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

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TO: Daron Haddock, Permit Supervisor

FROM: Priscilla Burton, Soils Reclamation Specialist

DATE: April 1, 1992

RE: Response to Technical Deficiencies of Chapter Three, "Operation and Reclamation Plan", Crandall Canyon Mine, Genwal Coal Company, ACT/015/032/91F, Folder #2, Emery County, Utah

SUMMARY

The Division received information on February 18, 1992, in response to a technical review of Chapter Three (1/17/92). Some, but not all of the information requested was addressed in this response. New information is presented in revised pages 8-3, 8-4, 8-7, 8-8, and 8-9. The amendments to Chapter 8 are not recommended for approval at this time.

This review discusses outstanding requirements for compliance with the R645-301-200 rules (whether the information is contained in Chapter 3 or in Chapter 8).

The information presented for the Crandall Canyon site has a topsoil shortage for the planned and approved reclamation depth of one foot of topsoil over the 6.65 acres (less access road width and length within the permit area). There may be substitute topsoil available in the contemporaneously reclaimed areas shown on Plate 7-5C. These areas could be itemized in the mass balance equations and used during final reclamation to eliminate the topsoil deficit.

TECHNICAL DEFICIENCIES

R645-301-121.100. Contain current information, as required by R645-200, R645-300, R645-301 and R645-302.

Applicant's Proposal:

Pages 3-4 and 3-5 refer to Class One, Two and Three roads. These

designations were replaced by the terms primary and ancillary in the April 12, 1990 regulations. Plate 3-6 shows cross-sections of typical road types, but has not received any significant changes since its first edition in February of 1988. Although, the primary haulroad within the disturbed area boundary was modified, asphalted and cemented in 1991. And, the ancillary road to the portals was modified in 1990.

Plate 3-3 (Mining Projections) has been updated in response to N.O.V. 91-13-1-1. The location of the two additional monitoring wells which were drilled in January of 1992 are not shown on plate 3-3.

Technical Deficiencies:

On September 26, 1990 Lowell Braxton notified all coal Operators of the procedures for updating the MRP with the new road classifications. The memo states that re-classification according to R645-301-527 will be handled during mid-term or permit change.

Plate 3-6 has been updated by several Plates collectively labeled Plate 3-15 which were viewed during the last complete inspection at the mine site. These plates are in the mine plan at the site but must be included in the plan with the Division copy of Chapter 3 and all other locations. Plate 3-15 includes the major construction work which occurred on the haulroad in 1991. Plate 3-15 has the certification of the primary road required for compliance with R645-301-512.

The location of drill holes on a plate is information that is used by the Division when evaluating hydrology and waste rock information. The location of the drill holes must be indicated on a map as per R645-301-622..

Compliance:

1. On or before May 14, 1992, Genwal must update Chapter 3 of the MRP to include the relevant portions of the haulroad which are depicted on a certified copy of Plate 3-15.

2. On or before May 14, 1992, Genwal must reclassify Class I, II, and III roads as primary or ancillary roads in the narrative and on Plate 3-6.

3. On or before May 14, 1992, Genwal must include the locations of all drill holes on a plate which shows their location relative to the underground workings.

R645-301-121.200. Be clear and concise;

Applicant's Proposal:

The chapter contains sources of confusion and erroneous citations.

Technical Deficiencies:

Page 3-3 refers to Plate 3-13 "Electrical substation Installation." However, the MRP already contains a Plate 3-13 which is "Proposed Screening and Load Out." Does the applicant want to replace the present Plate 3-13 or has the "Electrical Substation Installation" plate been mislabeled?

Compliance:

The application is not in compliance with this regulation.

1. On or before May 14, 1992, Genwal must clarify whether Plate 3-13 is to be "Electrical Substation Installation" or "Proposed Screening and Load Out."

R645-301-121.300. Be filed in the format required by the Division.

Applicant's Proposal:

During a previous chapter revision, a cross-reference from old to new regulations was submitted. This cross-reference cites Sections 13.1 and 14.1 for information concerning organization of the MRP. Reading these sections, one finds that the organization of the MRP is according to the November 1980 and the May 1987 Division Guidelines.

In the present revision of Chapter 3, Genwal has provided each revised page with a date in the bottom right hand corner. This practice is advantageous to the reader and is the Division's policy for revisions to the MRP. In the present revision of Chapter 8, the revision dates were not included in the bottom right hand corner.

Technical Deficiencies:

The Mining and Reclamation Plan requires updating in Chapter 8. All updates to the MRP must be submitted in a form that can be readily inserted into the MRP with replacement pages dated.

The cross-reference provides section and chapter locations for information on compliance with the R645 rules, which were developed in 1990. There are some corrections to be made in the cross-reference. For instance, in the R645-301-200 sections, the following corrections should be made:

RULE	*CORRECT CITE*	*CURRENT CITE*
R645-301-231.100	*Sec. 3.4.4, Sec. 8.11*	
R645-301-231.300	*Sec. 3.5.4.4, Sec. 3.5.5*	*Sec. 8.7, Sec. 8.8, Sec. 8.9*
R645-301-231.400	*Plate 3.8*	
R645-301-232.100	*Sec. 3.5.2*	
R645-301-232.200	*Sec. 3.5.2, Sec. 8.6*	
R645-301-232.500	*Sec. 8.6*	
R645-301-243.100	*Sec. 8.6*	*Sec. 8.8*
R645-301-242	*Sec. 8.8, Sec. 3.5.4.4*	*See Below*
R645-301-242.110 thru .200	*Sec. 3.5.4.4*	
R645-301-243	*Sec. 8.9, App. 8-1*	*Sec. 8.8*
R645-301-244.100	*Sec. 8.8, Sec. 8.9*	
R645-301-244.100	*Sec. 8.8, Sec. 8.9*	*Sec. 8.8.8.9*

Compliance:

The application is not in compliance.

1. On or before May 14, 1992, Genwal must revise the cross-reference to include the changes noted in the deficiency review of R645-301-121.300.

2. On or before May 14, 1992, Genwal must ensure that all page replacements for the Mining and Reclamation Plan submitted with revision 91F will be labeled with the revision date.

R645-301-122. **If used in the permit application, referenced materials will either be provided to the Division by the applicant or be readily available to the Division.**

Applicant's Proposal:

The SPCC plan and the Air Quality Approval Order have been included in the MRP as Appendices 3-21 and 11-2, respectively.

Any pertinent agreements with the U.S. Forest Service concerning the parking/turnaround, the Forest Service Road, additional parking permitted adjacent to the topsoil stockpiles, etc. have been included in Chapter 2 of the MRP (Legal and Financial). Updates to these agreements must be provided as they are revised.

Technical Deficiencies:

Revisions to the FS Special Use Permits have not been provided to the Division. These permits are pertinent to the revision of Chapter 3, "Operation and Reclamation Plan," because the topsoil storage, the sediment pond and snow removal operations are located in a special use areas.

Compliance:

1. On or before May 14, Genwal must provide to the Division all construction approvals and revisions to the Forest Service Special Use Permits which are presently included in Chapter 2 of the MRP.

R645-301-200. **SOILS**
R645-301-230. **OPERATION PLAN.**
R645-301-231.100. **Description of the methods for removing and storing topsoil, subsoil, and other materials;**

Applicant's Proposal:

The cross-reference refers the reader to sec 8.7 for information.
In this submittal of Chapter 3, "Preservation of the Soil Resource" is described in Section 3.4.4. Section 3.4.4.2 of Chapter 3 refers the reader to Section 8.11 for information concerning "Control Measures to Mitigate Impacts."

Section 3.5.2, page 3-22, "Reclamation Plan/Soil Removal and Storage," describes activities which have occurred as part of operations (not reclamation).

The reader learns in the section entitled, "Protection of Vegetation Resources," that topsoil was removed from the surface with a front end loader and D-6 dozer in a single lift. The depth of removal was based on color, using the soil survey attached as App 8-1 for a guide. Soil was removed from areas on Plate 8.1 identified as TCE (Twin Creek Soil), and JDE (Jodero and Datino variants).

Technical Deficiencies:

The location of the information is not clearly stated. The reader is referred to Chapter 8, then Chapter 3, then back to Chapter 8 again for information. Information on the soil resource is actually found in the section entitled "Reclamation Plan/Soil Removal."

Since topsoil removal has occurred, the year of topsoil removal should be indicated.

Compliance:

The application requires clarification of detail.

1. On or before May 14, 1992, Genwal must clearly state in Section 3.4.4 "Preservation of the Soil Resource" of Chapter 3 the page or section location of information on topsoil and subsoil removal and storage and place all information on topsoil harvest and storage in Section 3.4.4 "Preservation of the Soil Resource," of Chapter 3 (remove from Section 3.5.2 "Reclamation Plan").

2. On or before May 14, 1992, Genwal must clearly state the year of topsoil removal and topsoil pile construction.

R645-301-231.200. Demonstration of the suitability of topsoil substitutes or supplements;

Applicant's Proposal:

The MRP Chapter 8 has demonstrated the suitability of subsoil for use as a topsoil substitute.

The topsoil salvage plan and actual storage of topsoil for the site remains unclear. Page 10 of Appendix 8-1 itemized topsoil and subsoil depths, acreages and volumes of **recoverable** material. But, Section 8-6 states that "B" horizons of the TCE map units **will be** salvaged to make up any deficit, along with the subsoil of the JDE map unit. And, Section 8.7 indicates that color **was used** to determine the depth of salvage and that recovery depths are indicated on page 10 of Appendix 8-1. What area and depth of soil was actually recovered and stored?

Are there plans for future salvage of material within the disturbed area? If so, these areas must be designated on the surface facilities map as substitute topsoil 'in situ' storage areas.

Technical Deficiencies:

These issues are more thoroughly discussed under R645-301-231.400 and R645-301-242.

Compliance:

Please see compliance items #1 through #3 under R645-301-231.400 and compliance item #2 under R645-301-242.

R645-301-231.300. Testing plan

Applicant's Proposal:

Page 10 of Appendix 8-1 provides nutrient supplement recommendations for the topsoil and subsoil after sampling in June of 1981, prior to long-term storage.

Sampling of the topsoil storage piles prior to soil redistribution is addressed in Section 3.5.5.1 "Soil Preparation," page 3-28 of the plan. Appendix 3-22 itemizes the parameters to be evaluated. The application states that soil test data and recommendations for soil amendments will be submitted to both the Division and the USFS prior to soil redistribution.

Compliance:

The application is in compliance.

R645-301-231.400. Narrative that describes the construction, modification, use and maintenance of topsoil handling and storage areas.

Applicant's Proposal:

1. Issue of Volumes of stockpiled material:

Plate 3-10 shows the location of the three topsoil piles with reference to the location of surface facilities. Plate 3-8 provides contours, cross-sections, area, yardage for each topsoil pile.

Section 3.2.1. refers the reader to Chapter 8 for topsoil stripping details. Section 8.7 refers the reader back to Section 3.2.1 of the application.

Elsewhere in Chapter 8, the following information is found.

In Section 8.7 of Chapter 8, the separate removal of topsoil and subsoil is described, using color to determine the depth of removal. Section 8.7 further describes topsoil removal to the depth specified in App 8-1, except for the steep slopes of soil type DPH2 (2.39 acres of Doney and Podo variants and rock outcrop on 50 to 70% slopes). Loss of recoverable topsoil from these steep slopes will be made up with subsoil from the JDE and TCE soil units (pgs 8-6 and 8-8). Plate 8-1 (Soil Types) and plate 3-1 (Surface Facilities) are cited for further information.

Section 8.6 of the approved plan states that the "B" horizons from the JDE and TCE soils will be salvaged and used to make up any topsoil deficiency. The analysis of these subsoils is located in Appendix 8.1, a technical report written by Mr. Laural H. Stott of Valley Engineering Inc., Richfield, Utah, June 1981.

Section 8.3.2 of the approved plan indicates that **8,410 cubic** yards **are required** for topsoiling of 5.15 acres of disturbance with one foot of topsoil or substitute topsoil. The plan for the recovery of 8,410 yd^3 includes salvage of 32.5 yd_3 of map unit JDE over 1.46 acres and recovery of an unspecified depth of JDE & TCE stored in stockpiles 1 & 2. The volume stored in stockpiles 1 & 2 should be 8,377.5 using basic subtraction.

On Page 10 of Appendix 8-1, a second plan itemizes topsoil and subsoil depths, acreages and volumes of **recoverable** material:

JDE map unit	Jodero variant topsoil	32 in = 4846 yd^3
	subsoil	65 in = 4991 yd^3
	Datino variant topsoil	8 in = 973 yd^3
	subsoil	37 in = 6287 yd^3
TCE map unit	topsoil	8 in = 2182 yd^3
	subsoil	57 in = 1719 yd^3

Clearly, topsoil and subsoil salvage did not follow these recommended depths, since the reported volumes in topsoil storage piles on page 8-3 indicate 2030 yd^3 stored from map units JDE and TCE soils. This information conflicts with Plate 3-8 which shows the actual stockpiles containing 943 + 1087 + 1671 = 3701 yd^3 of stored topsoil and substitute topsoil.

Page 8-8 of Section 8-7 provides estimates of the volume of soil **to be salvaged.** It was **estimated** that there was 5,171 cubic yards of topsoil and 3,239 cubic yards of subsoil to be collected for a total of 8,410 cubic yards of soil stockpiled.

Page 8-3 of Section 8.3.2 discusses the **total salvage of 8,410 yd^3** of topsoil and subsoil. Included in this analysis are the volumes of stockpiles #1 and #2 = 2,020 cu yds and the projected salvage 6,380 cu yds of topsoil and subsoil to be placed (apparently) in stockpile #3.

Plate 3-8 shows the actual stockpiles containing 943 + 1087 + 1671 = 3,701 cubic yards of stored material. Apparently, the third stockpile fell short of the projected salvage of 6,380 yd^3 and only contains 1,671 yd^3 of soil. Obviously, salvaged volumes did not meet the expectations of the consultants who studied the area prior to disturbance. The questions remaining are these. Why did the stockpiles fall short of the expected goal? Are there locations of 'in situ' topsoil or subsoil stockpiles which could be identified on a surface map to make up the deficiency?

2. Issue of unmarked topsoil storage:

Page 8-6 of the narrative indicates that there is temporary storage of topsoil above the substation pad and across from the coal stockpile and above the #2 stockpile. Soil stored in these locations is designated for final reclamation of areas above the substation pad and across from the coal stockpile. Are these areas of contemporaneous reclamation?

Section 8-7, pg 8-8 also indicates that topsoil and subsoil is stored adjacent to the public parking area on the USFS road. Is this parking area the "trailhead"? Reference to

subsoil and topsoil storage adjacent to the public parking area of the FS road must be clarified.

The separate storage of topsoil and subsoil is described in the MRP. Adjacent to topsoil stockpile #2 on Plate 3-8 there is an area that is labeled "future topsoil stockpile." This area was previously permitted by the Forest Service as a gravel storage area and is (apparently) currently permitted by the Forest Service as a parking area (pg 3-6, Section 3.2.10).

Technical Deficiencies:

1. Issue of Volumes of stockpiled material:

Topsoil is stored in three locations on the Forest Service access road. An accounting of the difference in the estimated volume to be stockpiled and the actual volume stockpiled must be provided. i.e. approximately 5,000 cu yards less material was stockpiled than was anticipated.

On Plate 3-8, the original surfaces for storage piles #1 and #2 were not surveyed. They are approximated on Plate 3-8. Plate 3-8 does not provide an original surface line for cross-section "J" stockpile #3. The method of determining volumes must therefore be indicated. Accurate information for compliance with item #1 below may require a survey of the storage piles.

2. Issue of unmarked topsoil storage:

All locations of topsoil and subsoil storage must be marked in the field and identified on a surface map.

Reference to temporary storage piles no longer in existence must be removed from the MRP. However, the plan **should** indicate the location of topsoil which is temporarily stored in areas that have been contemporaneously reclaimed.

Compliance:

1. On or before May 14, 1992 Genwal must clarify the text of Chapters 3 and 8 of the MRP to eliminate information on topsoil recovery which did not actually occur. Only the actual salvage of topsoil and/or subsoil material, including an accounting for the limited recovery of topsoil and subsoil should be included in

Chapter 3 and 8. Information concerning soil storage on Plate 3-8 must agree with the narrative.

2. On or before May 14, 1992 Genwal must state the method of determining the volume of salvaged topsoil and subsoil as shown in Plate 3-8.

3. On or before May 14, 1992 Genwal must indicate on Plate 3-8 which storage piles are subsoil and which are topsoil as well as the volumes of topsoil and subsoil.

4. On or before May 14, 1992, Genwal must revise Plate 3-8 to correctly state the permitted use of the adjacent land (Forest Service Special Use Area) and update the supporting documents from the Forest Service allowing activity in these areas (also requested in compliance item #1 under R645-300-122).

R645-301-232.100. All topsoil will be removed as a separate layer from the area to be disturbed, and segregated.

Applicant's Proposal:

Section 3.5.2, page 3-23, Section 8.7, page 8-5, and Plate 3-8 address this rule.

The commitment to segregate topsoil from subsoil is expressed in Section 3.5.2 and Section 8.7, but the location of the substitute topsoil (subsoil) piles is not indicated on Plate 3-8. The cover letter accompanying this submittal indicates that substitute topsoil (subsoil) salvage and storage is unknown.

Technical Deficiencies:

An evaluation of the information provided in the plan may aid in determining which stored material is the subsoil/substitute topsoil. Volume of the substitute material must be indicated.

Compliance:

1. On or before May 14, 1992, Genwal must determine the location of the subsoil which is substitute topsoil and indicate the storage location of the subsoil (substitute topsoil) stockpile on Plate 3-8 and in the narrative.

R645-301-232.200. Where the topsoil is of insufficient quantity or poor quality for sustaining vegetation, the materials approved by the Division in accordance with R645-301-233.100 will be removed as a separate layer from the area to be disturbed, and segregated.

Applicant's Proposal:

Section 3.5.2 page 3-23 indicates that subsoil will be used to make up the topsoil shortage. Pages 3-6 and 3-22 indicate that 6.65 acres have been disturbed at the mine site.

Page 8-8 and page 8-3 of Chapter 8 indicate that there will be one foot of topsoil or topsoil substitute replaced over a disturbed area of 5.15 acres, requiring a total of 8,410 cu yards of stockpiled soil.

A contingency plan for topsoil deficiency is stated on page 8-6 of Section 8-7 in chapter 8. Here, the applicant suggests that the stream buffer zone (outside of the disturbed area) will be flattened "to handle excess excavation." The plan calls for "design adjustments in pad elevation" to provide a balance in cut and fill measurements.

Technical Deficiencies:

This section should refer the reader to Sections 8.6 and 8.7 for further details.

The plan is inadequate in describing the area of disturbance requiring topsoil replacement and in addressing the volume of topsoil required for reclamation of the 6.65 acres disturbed. The amount of topsoil in the stockpiles is itemized in Plate 3-8 at 3,701 cubic yards of material. Chapter 8 commits to the replacement of one foot of soil material over the entire site (page 8-8). The Division calculates that for the 6.65 acre site, this will require 10,728 cu yds of stockpiled soil (reduced slightly by the area to remain as an access road). The applicant has a serious shortage of topsoil, the stockpiles account for only one-third of the amount calculated to be required.

Compliance:

1. On or before May 14, 1992 Genwal must clearly outline and state in both Chapter 3 and Chapter 8 of the MRP the volume of stored topsoil and substitute, the acreage of disturbance to be reclaimed and the shortage of topsoil.

2. On or before May 14, 1992 Genwal must modify the text of the MRP to further describe the contingency plan for topsoil deficiency discussed on page 8-6 of Chapter 8. The discussion should include reclamation drawings of sufficient detail to allow Division evaluation of the proposal. Plans for obtaining additional substitute topsoil material must also be entertained. (Please see additional comments under R645-301-242 Compliance Item #2.)

R645-301-233. Topsoil Substitutes and Supplements.

Applicant's Proposal:

Appendix 8-1, Soils Study of the Crandall Canyon Permit Area by Laural H. Stott of Valley Engineering of Richfield Utah, conducted in June of 1981, provides information on the analysis of topsoil substitutes and supplements.

Technical Deficiencies:

The material chosen for substitute topsoil is of good quality. The storage location of the substitute topsoil is further discussed under R645-301-231.200. The quantities of substitute topsoil required are discussed under R645-301-232.200.

Compliance:

The applicant is in compliance with this regulation.

R645-301-234. Topsoil Storage.

Applicant's Proposal:

See Sections 8.6 and 8.7 and Plate 3.8 describing the placement of 3 stockpiles along the forest service road. Section 8-7, pgs 8-7 and 8-8 describe earthen berms and fences that will be constructed around the topsoil piles. Section 3.2.1 describes the use of earthen berms, straw bails, silt fences or the equivalent.

The application cites one seed mix on page 3-29 of Section 3.5.5.2 and another on pgs 3-22 and 3-30 (Appendix 3-15) as being used on the topsoil piles for protection and cover of the soil resource. The application is confusing. Which seed mix was used on the

stockpiles?

Technical Deficiencies:

Presently, the three stockpiles within the disturbed area are protected by an asphalt berm, and strawbales. There are no fences and no earthen berms. The protection of topsoil stockpiles with an asphalt berm and strawbales must be described on pg 8-7 and 8-8 rather than the earthen berms and fence which is presently described.

Several inspectors have described the potential contamination of topsoil by snow clearing activity. The plan should indicate what precautions are being taken to limit the potential contamination with salts from the road.

A commitment is lacking in the plan to gain approval prior to moving stored topsoil as per R645-301-234.240.

Compliance:

1. On or before May 14, 1992 Genwal must accurately state in the MRP the protections from water and wind erosion, and accumulations of sediment and salts which have been afforded the topsoil along the Forest Service road and at all other storage locations which are alluded to in the plan. (Please see discussion under R645-301-231.400 Issue of unmarked topsoil storage.)

2. On or before May 14, 1992, Genwal must clarify the discrepancy of information provided in section 3.5.5.2 (between pg 3-29, pg 3-22 and pg 3-30) with regard to the seed mix used on the topsoil piles.

3. On or before May 14, 1992, Genwal must commit to maintaining the stockpiles in their present configuration until required for redistribution.

R645-301-234.300. ...The Division may approve the temporary distribution of the soil materials...

Applicant's Proposal:

Page 3-36 of Section 3.5.5.3 of the revised MRP discusses contemporaneous reclamation. Section 3.5.5.3 indicates that these areas are also shown on Plates 3-1 "Surface

Facilities," 3-4 "Phase 1 Reclamation" and 7-5 "Surface Run Off Control."
It is not clear whether the applicant's final, contemporaneous reclamation of the slope above the substation pad and the bench beside the coal loadout fits into this category of temporary topsoil storage.

Technical Deficiencies:

Areas of contemporaneous reclamation should be identified on all Plates as alluded to in Section 3.5.5.3 of the MRP. Plate 7-5 does not have a legend for contemporaneously reclaimed areas, but Plate 7-5C does. Plate 3-1 does not have a legend for contemporaneously reclaimed areas to distinguish them from the rest of the disturbed areas. Plate 3-4 shows contemporaneous reclamation areas that are not reaffected by Phase I Reclamation.

As shown on Plate 3-4, several areas of contemporaneous reclamation are to be redisturbed during final reclamation. The storage of topsoil and subsoil on the contemporaneously reclaimed slopes should be estimated to alleviate the present topsoil deficiency.

Compliance:

1. On or before May 14, 1992, Genwal must correctly state in Section 3.5.5.3 of the MRP that Plates 3-4 and 7-5C show areas of Contemporaneous Reclamation.

2. On or before May 14, 1992, Genwal must calculate the additional available topsoil resource that is stored 'in situ' in the contemporaneously reclaimed areas and adjust the mass balance calculations shown on page 8-3 of Chapter 8 to reflect the actual volumes stored in stockpiles and 'in situ'.

3. On or before May 14, 1992, Genwal must identify the areas of 'in situ' topsoil storage on Plates 3-1 "Surface Facilities Map."

R645-301-240. RECLAMATION PLAN.
R645-301-242. Soil Redistribution.

Applicant's Proposal:

Issue of the depth of substitute topsoil and topsoil replacement: A revision of page 8-3 was submitted with responses to deficiencies received 2/18/92 for this amendment. Page

8-3 of Section 8.3.2 now states that 0.25 feet will be applied to 5.15 acres during reclamation. The plan for recovery of subsoils and topsoils as reported on page 8-5 (Section 8.6) and page 8-3 (Section 8.3.2) remains unchanged.

Soil Redistribution

Section 3.5.4 contains backfilling and grading plans. Section 8.8 of Chapter 8 correctly refers to these plans. Final contours are given on Plate 3-5.

After returning the grade to approximate original contour, the earth will be ripped eighteen inches deep (pg 3-27, Sec 3.5.4.4) or disced (slopes less than 30%, pg 8-8). The areas of topsoil replacement will be staked for quick, visual depth determinations. The topsoil will be applied in the late fall (late September, early October, pg 3-31). Page 3-28 has been changed to indicate that "four inches" of topsoil will be replaced on the disturbed surface. (This change is not acceptable.) Section 8.8, pg 8-9 indicates that the land will be disced or harrowed after topsoil replacement.

Technical Deficiencies:

The amendment to reclaim using only 0.25 feet of topsoil and substitute topsoil implies that overburden will constitute the major growth medium for plants. However, the use of 3 or 4 inches of topsoil/substitute over overburden may limit the ability of Genwal to achieve the performance standards of R645-301-353. In view of the fact that substitute topsoil is available and may be stored 'in situ', this proposition is not consistent with the approved postmining land use of wildlife, grazing & recreation (R645-301-242.110).

Subsoil at the site has been determined adequate for substitute topsoil (App 8-1). The applicant must determine where additional subsoil can be salvaged (during final reclamation) for topsoil use. The location must be specified in the plan and on a surface facilities map, to ensure adequate protection under R645-301-232.200 of the subsoil 'in situ'. The planned topsoil cover depth of one foot over the entire disturbed area can be maintained in this manner, even though the present topsoil piles do not store enough material for the one foot coverage.

It is suggested that at the time of final reclamation, the precipitation data available on hand is analyzed for the ten years prior to reclamation to determine the most suitable time for seeding and soil redistribution. The reclamation timetable can be adjusted accordingly.

Compliance:

1. Genwal's proposal included with this amendment, to reduce final cover down to 0.25 feet is not approvable and must be withdrawn; on or before May 14, 1992 the following pages will require correction: 3-28, 8-3, 8-7, and 8-9.

2. On or before May 14, 1992, Genwal must identify locations of 'in situ' topsoil or subsoil which can be utilized to make up the present topsoil deficiency for the replacement of one foot of cover over the surface disturbance during final reclamation. These locations must be marked on Plate 3-1, "Surface Facilities."

3. On or before May 14, 1992, the applicant must correct the total acreage requiring topsoil replacement to read 6.65ac - 0.03 ac - 1.2 ac = 5.42 acres on page 8-3, Section 8.3.2 as revised on February 18, 1992.

R645-301-243. Soil Nutrients and Amendments.

Applicant's Proposal:

This topic is addressed in Section 3.5.4.4 and Section 3.5.5.1 "Soil Preparation," page 3-27 and 3-28 of the plan.

Topsoil will be tested for nutrient content prior to use (Pg 3-28). The surface will be gouged (Pg 3-31). The topsoil will be hydroseeded and hydromulched, with fertilizer also applied to the surface in the mulch slurry (pg 3-33 through 3-35).

Technical Deficiencies:

The idea of slurrying fertilizer and hydraulically applying it is not the best plan for the following reasons:

1. loss of fertilizer due water erosion
2. ineffective placement of fertilizer for plant utilization
3. potential harm caused by salts to emerging seedlings contacting the fertilizer

A more cost-effective approach is to broadcast fertilize the slopes and incorporate fertilizers at the time of ripping subsoil or the mulch discing steps (which were discussed in

Chapter 8). Ideally, the fertilizer would be placed four to twelve inches deep for young roots to contact.

Compliance:

1. On or before May 14, 1992, Genwal must amend the plan to state that fertilizers will be applied at the time of soil redistribution and be incorporated into the soil.

R645-301-244. Soil Stabilization.

Applicant's Proposal:

Section 3.5.5.3 "Final Reclamation," describes grading on a contour to minimize erosion and instability. The surface will be left rough either by gouging or tracking of the surface parallel to the contours. The contemporaneous reclamation of steep slopes will receive curlex instead of hydromulch as per page 3-30 of Section 3.5.5.2 "Seeding and Transplanting."

A commitment to protect the soil from erosion is also found in Section 8.8, where it is stated that 1.5 T/ac of mulch will be disced onto slopes less than 30% and slopes greater than 30% will be hydromulched to control erosion.

The commitment to reseed and regrade any gullies greater than six inches is found in Section 8.8 of Chapter 8.

Technical Deficiencies:

The stabilization of the redistributed soil with mulch will occur twice: once before topsoil redistribution (page 8-9 of Chapter 8) and once after seeding (page 3-34).

Compliance:

The applicant is in compliance.

R645-301-420. Air Quality.

Applicant's Proposal:

Section 3.4.7 refers the reader to the "Air Pollution Control Plan" included in Chapter 11 as Appendix 11-2.

Compliance:

The applicant is in compliance.

CONCLUSIONS

The response to the last Chapter 3 deficiency review confirms that mass/balance calculations for topsoil redistribution are not adequate. The subsoil within the disturbed area is of a quality suitable for topsoil substitute. A likely source of this substitute is from areas of contemporaneous reclamation. The applicant must identify areas of subsoil that are to be stored 'in situ' to make up the topsoil deficiency.

The amendment included with this plan to revise topsoil depth from one foot down to 0.25 foot is not recommended for approval.

Chapter 3 does not adequately address the R645-301-200. The next submittal should have the changes in the narrative of Chapter 3 and 8 highlighted to expedite the review. A failure of Genwal to provide the requested information in the requested time-frame and format should result in enforcement action.

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