

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

July 11, 2005

TO: Internal File

THRU: Karl R. Houskeeper, Environmental Scientist III, Team Lead

FROM: Priscilla W. Burton, Environmental Scientist III/Soils

RE: Excess Spoil Disposal Area #2 Design Revision, Sunnyside Cogeneration Association, Sunnyside Refuse/Slurry, C/007/0035, Task ID #2223

SUMMARY:

The annual reports dated 1999 through 2004, indicate that approximately 103,000 tons of material has been placed in Spoil Disposal Area #2, which is approaching the original design capacity of 130,000 yd³. A proposal received April 18, 2005 would change the final configuration of the slopes of Disposal Area #2 from 5% (20h:1v) to 20% (5h:1v), thereby increasing the capacity of the storage site to 217,072 yd³ (Appendix 9-7, Revised Capacity Calculations). Since approximately 20,000 yd³ are placed in the disposal area each year, this design change will provide an additional five years of capacity for the disposal site. Plates 9-8A through 9-8D illustrate plans for Spoil Disposal Area #2.

Annual reports from 1999 through 2004 indicate that over 1 million tons of refuse have been removed from the coarse refuse pile.

The Permittee must update reclamation hydrology plan (Appendix 8-1 and Plate 8-3, Permit Term Reclamation Plan Drainage Areas and Diversions) and Final Reclamation Hydrology Plan (Appendix 10-1; Plate 10-4 Final Reclamation Grading Plan; and Plate 10-5 Final Reclamation Drainage and Diversion Plan) to indicate that the clear water pond and UPDES point 004 (Clear Water Pond) will not be retained until Phase 2 reclamation.

TECHNICAL ANALYSIS:

OPERATION PLAN

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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

Excess Spoil Pile #2 is described in Chapter 9 and Appendix 9-7. The 1999 through 2004 annual reports indicate that approximately 103,000 tons of material has been placed in Excess Spoil Pile #2.

Findings:

Information provided meets the requirements of the Regulations.

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 and Underground Development Waste

Appendix 9-7 and Chapter 6 Section state that one grab sample will be taken from the surface of Excess Spoil Pile #2 at the completion of each 4-foot lift. Initial borings of the coarse refuse (Appendix 6-7) indicated that at depths of 60 – 130 ft the pile is acid forming. The borings also indicated that the neutralization potential of the underlying native soils (depths of 140 – 195) is between 6 and 17 tons/1000 tons of soil.

Annual reports on file with the Division contain the analytical reports for years 1999 through 2002 and 2004. (Spoil analysis was not included in the 2003 annual report.) After reviewing the annual reports, the Division understands that most of the material being placed in Excess Spoil Pile #2 is sand or loamy sand, with a pH between 6.2 and 8.7; an EC between 2 and 3 mmhos/cm; an SAR between 2 and 3; and with adequate buffering capacity [Acid Base

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Potential (ABP) of 25 to 90 CaCO₃ tons/1000 tons spoil]. However, in 2001, spoil with a high SAR of 6 to 16 was placed in the disposal area and in 2004 spoil with acid forming potential was placed in the disposal area (ABP of -2.9). The material placed in Excess Spoil Pile #2 with high SAR (values of 10 and over) and with acid forming probability (ABP values less than zero) must be covered with four feet of cover.

As the mining progresses into the coarse refuse pile, the likelihood of encountering acid-forming material increases. The Permittee will continue to monitor the chemical characteristics of the spoil through grab samples of each four-foot lift (Appendix 9-7 and Chapter 6). The Excess Spoil Disposal Area is bonded for four feet of cover (pg 900-11). According to the information in Appendix 9-7, vegetation establishment on the non-toxic, non-acid forming spoil using less than four feet of cover will be demonstrated. During operations several sites have received interim reclamation treatment (that is with a seed mix that has no woody species). The interim reclamation sites are itemized in Section 9.3 of the MRP.

To suppress fires with the coarse refuse pile, part of the third and all of the fourth lift were reclaimed in the spring of 1994 with two feet of borrow material (MRP, Chap 9, pg. 900-18). The site was fertilized with 16-16-8 (150 lbs/ac) and treated with wood fiber mulch (1 T/acre). The interim seed mix was planted (Fig. 9-1). This mix has no woody species.

Final (contemporaneous) reclamation of 5.5 acres on the Old Coarse Refuse Road was completed in 1994 with four feet of borrow material over acid forming material and six to 18 inches on the road out slopes where no toxicity was noted.

Evaluation of the Sacco Flats site (MRP, Appendix 3-6 and Appendix 3-5) concluded that the depth of cover enhanced woody plant establishment with the optimum cover being 48 inches of borrow or 12 inches of topsoil.

The Permittee has not suggested that the above reclamation supports lesser cover. The bond held for the site must include four feet of cover over the entire site until such time as demonstrations of vegetation establishment with lesser cover can be documented.

Findings:

The information provided meets the requirements of the Regulations. The bond held for the site must include four feet of cover over the entire site until such time as demonstrations of vegetation establishment with lesser cover can be documented for the non-acid/non-toxic spoil.

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RECLAMATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution

A discrepancy exists between Plate 8-4 Permit Term Reclamation Plan Borrow Material Plan 9 and Plate 10-6 Final Reclamation Plan Borrow Material Plan, both were incorporated in February 2003.

- Plate 10-6 indicates that four feet of borrow material is required for 9.3 acres, rather than for 489,808 acres (as outlined in Plate 8-4).
- Plate 10-6 further indicates that two ft of borrow is required for 4.0 acres, rather than over 14.06 acres (as outlined in Plate 8-4).
- Plate 10-6 also indicates that 1.5 ft of borrow is required for 124.7 acres, rather than over 45.24 acres (as outlined in Plate 8-4).

Findings:

The information provided does not meet the requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-553.252, The plan must indicate that the worst case scenario, requiring four foot cover depths is illustrated by Plate 8-4 and the best case scenario is illustrated by Plate 10-6, but bond posted is for four feet of cover as presented on Plate 8-4.

STABILIZATION OF SURFACE AREAS

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

Analysis:

Plate 9-9D of Appendix 9-7 illustrates the west and east facing 15% slopes of Excess Disposal Area #2. These slopes run for a length of approximately 150 ft. The spoil is predominantly sand and has little water holding capacity. Stabilization will be accomplished through the use of gouging, wood fiber mulch, and hay. The seed mix to be applied over the Spoil Disposal Site #2 is the Pinyon/Juniper/Sagebrush mix given in Figure 10-3, which includes the small trees: serviceberry and mountain mahogany.

Final reclamation treatments will include 2 tons/ac mulch and wood fiber mulch as described in Section 9.9.4.

Findings:

The information provided meets the requirements of the Regulations.

RECOMMENDATIONS:

The application is not recommended for approval until the discrepancy between Plates 8-4 and 10-6 is explained in the plan. In addition, the Permittee should update Plates 9-8A – D in large format for inclusion in Book 9.

The Permittee should update reclamation hydrology plan (Appendix 8-1 and Plate 8-3, Permit Term Reclamation Plan Drainage Areas and Diversions) and Final Reclamation Hydrology Plan (Appendix 10-1; Plate 10-4 Final Reclamation Grading Plan; and Plate 10-5 Final Reclamation Drainage and Diversion Plan) to indicate that the clear water pond and UPDES point 004 (Clear Water Pond) will not be retained until Phase 2 reclamation.