



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

ok

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)

September 19, 2001

Chuck Semborski, Environmental Supervisor
Energy West Mining Company
P.O. Box 310
Huntington UT 84528

Re: Findings for Volume 2 Part 4 of Reclamation Plan, PacifiCorp, Cottonwood/Wilberg Mine, C/015/019-AM00B-3, Outgoing File

Dear Mr. Semborski:

The Division has reviewed the bond calculations submitted with the above-referenced amendment and considers the amount of \$3,082,587 in 2005 dollars adequate. Please post this amount within 90 days of receipt of this letter.

The above-referenced amendment included additional soil information that has raised additional questions in the form of deficiencies that must be adequately addressed prior to approval. A copy of our Technical Analysis is enclosed for your information. Please respond to these deficiencies by October 30, 2001.

If you have any questions, please call me at (801) 538-5268 or Priscilla Burton at (801) 538-5288.

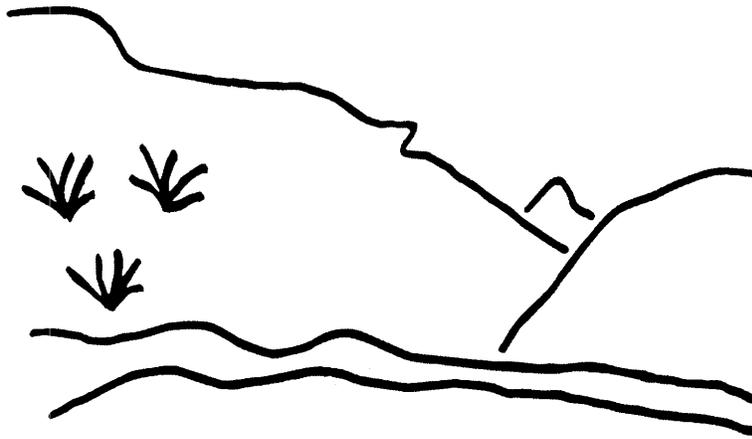
Sincerely,

A handwritten signature in cursive script, appearing to read "Pamela Grubaugh-Littig".

Pamela Grubaugh-Littig
Permit Supervisor

pwb/sm
Enclosure:
cc: Price Field Office
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State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Cottonwood/ Wilberg Mine
Reformatting of Part 4 of the MRP, Reclamation Plan
C/015/019-AM00B-3
Technical Analysis
September 18, 2001

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TECHNICAL ANALYSIS

INTRODUCTION

On July 2, 2001, the Division received the 3th round for amendment AM00B, which reformats Part 4, Reclamation Plan of the MRP for the Cottonwood/Wilberg mine. The last correspondence from the Division concerning the reformatted reclamation plan was dated November 14, 2000. A response from the Permittee has been delayed by several requests for extension, and was finally received over a year later (July 2, 2001).

On August 3, 2000, Dennis Oakley of PacifiCorp, came up to the Salt Lake office to conduct a side-by-side review of the MRP. PacifiCorp's copy of the MRP was compared with the copies in the Salt Lake Public Information Center and in the Price Field Office. Several inconsistencies were found. Several items were corrected immediately. This submittal provides the remaining missing information: one copy of each of the nine plates associated with Appendix III (overland tube).

The engineering issues in AM00B are highwall elimination, reclamation maps and cross sections, and bond calculations. The Division found that all those issues were adequately addressed in the submittal. The response includes adjusted bond calculations for Stage I and Stage II reclamation work. However, the bond calculations do not contain all the information that the Division requested. Instead, the Permittee made some conservative assumptions about reclamation costs. Those assumptions will result in a bond amount that is sufficient to insure reclamation in the event of bond forfeiture. The Division believes that the bond amount could be reduced if the Permittee were to use more a detailed cost estimates.

Soil sampling to characterize the fill slopes for potential use as substitute topsoil was conducted in 1980, 1983, 1989 and 2001. Results indicate that some of this soil must be disqualified for use as substitute topsoil due to salt loading from winter road salting and snow removal operations.

The reformatting changes of this submittal (i.e. the new Table of Contents with list of Appendices) are accurate and can be approved. Now that the reorganization and reformatting has been completed, the Division may, in the future, review the plan for details of reclamation technique which may have changed since the plan was devised in the 1980's. In approving amendment AM00B, the Division requires the Permittee to post a reclamation bond in the amount of \$3,082,587.

SUMMARY OF OUTSTANDING DEFICIENCIES

SUMMARY OF DEFICIENCIES

The Technical Analysis of the proposed permit changes can not be completed at this time. additional information is requested of the permittee to address to address deficiencies in the proposal. A summary of those deficiencies is provided below. Additional comments, concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the Division, result in denial of the proposed permit changes, or may result in other executive or enforcement action as deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

- R645-301-232.200**, Correct the reference to Plate 4-2, map CM10378-WB, to sheet 1 of 3 on page 8 of Part 4. 6

- R645-301-232.200**, Provide acreage information for each of the five fill slopes that hold the substitute topsoil for the Wilberg Mine to support the statement on page 22 of Part 4 that 70,000 cubic yards of substitute topsoil will be generated from the five fill areas at the Wilberg Mine site. 17

- R645-301-731.311**, Place in the narrative a reference for the location of sample results for the Cottonwood/Wilberg Waste Rock site. 17

GENERAL CONTENTS

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The revised Introduction, Table of Contents for the MRP, and Table of Contents for the Appendices volumes (dated 5/24/2000) are to replace those found in the Introduction section of Volume 1 (dated 12/20/99 and approved under amendment AM00A). The latest information includes Volumes 8 - 11 in the Table of Contents list. The Division files were checked for accuracy against the Table of Contents. The following has been noted:

- The information listed as existing in Volume 2 is now being presented in two volumes: Volume 2 and the recently submitted volume entitled "Part 4 - Reclamation Plan" (dated 1/17/00, yet to be incorporated). Once Part 4 has been approved, it will be incorporated into Volume 2.
- Volume 4 is an empty volume; it used to contain Maps 2-7, 2-10, 2-11, 2-12, and 2-13. According to this submittal, these maps were moved to Volume 8 in 1993.

As plates were moved from Volume 4 to Volume 8, the following changes occurred:

1. Plate 2-7 (Hiawatha-Cottonwood and Cottonwood-Blind Canyon Interburden Isopach Map) became Plate 2-6A or Map CM-10692-EM.
2. Plate 2-8 (Isopach Map of the Blind Canyon and Cottonwood Coal Seams) was replaced with Plate 2-6 or Map CM-10696-EM.
3. Plate 2-10 (Hiawatha Coal Seam Overburden Isopach Map) became Plate 2-6B or Map CM-10703-EM.
4. Plate 2-11 (East Mountain Property. Blind Canyon and Cottonwood Coal Seams Overburden Isopach Map) was moved to Volume 8 and became Plate 2-6C or CE-10704-EM..

Plates labeled 2-12 and 2-13 were moved to Volume 9:

5. Plate 2-13 (East Mountain Property Hydrology Data Map), CM-10478-EM, was replaced with Plate HM-1 in Volume 9.
 6. Plate 2-12 (East Mountain Property Hiawatha Coal Seam In-Mine Watering Locations), CM-10532-EM, was replaced with Plate HM-3 in Volume 9.
- Volume 7 is included in the Table of Contents as non-existent.

GENERAL CONTENTS

- Volume 8 is a shared volume between Deer Creek Mine (C/015/018) and Des Bee Dove Mine (C/015/017). It is filed in the Public Information Center with the Des Bee Dove Mine files.
- Volumes 9, 9A and 9B are noted in the Table of Contents. These volumes are shared with the Deer Creek Mine (C/015/018) and the Des Bee Dove Mine (C/015/017). They are filed in the Public Information Center with the Deer Creek Mine files.
- Appendix XX should be moved to volume 9, according to this submittal.
- The Appendices are found in three unlabeled volumes:

Appendix I through X
Appendix XI through XIX
Appendix XX and XXII.

- This submittal (7/2/01) provides Plates 1-9, Overland Tube, Appendix III.
- Missing Plate 3-16A CM-10982-CP of Appendix III dealt with the Cottonwood Canyon Fan Portal surface facilities. The Cottonwood Fan Portal area was disturbed but facilities were never developed. The Cottonwood Fan Portal area was reclaimed in November of 1998. Therefore, the Permittee requests that Plate 3-16A is removed from the plan.

The submittal has brought the Table of Contents and the Division's copy of the Mining and Reclamation plan up to date.

Page 8 of Part 4 makes reference to Plate 4-2, map CM 10378-WB, 1 of 2. This reference should be to Plate 4-2 map CM 10378-WB, sheets 1 of 3.

Findings:

The information provided does not meet the minimum permit application requirements for format and contents. Prior to approval the Permittee must provide the following in accordance with:

R645-301-232.200, Correct the reference to Plate 4-2, map CM10378-WB, to sheet 1 of 3 on page 8 of Part 4.

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.

Minimum Regulatory Requirements:

Provide adequate soil survey information on those portions of the permit area to be affected by surface operations or facilities consisting of a map delineating different soils, soil identification, soil description, and present and potential productivity of existing soils.

Where selected overburden materials are proposed as a supplement or substitute for topsoil, provide results of the analysis, trials and tests required. Results of physical and chemical analyses of overburden and topsoil must be provided to demonstrate that the resulting soil medium is equal to or more suitable for sustaining revegetation than the available topsoil, provided that trials and tests are certified by an approved laboratory. These data may be obtained from any one or a combination of the following sources: U.S. Department of Agriculture Soil Conservation Service published data based on established soil series; U.S. Department of Agriculture Soil Conservation Service Technical Guides; State agricultural agency, university, Tennessee Valley Authority, Bureau of Land Management or U.S. Department of Agriculture Forest Service published data based on soil series properties and behavior; or, results of physical and chemical analyses, field site trials, or greenhouse tests of the topsoil and overburden materials (soil series) from the permit area. If the permittee demonstrates through soil survey or other data that the topsoil and unconsolidated material are insufficient and substitute materials will be used, only the substitute materials must be analyzed.

Analysis:

Soils information for the mine is located as follows:

Old Waste Rock site (UTU 37642)

Appendix VII and Part 4 (Reclamation Plan) Appendix D, page 32.

New Waste Rock site (UTU-65027)

Volume 10 and Part 4 (Reclamation Plan) Appendix D, page 34.

Cottonwood Mine Facilities

Volume 1 Part 2, pages 2-143 to 2-158 and Appendix D

Drawing CE 1047 WB General Soil Map of the Cottonwood/Wilburg Mine Permit Area
(designated by the Division as Map 2-17)

Drawing CE 10346 - WB Mine Plan Area Soils Map (designated by the Division as Map 2-18).

Wilberg Mine Site

The area of the Wilberg Mine is about 18 acres at an elevation of 7400 to 8000 feet. The general slope is 35 degrees (70% or 1.5h:1v). The slopes have a southern exposure. Annual precipitation is about eight inches (Part 4, Appendix D).

Construction of the Wilberg Mine was begun and completed in 1978. Dr. A. R. Southard states in his June 1989 report entitled, "Soil Resources of the Wilberg Mine Area," (found in Appendix D)

that a permit for construction was granted by the U.S. Geological Survey under the authority of 30 CFR 211, which required "approximately the same soil conservation practices as SMCRA's interim regulations effective December 13, 1977."

The soils in existence prior to disturbance at the mine site were probably loamy-skeletal, mixed, mesic Lithic Ustorthents. A typical pedon description would have an A horizon of 0 - 4 inches of very gravelly loam, moderately calcareous, moderately alkaline (pH 8.3). This surface horizon would be followed by a C horizon from 4 - 14 inches of fine sandy loam with 40% flagstones, strongly calcareous, strongly alkaline (pH 8.8) disseminated carbonates. Below fourteen inches would have been sandstone.

On site, small areas (less than 100 square feet) of deep colluvial deposition were noted. One such area had a soil depth of 45 inches and is represented by samples 1112 to 1116 on the Mine Plan Area Soils Map (CM-10346-WB). The deep soil was sandy loam in texture with approximately 60% sand, 25% silt and 15% clay. The pH of these soils was between 8.0 and 8.4. The Electrical Conductivity was between 0.4 and 1.5 dS/cm. The Sodium Adsorption Ratio values were below 1.5. Organic Matter percentage was 4.4 at the surface (0 - 6 inches) and lowered to 1.3% at the 31 - 45 inch depth. Phosphorus levels were recorded as 2.9 ppm at the surface and down to 0.6 ppm at 14 - 21 inch depth, falling to 0.1 ppm at 31 - 45 inches.

Dr. Southard concludes in his June 1989 report that no topsoil existed in sufficient quantities to warrant stockpiling. However, Dr. Southard found that the fill slopes and pad material could be utilized as substitute topsoil, if the soil was not contaminated by mining activity (page 9 of the June 1989 report entitled, "Soil Resources of the Wilberg Mine Area"). Consequently, a plan to monitor the fill slopes for chemical characteristics was included in the MRP.

Sampling and laboratory analysis of the fill slopes was to be conducted at 5 year intervals to record productivity changes on the slopes with the ultimate goal of creating substitute topsoil from the fill (see Part 4, pages 18 - 21). At five year intervals pH, EC, SAR, OM%, SP%, AWC, and soil fertility (P, K) analyses were to have been performed on five composite samples from five fill slopes. The plan still retains a commitment to sample the fill slopes every five years to monitor soil productivity changes.

The reclamation plan describes using the top 18 inches of soil from five major interim fill slopes which were seeded in 1988 (see Part 4, pages 18 - 21). These slopes are shown in green on Drawing KS1217D, 1993, Vegetation Monitoring Map, dated 4/18/94 (found in the Annual Report Volume); on Plate 2-18 Mine Plan Area Soils Map (CM-10346-WB); on Drawing WS 449 D, Cottonwood Mine Surface Facilities Map 2000 Vegetation Monitoring (found in the Annual Report Volume); and on a 1989 Figure drawn in Appendix D, Soil Physical and Chemical Analysis. The fill slopes identified in Appendix D are: Area W1 (upper parking lot); Area W2 west (slope west of the Wilberg conveyor); Area W2 east (slope east of the Wilberg conveyor); Area W2 north (slope below parking lot and adjacent to the road); and Area W3 (sediment pond fill).

Spoil banks were tested in 1980, 1983 and 2001. The soil in the fill slopes was sampled in 1983, 1989 and in 2001. Sampling results and location maps are included in Appendix D. The Mine Plan Area Soils Map (CM-10346-WB) is also necessary for interpretation of the results. Samples were not composited in the year 2001. However, in 1989, the laboratory analyzed sub-samples composited by depth segment from several sample locations within each fill area. Sampling locations were similar between studies, although not all five fill slopes are represented at each sampling date.

ENVIRONMENTAL RESOURCE INFORMATION

In the year 2001, at the Cottonwood/Wilberg Mine facilities area, sample SS1 was taken of the spoil banks by the former security guard station. Samples SS2 and SS8 were taken from the main access road and the Wilberg fan portal access road, respectively. Sample SS3 was taken from the undisturbed slopes above the crane pad. SS9 was taken outside the disturbed area boundary from the slope directly north of the substation/storage yard. Samples SS4, SS5, SS6, SS7 represent the fill slopes. The following chart listing sample site locations and designation for each sample year was created to enable comparison of the spoil banks and fill slopes over time.

Sample Location and Designation By Year Sampled

	1980	1983	1989	2001
Spoil banks – by former security guard station	samples 658, 659, 660, 661, 662.	Sample W4 (a composite of 10 samples)	not sampled	sample site SS1
Area W1 – upper parking lot	not sampled	sample W1 (a composite of 10 samples)	samples 1213, 1214, 1215 (each a composite of 5 samples)	sample sites SS6 and SS7
Area W2 north – slope below parking lot and adjacent to the road	not sampled	sample W2 (a composite of 10 samples)	samples 1222, 1223, 1224 (each a composite of 2 samples)	not sampled
Area W2 east – fill slope east of the Wilberg conveyor	not sampled	not sampled	samples 1219, 1220, 1221 (each a composite of 5 samples)	sample site SS4
Area W2 west – fill slope west of the Wilberg conveyor	not sampled	not sampled	samples 1216, 1217, 1218 (each a composite of 5 samples)	sample sites SS5
Area W3 – sediment pond fill slope	not sampled	sample W3 (a composite of 10 samples)	not sampled	not sampled

The Division has created the following tables to show the physical and chemical characteristics reported for each fill slope over time. There is one table for each fill slope.

Spoil Banks Comparison of Chemical and Physical Properties Over Time

	1980 average of the five samples reported	1983 composite of 10 samples	2001 one sample averaged over all depths sampled
Sand		75	66
Silt		14.5	22
Clay		10.5	12
Texture		loamy sand	sandy loam
pH	7.76	7.8	7.7
EC	5.64	0.80	4.3
SAR		0.06	8.57
%OM (%N)		10.98 (0.254)	2.2 total organic carbon (.09%)
Ca		8.67%	11.68 meq/L
Mg		1.85%	4.66 meq/L
Na	17.52 meq/L	0.72%	25.73 meq/L
K	0.007 %	0.094%	
ppm P	3.8	0.055	
% Calcium carbonate		16.5	
Nitrate nitrogen ppm			1.26
Keldahl nitrogen%			0.09%
Saturation percent		20%	24.8%
Available Water Holding Capacity (in/in)			0.07 (when adjusted for coarse fragments and EC).

ENVIRONMENTAL RESOURCE INFORMATION

Fill Slope Area W1 (Upper Parking Lot) Time Comparison of Chemical and Physical Properties

	1983 composite of 10 samples	1989 average of 3 composite samples	2001 two samples averaged over all depths sampled
Sand	78.5	59	52
Silt	6.5	22	32
Clay	15	19	16
Texture	loamy sand	sandy loam	loam
pH	8.5	8.1	7.6
EC	0.51dS/m	2.0 dS/m	0.95mmhos/cm
SAR	2.29	2.9	0.87
OM% (%N)	5.50 (0.85)	2.1 % TOC	2.5% TOC
Ca	8.98%	7.0 meq/L	5.98 meq/L
Mg	2.58%	5.9 meq/L	2.5 meq/L
Na	0.30%	7.3 meq/L	1.42 meq/L
K	0.88%	180 ppm	
ppm P	0.028	7.3	
% Calcium carbonate	16.7		
Nitrate nitrogen ppm			2.7
Keldahl nitrogen%			0.11
Saturation percent	30	29	26.7
Available Water Holding Capacity (in/in)		0.04 (adjusted for coarse fragments)	0.08 (adjusted for coarse fragments)

ENVIRONMENTAL RESOURCE INFORMATION

Fill Slope Area W2 north (slope below parking lot) Time Comparison of Chemical and Physical Properties

	1983 composite of 10 samples	1989 average of 3 composite samples
Sand	79.5	56
Silt	13.5	27
Clay	8.5	18
Texture	loamy sand	sandy loam
pH	8.2	8.0
EC	0.98	11
SAR	0.02	13
OM% (%N)	12.22 (0.266)	1.7% TOC
Ca	9.5%	21 meq/L
Mg	2.54%	18 meq/L
Na	0.82%	76 meq/L
K	0.57%	139 ppm
ppm P	0.035	2.8 ppm
% Calcium carbonate	16.5%	
Nitrate nitrogen ppm		
Keldahl nitrogen%		
Saturation percent	20%	31%
Available Water Holding Capacity (in/in)		0.06 (corrected for rock content and EC)

ENVIRONMENTAL RESOURCE INFORMATION

Fill Slope Area W2 east (fill slope east of the Wilberg conveyor) Time Comparison of Chemical and Physical Properties

	1989 average of 3 composite samples	2001 one sample averaged over all depths sampled
Sand	58	59
Silt	23	28
Clay	19	13
Texture	sandy loam	sandy loam
pH	7.9	7.6
EC	8.6	6.6
SAR	8.4	21.4
TOC%	1.8%	1.7%
Ca meq/L	37	5.7
Mg meq/L	26	3.6
Na meq/L	47	46.5
ppm K	78	
ppm P	2.0	
% Calcium carbonate		
Nitrate nitrogen ppm		1.11
Keldahl nitrogen%		0.12
Saturation percent	27%	22.3
Available Water Holding Capacity(in/in)	0.05 (adjusted for rock content and EC)	0.06 (adjusted for rock and EC)

ENVIRONMENTAL RESOURCE INFORMATION

Fill Slope Area W2 west (fill slope west of the Wilberg conveyor) Time Comparison of Chemical and Physical Properties

	1989 average of 3 composite samples	2001 one samples averaged over all depths sampled
Sand	58	59
Silt	23	25
Clay	19	15
Texture	sandy loam	sandy loam
pH	7.9	7.4
EC	7.5	3.4
SAR	8.4	5.0
TOC%	1.6	1.4
Ca meq/L	27.3	10.9
Mg meq/L	23.5	7.7
Na meq/L	41.5	14.2
ppm K	99	
ppm P	3.33	
% Calcium carbonate		
Nitrate nitrogen ppm		
Keldahl nitrogen%		0.08
Saturation percent	28	25.5
Available Water Holding Capacity (in/in)	0.05 (adjusted for rock content and EC)	0.07 (adjusted for rock content and EC)

ENVIRONMENTAL RESOURCE INFORMATION

Fill Slope Area W3 (sediment pond fill slope) List of Chemical and Physical Properties

	1983 a composite of 10 samples	No other sampling conducted
Sand	75	
Silt	12.5	
Clay	12.5	
Texture	loamy sand	
pH	8.6	
EC	1.0	
SAR	1.19	
OM% (%N)	19.90 (.299)	
Ca	7.5%	
Mg	2.23%	
Na	0.144%	
K	0.52%	
ppm P	0.110	
% Calcium carbonate	15.1%	
Nitrate nitrogen ppm		
Keldahl nitrogen%		
Saturation percent	30	
Available Water Holding Capacity		

Glancing through these soil sample results one immediately notes that sample site SS4 has elevated Electrical Conductivity (values of 3.16 mmhos/cm in the 0 - 6 inch depth sample increasing to 9.5 mmhos/cm in the 12 - 18 inch depth sample) and Sodium Adsorption Ratio values. The SAR value in the 0 - 6 inch sample is 16.4 and ratio increases with depth to 24.6. As previously noted by A. R. Southard and T. H. Furst in the June 15, 1989 report entitled "Soils of the Wilberg Mine Site: Report on Soil Physical and Chemical Analyses" (found in Appendix D), extreme SAR values are probably due to snow removal and salting operations along the road during the winter months. The Division concludes that the soil in the area of SS4 (Area W2 East) is not useful as topsoil material. Southard and Furst found the area immediately north of the test plots (designated as W2 north in the 1989 study) was unsuitable for the same reason.

Other fill slopes also have SAR values that are higher than native soils, but not to this extreme. For example SS5 has a SAR value of 5.24 in the upper six inches and the value decreases through the profile. Therefore, prior to including Area W2 East in substitute topsoil calculations, further sampling of the Area W2 East will be required to show that the sample SS4 is not representative of the entire slope.

On page 22 of Part 4 it is noted that 70,000 cubic yards of substitute topsoil will be recovered from the fill slopes. The information provided on fill slopes is incomplete. The Division must know the acreage of each fill area and volumes projected to be salvaged from each fill area. In searching through the submittal for this information, the Division noted that reference is made to the redistribution of interim topsoil over two acres of the site on page C-43 of Appendix C, but no further information on the topsoil segregation or redistribution was found in the MRP.

Wilberg Mine Test Plots

In 1988 test plots were established in Area W2 West (see Map 2-18) at the Wilberg Mine site to test mulch (hydromulch vs. mulch blanket vs. hay & netting) and irrigation applications (once a week for two years) for final reclamation (see page 20 and 21 of the submittal for details). All test plots received the final reclamation mix (page 24 of the submittal). A design of the test plots is located in Part 4, Figure 4. Page 20 of the submittal states that test plots have been monitored according to the plan for final reclamation monitoring and refers the reader to Part 2: Vegetation Information for sampling technique. The sampling results are found in the volumes of Annual Vegetation Monitoring Reports. The most recent sampling was conducted in 1999. During the 1999 evaluation, a salt-effect on vegetation growth was noted on plots immediately adjacent to the road.

Waste Rock Storage Site (UTU-65027)

The UTU-65027 waste rock facility is 16.9 acres. The access road to the site is 1.435 feet long and covers 5 acres of ground. The waste is being contemporaneously reclaimed with 12 inches of subsoil and 6 inches of topsoil cover (see Chapter 3, Appendix XXI of the MRP. Appendix XXI will become Volume 10 of the MRP when this submittal is approved.)

Soils of the waste rock site were surveyed in 1989. A report entitled, "A Report on the Soils of the Wilberg Waste Rock Site" by T.H. Furst is found in Chapter VII of Appendix XXI of the MRP. Laboratory analyses are found in Tables 2, 3 and 4 of this report. The soils were identified as Strych soils: Lithic Ustic Torriorthent, fine-silty, mixed (calcareous) mesic family, 5 - 30% slopes and 0 - 5%

ENVIRONMENTAL RESOURCE INFORMATION

slopes. The pedon excavation sites and soil boundaries are illustrated on Plate 7-1, CM-10818-WB of Appendix XXI.

In Chapter 3, page 3-11, of Appendix XXI of the MRP, a commitment is made to sample soil materials on the interim revegetation sites. And, so, in the year 2001, samples were collected from waste rock at the Waste Rock Storage Site (UTU-65027). The analytical results have been placed in Appendix D of Part 4. However on page 34 of Part 4 there is no reference made to the location of these samples, the reader is sent to "Volume 10 for complete details". Perhaps these results are better placed in an Appendix with the Waste Rock Site information.

Findings:

The information provided is not adequate to meet the minimum soils resource information requirements of the Regulations. Prior to approval the Permittee must provide the following in accordance with:

R645-301-232.200, Provide acreage information for each of the five fill slopes that hold the substitute topsoil for the Wilberg Mine to support the statement on page 22 of Part 4 that 70,000 cubic yards of substitute topsoil will be generated from the five fill areas at the Wilberg Mine site.

R645-301-731.311, Place in the narrative a reference for the location of sample results for the Cottonwood/Wilberg Waste Rock site.

RECLAMATION PLAN

RECLAMATION PLAN

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-270, -301-271, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Minimum Regulatory Requirements:

Note: The following requirements have been suspended insofar as they authorize any variance from approximate original contour for surface coal mining operations in any area which is not a steep slope area.

Criteria for permits incorporating variances from approximate original contour restoration requirements.

The Division may issue a permit for nonmountaintop removal mining which includes a variance from the backfilling and grading requirements to restore the disturbed areas to their approximate original contour. The permit may contain such a variance only if the Division finds, in writing, that the applicant has demonstrated, on the basis of a complete application, that the following requirements are met:

- (1) After reclamation, the lands to be affected by the variance within the permit area will be suitable for an industrial, commercial, residential, or public postmining land use (including recreational facilities).
- (2) The criteria for the proposed post mining land use will be met.
- (3) The watershed of lands within the proposed permit and adjacent areas will be improved by the operations when compared with the condition of the watershed before mining or with its condition if the approximate original contour were to be restored. The watershed will be deemed improved only if: the amount of total suspended solids or other pollutants discharged to ground or surface water from the permit area will be reduced, so as to improve the public or private uses or the ecology of such water, or flood hazards within the watershed containing the permit area will be reduced by reduction of the peak flow discharge from precipitation events or thaws; the total volume of flow from the proposed permit area, during every season of the year, will not vary in a way that adversely affects the ecology of any surface water or any existing or planned use of surface or ground water; and, the appropriate State environmental agency approves the plan.
- (4) The owner of the surface of the lands within the permit area has knowingly requested, in writing, as part of the application, that a variance be granted. The request shall be made separately from any surface owner consent given for right-of-entry and shall show an understanding that the variance could not be granted without the surface owner's request.

If a variance is granted, the requirements of the post mining land use criteria shall be included as a specific condition of the permit, and, the permit shall be specifically marked as containing a variance from approximate original contour.

A permit incorporating a variance shall be reviewed by the Division at least every 30 months following the issuance of the permit to evaluate the progress and development of the surface coal mining and reclamation operations to establish that the operator is proceeding in accordance with the terms of the variance. If the permittee demonstrates to the Division that the operations have been, and continue to be, conducted in compliance with the terms and conditions of the permit, the review specified need not be held. The terms and conditions of a permit incorporating a variance may be modified at any time by the Division, if it determines that more stringent measures are necessary to ensure that the operations involved are conducted in compliance with the requirements of the regulatory program. The Division may grant variances only if it has promulgated specific rules to govern the granting of variances in accordance with the provisions of this section and any necessary, more stringent requirements.

Analysis:

The definitions of AOC contained in the Surface Mining Control and Reclamation Act (SMCRA) and the Utah coal rules are primarily statements of the objectives of postmining backfilling and grading so that the area "closely resembles the general surface configuration of the land prior to mining" and "blends into and complements the drainage pattern of the surrounding terrain." At the same time, reclamation performance standards must be met, including controlling erosion, establishing mass stability and establishing permanent, diverse and effective vegetative cover. In some circumstances, replicating the original contour may only be possible at the expense of one or more reclamation

performance standards. In other circumstances, it may be possible to achieve nearly exact original contour and simultaneously satisfy all the other regulatory requirements.

The underlying objectives of the AOC requirements relate to the assumption that postmining features which mimic pre-mining features are most likely to quickly achieve mass and erosional stability, revegetation, hydrologic balance and productive post-mining land use, all of which are the objectives of the reclamation performance standards. AOC also addresses aesthetic considerations. In order to evaluate methods for achieving AOC, the underlying objectives and challenges of reclamation at the site in question must first be identified.

Final Surface Configuration

The main question that is used to determine if the site meets this requirement is "Does the postmining topography, excluding elevation, closely resemble its pre-mining configuration?" Since the site is pre-SMCRA the Permittee does not have accurate pre-mining topography. Therefore, the Division will base the analysis on whether the site resemble the surrounding undisturbed topography. The Division relies on the judgement of the technical staff that reviews the reclamation plan. The staff reviewed all the operational and postmining topographic maps and cross sections and determined that this condition is met based on the following:

- The existing topography and the proposed reclamation topography are shown on drawing CM-10500-WB, Cottonwood/Wilberg Mine Final Reclamation Map Stage I, the second stage is shown on drawing CM-10378-WB. The final cross sections are shown on CM-10484-WB.
- The reclaimed surface configuration is similar to that shown in the undisturbed areas and to the regional topography.
- The amount of cut material that will be handled during reclamation 143,879 cubic yards and the amount of fill is needed is 131,499 cubic yards. The cut and fill calculations do not match but are within 10% so the Division feels that the earthwork plan is adequate. Volume estimates at best are $\pm 10\%$. See earthwork calculations on drawing CM-10500-WB.

All Spoil Piles to be Eliminated

No spoil piles are associated with this site.

All Highwalls to be Eliminated

The highwall locations are shown on drawing CM-10484-WB. The drawing shown the location all operational highwalls and the cross sections show the existing topography and the proposed reclaim topography. Drawing CM-10500-WB shows the location of the highwall remnant that will exist after final reclamation.

The highwall remnants are located on or near cliffs. In most cases the locations where the highwalls stops and the nature cliffs starts are difficult to determine. The Permittee could eliminate the

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highwall remnants by placing more fill along the highwall. From the cut and fill calculations the Permittee does not have access to much additional fill material on the site.

If additional fill material were to be imported to eliminate the highwalls then the Permittee would have to increase either the reclaimed slope angle and thus decrease the slope stability or place material in the drainage which would decrease the compatibility of the reclaimed channels with the existing channels.

Under the provision of R645-301-553.500, highwall remnants can be left if 1) the remaining highwalls are compatible with the postmining land use, 2) provide for adequate drainage, 3) the highwall remnants are stable and 4) the Permittee does not have access to reasonable available spoil to eliminate the highwalls. The Division has found that the reclaimed site will be compatible with the postmining land use. See the postmining land use section of the TA for more details. The drainage proposed for the reclaimed site has been found to be compatible with the undisturbed drainages. See the reclamation hydrology section of the TA for more details. The highwall remnants are in bedrock and will be stable. The Division reviewed the cut and fill calculations and determined that all reasonable available fill material will be used for highwall elimination.

The Division has determined that the Permittee has eliminated all highwalls to the extent technologically partible and that the proposed highwall remnants meet the requirements of R645-301-553.500.

Hydrology

The main concerns with hydrology are that the drainages are restored, sediment is controlled and that no hazardous or toxic discharges will occur. The Division considers that those conditions will be met when the hydrologic reclamation requirements are met.

Post-Mining Land Use:

The Division has found that the application meets the general post-mining land use requirements

Variance from AOC:

The Permittee did not request a variance from AOC.

General Backfilling and Grading:

The Division analysis of the general backfilling and grading requirements is in the backfilling and grading section of this TA. The Division has found the general backfilling and grading requirements are satisfied.

Findings:

The Permittee meets the minimum approximate original contour restoration requirements of the regulations.

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.

Minimum Regulatory Requirements:

Each application shall contain maps, plans, and cross sections which show the reclamation activities to be conducted, the lands to be affected throughout the operation, and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown and described as an existing structure.

The permit application must include as part of the reclamation plan information, the following maps, plans and cross sections:

Affected area boundary maps

The boundaries of all areas proposed to be affected over the estimated total life of all mining activities and reclamation activities, with a description of size, sequence, and timing of phased reclamation activities and treatments. All maps and cross sections used for reclamation design purposes shall clearly show the affected and permit area boundaries in reference to the reclamation work being accomplished.

Bonded area map

The permittee shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

Reclamation backfilling and grading maps

Contour maps and cross sections to adequately show detail and design for backfilling and grading operations during reclamation. Where possible, cross sections shall include profiles of the pre-mining, operations, and post-reclamation topography. Contour maps shall be at a suitable scale and contour interval so as to adequately detail the final surface configuration. When used in the formulation of mass balance calculations, cross sections shall be at adequate scale and intervals to support the mass balance calculations. Mass balance calculations derived from contour information must demonstrate that map scale and contour accuracy are adequate to support the methods used in such earthwork calculations. Detailed cross sections shall be provided when required to accurately depict reclamation designs which include, but are not limited to: terracing and benching, retained roads, highwall remnants, slopes requiring geotechnical analysis, and embankments of permanent impoundments.

Reclamation facilities maps

Location of each facility that will remain on the proposed permit area as a permanent feature, after the completion of underground mining activities. Location and final disposition of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing water dam and embankment, disposal areas for underground development waste and excess spoil, and water treatment and air pollution control facilities within the proposed permit area to be used in conjunction with phased reclamation activities or to remain as part of reclamation.

Final surface configuration maps

Sufficient slope measurements to adequately delineate the final surface configuration of the area affected by surface operations and facilities, measured and recorded according to the following: each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area disturbed or, where this is impractical, at locations specified by the Division; where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances, or any other distance determined by the Division to be representative of the post-reclamation configuration of the land; and, slope measurements shall take into account variations in slope, to provide accurate representation of the range of slopes and reflect geomorphic differences of the area disturbed through reclamation activities.

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Reclamation monitoring and sampling location maps

Elevations and locations of test borings and core samplings. Elevations and locations of monitoring stations used to gather data on water quality and quantity, subsidence, fish and wildlife, and air quality, if required, to demonstrate reclamation success.

Reclamation surface and subsurface manmade features maps

The location of all buildings in and within 1,000 feet of the proposed permit area, with identification of the current or proposed use of the buildings at the time of final reclamation. The location of surface and subsurface manmade features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, fences, and agricultural drainage tile fields. Each public road located in or within 100 feet of the proposed permit area and all roads within the permit area which are to be left as part of the post-mining land use. Buildings, utility corridors, and facilities to be used in conjunction with reclamation or to remain for final reclamation.

Reclamation treatments maps

The location and boundaries of any proposed areas for reclamation treatments including but not limited to: location, extent and depth of materials used for resoiling; location, extent and types of treatments for revegetation including soil preparation, soil amendments, mulching, seeding, variations in seed mixtures, and other revegetation treatments. Each water diversion, collection, conveyance, treatment, storage and discharge facility to be used during reclamation. *Each facility to be used to protect and enhance fish and wildlife related environmental values.* other treatments or applications which are specifically designed or required as part of phased or final reclamation activity.

Certification Requirements.

Cross sections, maps, and plans required to show the design, location, elevation, or horizontal or vertical extent of the land surface or of a structure or facility used to conduct mining and reclamation operations shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or in any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture.

Each detailed design plan for an impounding structure that meets or exceeds the size or other criteria of the Mine Safety and Health Administration, 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified registered professional engineer with assistance from experts in related fields such as geology, land surveying, and landscape architecture; include any geotechnical investigation, design, and construction requirements for the structure; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Each detailed design plan for an impounding structure that does not meet the size or other criteria of 30 CFR Section 77.216(a) shall: be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, or in any State which authorizes land surveyors to prepare and certify such plans, a qualified, registered, professional land surveyor, except that all coal processing waste dams and embankments shall be certified by a qualified, registered, professional engineer; include any design and construction requirements for the structure, including any required geotechnical information; describe the operation and maintenance requirements for each structure; and, describe the timetable and plans to remove each structure, if appropriate.

Analysis:

Affected area boundary maps

The backfilling and grading operations at the Cottonwood/Wilberg mine will be done in two stages as described on page 7, Part 4 of the submittal. Stage I will recontour the disturbed areas of the right and left forks of Grimes Wash. The first stage is shown on Plate 4-1, drawing CM-10500-WB, Cottonwood/Wilberg Mine Final Reclamation Map Stage I.

The second stage will remove the access road and the north and south sediment ponds. Stage II is shown on Plate 4-2, drawing CM-10378-WB. The final cross sections are shown on CM-10484-WB, Cottonwood Wilberg Mine Final Reclamation Map Stage II, Sheets 1, 2 and 3 of 3.

For this submittal, Plates 4-1, 4-2 and 4-3 were re-created in autocad. Notable changes to these plates are the mass balance calculations and the inclusion of the disturbed area boundary. The disturbed area boundary matches that found on Plate 3-16 Cottonwood Mine Surface Yard Map approved and incorporated into the MRP 12/21/00 with Amendment 00C.

Page 8 of Part 4 makes reference to Plate 4-2, map CM 10378-WB, 1 of 2. This reference should be to Plate 4-2 map CM 10378-WB, sheets 1 of 3.

The maps and cross sections show the surface configuration after reclamation has been completed. The maps and cross sections are adequate for the Division to determine that the backfilling and grading plans are adequate, and that the site will be restored to AOC. Appendix C itemizes the cut and fill quantities.

Reclamation facilities maps

The location of the riprap channels, culverts and the road including the turnaround are shown on drawing CM-10378-WB.

Final surface configuration maps

The final surface configuration for the Cottonwood/Wilberg mine is shown on drawing CM-10500-WB, Cottonwood/Wilberg Mine Final Reclamation Map Stage I, the second stage is shown on drawing CM-10378-WB. The final cross sections are shown on CM-10484-WB.

Findings:

The Permittee has met the minimum requirements for supplying the Division with reclamation maps and cross section.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Minimum Regulatory Requirements:

General

After a permit application has been approved, but before a permit is issued, the applicant shall file with the Division, on a form prescribed and furnished by the Division, a bond or bonds for performance made payable to the Division and conditioned upon the faithful performance of all the requirements of the Act, the regulatory program, the permit, and the reclamation plan.

The bond or bonds shall cover the entire permit area, or an identified increment of land within the permit area upon which the operator will initiate and conduct surface coal mining and reclamation operations during the initial term of the permit. As surface coal mining and reclamation operations on succeeding increments are initiated and conducted within the permit area, the permittee shall file with the Division an additional bond or bonds to cover such increments.

The operator shall identify the initial and successive areas or increments for bonding on the permit application map and shall specify the bond amount to be provided for each area or increment. Independent increments shall be of sufficient size and configuration to provide for efficient reclamation operations should reclamation by the Division become necessary.

An operator shall not disturb any surface areas, succeeding increments, or extend any underground shafts, tunnels, or operations prior to acceptance by the Division of the required performance bond.

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The applicant shall file, with the approval of the Division, a bond or bonds under one of the following schemes to cover the bond amounts for the permit area as determined: a performance bond or bonds for the entire permit area; a cumulative bond schedule and the performance bond required for full reclamation of the initial area to be disturbed; or, an incremental-bond schedule and the performance bond required for the first increment in the schedule.

Form of bond

The Division shall prescribe the form of the performance bond. The Division may allow for: a surety bond; a collateral bond; a self-bond; or a combination of any of these bonding methods.

Performance bond liability shall be for the duration of the surface coal mining and reclamation operation and for a period which is coincident with the operator's period of extended responsibility for successful revegetation or until achievement of the reclamation requirements of the Act, regulatory programs, and permit, whichever is later.

With the approval of the Division, a bond may be posted and approved to guarantee specific phases of reclamation within the permit area provided the sum of phase bonds posted equals or exceeds the total amount required. The scope of work to be guaranteed and the liability assumed under each phase bond shall be specified in detail.

Isolated and clearly defined portions of the permit area requiring extended liability may be separated from the original area and bonded separately with the approval of the Division. Such areas shall be limited in extent and not constitute a scattered, intermittent, or checkerboard pattern of failure. Access to the separated areas for remedial work may be included in the area under extended liability if deemed necessary by the Division.

The bond liability of the permittee shall include only those actions which he or she is obligated to take under the permit, including completion of the reclamation plan, so that the land will be capable of supporting the postmining land use approved. Implementation of an alternative postmining land use which is beyond the control of the permittee, need not be covered by the bond. Bond liability for prime farmland shall be specific to include productivity requirements.

Determination of bond amount

The amount of the bond required for each bonded area shall: be determined by the Division; depend upon the requirements of the approved permit and reclamation plan; reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology, hydrology, and revegetation potential; and, be based on, but not limited to, the estimated cost submitted by the permit applicant.

The amount of the bond shall be sufficient to assure the completion of the reclamation plan if the work has to be performed by the Division in the event of forfeiture, and in no case shall the total bond initially posted for the entire area under 1 permit be less than \$10,000.

An operator's financial responsibility for repairing material damage resulting from subsidence may be satisfied by the liability insurance policy required in this section.

Terms and conditions for liability insurance

The Division shall require the applicant to submit as part of its permit application a certificate issued by an insurance company authorized to do business in the United States certifying that the applicant has a public liability insurance policy in force for the surface coal mining and reclamation operations for which the permit is sought. Such policy shall provide for personal injury and property damage protection in an amount adequate to compensate any persons injured or property damaged as a result of the surface coal mining and reclamation operations, including the use of explosives, and who are entitled to compensation under the applicable provisions of State law. Minimum insurance coverage for bodily injury and property damage shall be \$300,000 for each occurrence and \$500,000 aggregate.

The policy shall be maintained in full force during the life of the permit or any renewal thereof and the liability period necessary to complete all reclamation operations under this Chapter.

The policy shall include a rider requiring that the insurer notify the Division whenever substantive changes are made in the policy including any termination or failure to renew.

The Division may accept from the applicant, in lieu of a certificate for a public liability insurance policy, satisfactory evidence from the applicant that it satisfies applicable State self-insurance requirements approved as part of the regulatory program and the requirements of this section.

Analysis:

Determination of bond amount

The Permittee gave the Division updated reclamation cost estimates for the Cottonwood/Wilberg mine. The update costs include detailed earthwork calculations and equipment productivity. The demolition costs were based on old productivity data.

The Division reviewed the information supplied by the Permittee and found that they used some conservative data for estimating reclamation costs. Some of the assumption and methods were different from those used by the Division. However, the Division believes that those assumptions are sufficient to calculate a reclamation bond amount that will be sufficient to ensure that the Division can reclaim the site in case of bond forfeiture. If the Permittee wants to reduce the bone amount, the Division recommends that the Permittee uses the methodology usually used by the Division.

The Permittee calculated that the reclamation bond amount should be \$3,082,587 in 2005 dollars. The Division has reviewed the bond calculations and considers that amount adequate.

Findings:

The Permittee met the minimum regulatory requirements for submitting adequate information on reclamation cost estimates.

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