure 4A	Yes	Yes	10	p. 3	Yes	10
Figure 5	Yes	Yes		p. 54	Yes	59
Figure 5.4				p. 41	Yes	44
Figure 5.15				p. 41	Yes	44
Figure 6	Yes	Yes		No	No	Replaced by Tables 12a, 12b, 13a, and 13b
Figure 7	"Removed"			No	No	
Figure 7.26				p. 3	Yes	10
Figure 8	No	Yes	38	No	No	

Findings:

The Permittee has met the requirements for Permit Application Format and Contents.

OPERATION PLAN

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:

Coal Mine Waste

The Permittee intends to treat the rock-slope underground development waste differently from other coal-mine waste; however, it is coal mine waste and the Permittee must handle and dispose of it in accordance with all R645 rules that pertain to coal mine waste and refuse piles.

Refuse Piles

The following deficiencies were identified in the November 2009 Deficiency Letter:

R6435-301-536.500, *The Permittee needs to document:*

- *that the Wildcat Loadout is willing to accept the Lila waste,*
- *that the Wildcat Loadout is able to accept the waste; that the Wildcat Loadout refuse pile is adequately designed and of sufficient size to handle and dispose of the additional waste, and*
- *the sections of the Wildcat Loadout MRP that describe the management and reclamation of the Wildcat refuse pile.*

R6435-301-536.500, *The Permittee must show how disposal of refuse at ECDC will satisfy the Coal Mining Rules. It must be added that even if the Permittee provides this information, whether or not the Division has the regulatory authority to allow such a variation from the Coal Mining Rules is still open to question.*

R6435-301-536.600, -553; 830.130, -830.200, *The Permittee needs to update the Mass Balance volumes in Table 1 of Appendix 5-4 using the cross sections on updated Plates 5-7A, -7B, and -7C. The Permittee must provide information on the removal or reclamation of the rock-slope underground development waste refuse pile.*

Shipping waste to ECDC is no longer part of the mine plan. Section 553.210 has been rewritten to read: "All underground development waste brought to the surface will be placed in the temporary rock pile and then blended back into the ROM product for sale. There will be no coal processing waste generated on the surface. Any oversized from the screens will be crushed and put back into the ROM stream." The Permittee has also rewritten Sections 553.300 and Appendix 5-7 to remove reference to ECDC for disposal of coal mine waste. Similarly, sections 528.321, 536.100, and 542.730 no longer identify Wildcat Loadout as the location for disposal of these wastes.

Section 553.250 reads, "A need for a refuse pile at Lila Canyon is not anticipated." This is true in reference to there being no permanent area or pile dedicated to disposal of coal-processing waste. All underground development waste, other than the rock slope material, brought to the surface will be placed in the temporary rock pile and then blended back into the

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run-of-mine product for sale. There will be no coal processing waste generated on the surface (Section 536.100).

The entire Shop and Warehouse pad “rock disposal area” where rock-slope underground development waste will be permanently disposed is, by the definitions of “coal mine waste”, “refuse pile”, and “underground development waste” in R645-100-200, a refuse pile for the permanent disposal of underground development waste. Mass balance estimates for construction, dated November 8, 2007, are at the end of Appendix 5-4. Cross-sections on Plates 5-7A-1 through 5-7B-3 show the extensive cut-and-fill required to construct the refuse pile, coal stockpile, and bathhouse-office-parking pads. Material from the rock slopes are to be tested for acid- and toxic-forming materials during start up, at the ¼, ½ and ¾ mark, and near completion. Analysis of the first test is at the end of Appendix 6-2.

Appendix 5-7 contains a description of the construction and reclamation of the proposed Shop - Warehouse pad. Appendix 5-8 contains additional information. Table 1 has been removed from Appendix 5-4 and the information needed for bond calculation is located in Appendix 8-1. Reference is made to Chapter 3 for soil redistribution: the total subsoil and topsoil cover over the rock slope material area will be a minimum of 4 ft if the material is found to be acid or toxic forming (Appendix 5-7).

Findings:

The Permittee has met the requirements of the Coal Mining Rules for Spoil and Waste Materials.

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:

General

Section 2.9 identifies all areas with the “UA” designation as undisturbed; although the disturbed area around the Fan Portal is identified as UA-7 in Table 2, it is clear from Plates 7-2, 7-5 and 5-2 and Tables 3 and 5 that the area around the upper ventilation fan is disturbed.

Diversions: Miscellaneous Flows

Details for protection of drainage control structures are provided in Appendix 7-4.

Figure 3 shows the typical channel shape, and the ditch sizes are presented in Table 8. Adequately sized rip-rap, concrete, or other approved armoring will protect all diversion discharges (Section 734). Section 2.11 of Appendix 7-4 states that ditches projected to carry flow velocities of 5 fps or greater will be lined with rip-rap: Table 8 shows which ditches will be rip-rapped and gives the D_{50} .

Tables 9 and 10 in Appendix 7-4 summarize the culvert design parameters, including rip-rap sizes for the outlets. The Permittee used the Culvert Headwater Depth Nomograph in Figure 1 of Appendix 7-4 to determine the minimum culvert diameter. For culverts having either a HW/D ratio equal to or greater than 1.0 or a slope less than 2%, the Permittee used FlowMaster to determine the adequacy of proposed pipe diameters (Table 9 shows all culverts have a slope greater than 2%, and although HW/D ratios are not presented, it appears from Table 9 that all culverts were designed using FlowMaster). FlowMaster v6.0 calculation sheets are in Appendix 7-4.

Culverts carrying runoff from disturbed areas have been sized to safely carry flows from a 10-yr, 24-hr event, which meets or exceeds the requirements of the Coal Mining Rules. The Permittee states that culverts carrying runoff from undisturbed areas have been sized to safely carry expected flows from a 100-yr, 6-hr event: Culvert UC-1, which diverts the flow of the Right Fork of Lila Canyon under the main sedimentation pond, the only culvert in this class.

The following deficiencies were identified in the July 2009 Deficiency Letter:

R645-301-742.300, *The Permittee must clarify the following information on diversions:*

- *Table 6 (Appendix 7-4) does not show undisturbed area UA-5 reporting to any structure other than UC-1. Plate 7-5 does not show a ditch that can collect the runoff from UA-5 and carry it to UC-1. The Permittee needs to design a ditch to carry the undisturbed runoff from UA-5 to UC-1, include the calculation sheets and design information, and show the diversion on appropriate plates.*
- *Plate 7-5 shows DD-20 receiving flow from DC-8 and DD-8b then crossing the east side of disturbed area DA-8c, continuing southwest across adjacent undisturbed UA-5, and then along the down-slope edge of UA-5 to Sedimentation Pond #1; as shown, DD-20 would intercept most of the runoff from UA-5 and carry it to Sedimentation Pond #1 rather than to UC-1. According to Plate 7-5 and Table 6, culvert DC-8 reports to both DD-8c and DD-20, but Table 6 shows DD-8b reports only to DD-8c. DD-20 as shown on Plate 7-5 and described in Table 6 is not only not needed, but carries undisturbed drainage from UA-5 to*

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Sedimentation Pond #1. The Permittee needs to redesign DD-20 or remove it from the plan.

Table 6 of Appendix 7-4 now shows that runoff from UA-5 reports to ditch DD-20, which carries the flow to the sedimentation pond. Table 6 also states that DD-20 receives discharge from culvert DC-8 “during high flows which may overflow DD-8b and DD-8c”; it can only be assumed that this would be the result of storms that exceed the design event, causing DD-8b and DD-8c to overflow. Otherwise, DD-8c is designed to carry the discharge from DD-8b, DC-8, and DA-8c.

Findings:

The Permittee has satisfactorily addressed the Hydrology deficiencies identified in the November 5, 2009 Letter of Deficiency. Information on Hydrology is sufficient to meet the requirements of the Coal Mining Rules.

RECOMMENDATIONS:

The amendment should be approved.