

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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August 26, 2005

TO: Internal File

THRU: D. Wayne Hedberg, Permit Supervisor

THRU: Joe Helfrich, Team Lead

FROM: Priscilla Burton, Environmental Scientist III, Soils

RE: Reformat and Digitization, CO-OP Mining Company, Bear Canyon Mine, Permit C/015/0025, Tasks #120, 1863, 1989, and 2114.

### **SUMMARY:**

Division records indicate that the Permittee provided both electronic and hard copies of the reformatted Mining and Reclamation Plan (MRP) on January 27, 2003. The initial information was amended by information received on February 11, July 29, and, December 30, 2004.

The .xls file included with the Public information Center copy of the submittal provides a cross reference for new and old plate numbers and new plate titles. The .xls file included with the submittal provides new appendix numbers. The .xls file included with the submittal did not itemize changes to the tables. The .xls file included with the submittal did not cross reference changes to the narrative. This memo contains cross-reference charts for the narrative, appendices, tables and maps for information pertinent to soils of the site.

Soils information previously located in Chapter 8 and Appendices is now found in Chapter 2 and Appendices, consequently all the maps and table numbers begin with 2. i.e. Plates 2-1A rather than 8-1 is the Main Area Soils Map. Cross-reference charts are key to the understanding of previous technical memos on the Bear Canyon Mining and Reclamation Plan. **The Division should attach cross-reference charts to previous Technical Analysis for the Bear Canyon Mine on file in the Public Information Center.**

Changes to the operations and reclamation plan in this submittal were commented upon. The reformatted MRP includes sampling of the waste rock, roof and floor conducted in 2003.

TECHNICAL MEMO

**TECHNICAL ANALYSIS:**

## GENERAL CONTENTS

### PERMIT APPLICATION FORMAT AND CONTENTS

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

**Analysis:**

After viewing quick links to appendices and other connections within the document, the viewer must use the document button on the tool bar to return to the main document.

Soils information previously located in Chapter 8 and Appendices is now found in Chapter 2 and Appendices, consequently all the maps and table numbers begin with 2. An .xls file accompanying the submittal provides a quick check to the changes made in Plate and Appendix titles. The Division has created the cross-references for the narrative sections and table for use when reading the previous technical reviews.

The .xls file included with the Public information Center copy of the submittal provides a cross reference for new and old plate numbers and new plate titles. It is reprinted below with map titles added by the Division. New listings are in bold. This .xls file is not found on the other electronic copies of the submittal or in the hard copy.

Plate 2-1A	Formerly 8-1	Soils Map (Main Area)
Plate 2-1B	Formerly 8-1A	Soils Map (WHR Area)
Plate 2-2A	Formerly 8-2	Main Topsoil Stockpile Area
Plate 2-2B	Formerly 8.7	WHR Topsoil Stockpile Area
<b>Plate 2-2C</b>	<b>Created for WHR Tank Seam</b>	<b>WHR Tank Seam Topsoil</b>
<b>Plate 2-2D</b>	<b>Created for Mohrland</b>	<b>Mohrland Topsoil Stockpile Area</b>
Plate 2-2E deleted	Formerly 8-6 Plate 8.4	Tank Seam Road Topsoil Stockpile Ballpark Topsoil Pile Area
Plate 2-3A	Formerly 8-5A	Reclamation Area (TS 1 & 2 Ballpark Area)
Plate 2-3B	Formerly 8-5B	Reclamation Area (TS 2, 3, 4, & 9, Shower House Area)
Plate 2-3C	Formerly 8-5C	Reclamation Area (TS 5-8, Load-out Area)
Plate 2-3D	Formerly 8-5D	Reclamation Area (TS 6, Mine Access Road Area)
Plate 2-3E	Formerly 8-5E	Reclamation Area (TS 10 & 11, Tank Seam Portal Area)

**TECHNICAL MEMO**

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Plate 2-3F	Formerly 8-5F	Reclamation Area (TS 12 & 13, WHR Access Road Area)
Plate 2-3G	Formerly 8-5G	Reclamation Area (TS 12, 14, 15, 16, & 17, WHR Portal Area)
Plates 5-2 series	Formerly 2-4 series	Surface Facilities Blind Canyon

Plates in Chapter 2 (Soils) of the document are exactly the same as the existing MRP with one exception, Plates 2-2C (WHR Tank Seam Topsoil Stockpile Area) and 2-2D (Mohrland Topsoil Stockpile Area) are new listings and neither could be accessed. Apparently they have not been created yet.

Plate 2-2F Ballpark Topsoil Pile Area has been removed from the new format. This is appropriate since the Division approved the removal of the Ballpark from the disturbed area in 2001; and, Table 2-5, Topsoil Summary, does not include the Ball Park soils for use as substitute topsoil during final reclamation. Figures 2-1 and 2-2 in Chapter 2 are the same as Figures 8.9-1 (Photographs of the Ball Park Area) and 8.9-2 (Ball Park Topsoil Storage Pile) in the approved MRP. This information has been retained for historical purposes.

The .xls file included with the submittal provides new appendix numbers. For information pertinent to soils of the site, a cross-reference from the current MRP to the reformatted MRP is provided in the table below. There are no new listings of appendices for soils information.

Appendix 2-A	Formerly 8A	Soil Test Reports
Appendix 2-B	Formerly 8C	Prime Farm Lands
Appendix 2-C	Formerly 8D	Substitute Topsoil Material (Downcast)
Appendix 2-D	Formerly 8E	In-Place Plant Growth Material
Appendix 2-E	Formerly 8B	SCS Soil Survey
Appendix 2-F	Formerly 8F	WHR Soil Resource Inventory and Assessment WHR Tank Seam Soil Resource Inventory and Assessment
Appendix 2-G	Formerly 8G	
Appendix 5-I	Formerly 3-L	Cut & Fill calculations (for areas TS3-9)
Appendix 5-K	Formerly 3-P	WHR Tank Seam Pad and Access Road
Appendix 5O	Formerly 3-K	Sediment Pond Material
Appendix 7K	Formerly 7K	Alternate Sediment Control Areas (includes topsoil piles)
Appendix 5D	Formerly 3-E	Toxic Materials & Handling
Appendix 5J	Formerly 3-O	Wild Horse Ridge Blind Canyon Seam pad and conveyor access roads

The .xls file included with the submittal did not itemize changes to the tables. Tables in Chapter 2 (Soils) of the document are exactly the same as the existing MRP with one exception, the Analytical Parameters For Baseline Soil Data Table 8.8-1 has been replaced with two tables (Table 2-4a and 2-4b) that were taken from the January 2003 DRAFT Division Soils Guidelines

**TECHNICAL MEMO**

for Management of Topsoil and Overburden. Below is a cross-reference of the current and previous table numbers and new table titles in Chapter 2 of the document:

Table 2-1	Formerly 8.3-1	Soil Map Units
Table 2-2	Formerly 8.3-2	Soil Unit Acreage Within the Disturbed Area
Table 2-3	Formerly 8.9-2	Available Substitute Topsoil Material
Table 2-4a	<b>Replaced</b> 8.8-1	Analytical Methods for Baseline Soils Data
Table 2-4b	<b>Replaced</b> 8.8-1	Additional Analyses Required for Substitute Topsoil, Overburden, Spoil and Coal Mine Waste
Table 2-5	Formerly 8.9-5	Summary Table
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Table 2-6	Formerly 8.9-4	Ball Park Seed List
Table 2-7	Formerly 8.9-1	Reclamation Area Summary
Table 2-8	Formerly 8.9-3	Substitute Topsoil Summary
Table 2-9	Formerly 8.11-1	Final Grading Test Sample Density
Table 5K-1	Formerly Table 3P-1	WHR Tank Seam Topsoil Recovery
Table 5O-1	Formerly Table 3K-1	Analytical Parameters for Overburden (in Appendix 5O)
Table 5J-1	Formerly Table 3O-1	Summary of Cut and Fill Volumes (Wildhorse Ridge)

The .xls file included with the submittal did not cross reference changes to the narrative. Below is a cross-reference of the current and previous narrative sections pertaining to the soils resource information, topsoil and subsoil operations plan, soils redistribution plan, and stabilization plans.

Section R645-301-221	Formerly 8-6	Prime Farm Lands
Section R645-301-222	Formerly 8-1 & 8-2	Soil Survey
Section R645-301-222.100	Formerly 8-1	Soil Maps
Section R645-301-222.200	Formerly 8-3	Soil Identification
Section R645-301-222.300	Formerly 8-3	Soil description
Section R645-301-222.400	No previous reference	Soil Productivity
Section R645-301-223	Formerly 8-7 and 8.7-1	Soil Characterization
Section R645-301-224	Formerly 8.9-1	Substitute Topsoil
Section R645-301-230	Formerly 8.8.1.1	Operation Plan
Section R645-301-231	Formerly 8.8.1.1	General Requirements
Section R645-301-231.100	Formerly 8.8.1.1 and 8.8.1.2 & 8.9.7	Topsoil Removing and Storing
Section R645-301-231.300	Formerly 8.11	Soil Testing Plan
Section R645-301-231.400	Formerly 8.9, 8.9.2 through 8.9.6	Construction, Modification and Maintenance
Section R645-301-232	No previous reference	Topsoil and Subsoil Removal
Section R645-301-232.100	Formerly 3.5.4.2	Topsoil Removal Prior to Disturbance
Section R645-301-232.200	No previous reference	Insufficient Topsoil
Section R645-301-232.300	No previous reference	Topsoil Material Less Than 6" Thick

**TECHNICAL MEMO**

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Section R645-301-232.400	No previous reference	Area where topsoil will not be recovered
Section R645-301-232.500	No previous reference	Subsoil Segregation
Section R645-301-232.600	No previous reference	Timings
Section R645-301-233	Formerly 8.9	Topsoil Substitutes and Supplements
Section R645-301-234	Formerly 8.8.1.3	Topsoil Storage
Section R645-301-240	Formerly 8.9.1	Reclamation Plan
Section R645-301-241	No previous reference	General Requirements
Section R645-301-242	Formerly 8.10	Soil Redistribution
Section R645-301-243	Formerly 8.11	Soil Nutrients and Amendments
Section R645-301-244	Formerly 8.5	Soil Stabilization
Section R645-301-250	Formerly 8.4	Performance Standards

Cross-reference charts are key to the understanding of previous technical memos on the Bear Canyon Mining and Reclamation Plan. **The Division should attach these cross-reference charts to previous Technical Analysis for the Bear Canyon Mine on file in the Public Information Center.**

**Findings:**

The information provided meets the minimum general contents requirements of the Regulations.

## **ENVIRONMENTAL RESOURCE INFORMATION**

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

## **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:**

For the most part, soils information has not changed since the last submittal two major soil amendments were received AM01A in 2001 and AM03B in 2003. Soil productivity information is found in Appendix 2-E, SCS Soil Survey and Appendix 3-B Miscellaneous Vegetation Information.

**Findings:**

The information provided meets the minimum soils resource information

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TECHNICAL MEMO

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requirements of the Regulations.

## **PRIME FARMLAND**

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

### **Analysis:**

There has been no change to the information provided previously.

### **Findings:**

The Division concurs with the Natural Resources Conservation Service that there are no prime farmlands within the disturbed area.

## **OPERATION PLAN**

### **TOPSOIL AND SUBSOIL**

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

### **Analysis:**

#### **Topsoil Removal and Storage**

Information in the reformatted submittal is the same as the approved plan except where noted below.

Table 2-5 Topsoil Summary is the equivalent of Table 8.9.5 in the currently approved MRP. Table 2-5 details the storage of 16,134 CY of topsoil and the 36,452 CY of additional substitute topsoil, for a total of 52,586 CY of topsoil and substitute topsoil.

The information in the reformatted plan is current with regard to location of topsoil stockpiles

Table 2-7 (Formerly Table 8.9-1) indicates that there area 28.03 “New acres” of disturbance. That figure is changed from the approved plan which indicates 27.90 acres of disturbance. The change is in the TS-16, WHR TS Lower Portal Access Road which was formerly listed as 0.76 acres. The narrative in Section R645-301-242 under RS-16 has also been modified from the approved MRP to indicate that the lower portal access road would be widened

in two locations as shown on Plate 2-3G and in Appendix 5-K. The narrative indicates that 124 cu yds of topsoil was stockpiled from this location.

**Findings:**

The information provided meets the minimum Operations Topsoil/Subsoil requirements of the Regulations.

**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**

Sediment pond clean out is described in Appendix 5O. A maximum of 150 cu yd of coal mine waste will be temporarily stored on the main storage pad shown on Plate 5-2C. Waste rock from the Wild Horse Ridge will be hauled to Hiawatha slurry pond 5A. Prior to being hauled it will be tested according to Table 5O-1 of Appendix 5O.

In Mine roof samples are in Appendix 6-C for samples taken through 1995. Samples taken from RM1 were analyzed in January 2003 and are included in Appendix 6C, page 29. The RM1 samples show that the coal has a pH of 3.7, no neutralization capacity and a boron content of 10 ppm.

Section 542.200 of the reformatted MRP states that coal fines will be removed from disturbed areas if not covered by grading activity. The MRP further states that coal fines will be removed to "pre-mining levels," which the Division understands to mean uncovering native soil. Methods to be used for coal removal include vacuuming (if justified by large quantities), or by washing down with a high-pressure water hose (effective on rock and rocky slopes). Disposal of the waste is described in R645-301-529.

**Findings:**

The information provided meets the minimum Operation Spoil and Waste Materials requirements of the Regulations.

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TECHNICAL MEMO

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## 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**

Section 542.200, page 5-39, refers the reader to Appendix 5D and Appendix 6C for acid toxic information. Appendix 5D Toxic Materials & Handling provides limited information on the characteristics of soil, coal and sediment pond sludge through 1989. Appendix 6C Coal & Rock Characteristics has samples of roof and floor through 1995 and includes one sample analyzed in January 2003 of roof, floor, coal and sediment pond clean out. The Division expects that both Appendices will be updated to include all sampling conducted in 2004 and future sampling.

### Findings:

The information provided meets the minimum Operation Hydrologic Information requirements of the Regulations.

## RECLAMATION PLAN

### TOPSOIL AND SUBSOIL

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

### Analysis:

#### **Redistribution**

There are no changes to the previously approved reclamation plan.

### Findings:

The information provided is meets the requirements of the Regulations for Topsoil/Subsoil Reclamation Plan.

## STABILIZATION OF SURFACE AREAS

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

### Analysis:

There has been no change to the information presented for stabilization of surface areas.

Gouging to an 8 inch depth on the pad areas is referred to in Section 542.200 page 5-41. Tank seam gouging to a depth of 8 – 12 inches is described on page 5-44. Section 542.200 page 5-47 refers the reader to Appendix 7-K for information on deep gouging during Wild Horse Ridge reclamation. Appendix 7-K refers to the use of gouging only as part of the alternate sediment control during reclamation of BTCA “Z,” the ASCA for WHR topsoil stockpile area and conveyor access road slopes (pg 7K-31).

The Permittee should investigate the use of deep gouging 18 - 24 inches on the reclaim site. Deep gouging has been used successfully on reclamation sites through out Utah and has been described in The Practical Guide to Reclamation in Utah, page 66. This publication is available on the web at <http://www.dogm.nr.utah.gov>

Mulching is described in Section R645-301-341 page 3-41 as well as on pages 5-44 and 5-48 of Section 542.200. The Permittee intends to use excelsior blanket on slopes of 2h:1v.

Section 542.200, page 5-44 indicates that rocks will be embedded into the upper surface as described on page 5H-27 (in a May 10, 1994 letter from Dames and Moore). As stated on page 5-44, the goal will be to obtain a minimum cover of 32% rock, similar to the reference area. Wind protection through the use of boulders is also described in R645-301-412.110 Method for Achieving Post-Mining Land Use.

### Findings:

The information provided meets the minimum requirements of the Regulations to provide stabilized surface areas.

### RECOMMENDATIONS:

Cross-reference charts created by the Division under Permit Application Format and Contents are key to the understanding of previous technical memos on the Bear Canyon Mining and Reclamation Plan. Cross-references should be included with the Division’s original

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**TECHNICAL MEMO**

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Technical Analysis of the Bear Canyon Mining and Reclamation Plan on file in the Public Information Center.

The reformatted plan accurately reflects the existing MRP and is acceptable as the official MRP copy.

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