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DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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June 1, 2001

TO: Internal File  
THRU: Joe C. Helfrich, Team Lead  
FROM: Priscilla W. Burton, Soils Reclamation Specialist  
RE: Adit No. 1 Reclamation Plan Appendix 3-2, Castle Gate Holding Co., Castle Gate Mine, C/007/004-AM01A B

**SUMMARY:**

This submittal of changes to Appendix 3-2 includes incorporation of best management practices such as extreme roughening and filter fabric on the channel bottom. The site to be regraded and contoured is 1.5 acres. There is an ephemeral stream in the middle of the site.

There has been no topsoil salvaged from the pre-SMCRA site. The submittal indicates that soil will be tested for suitability of use as topsoil substitute. The Division requests an opportunity to review that analytical information before approval is granted.

**TECHNICAL ANALYSIS:**

**ENVIRONMENTAL RESOURCE INFORMATION**

**SOILS RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 783.21, 817.200(c); R645-301-220, -301-411.

**Analysis:**

This 3.0 acre pre-SMCRA site has had no topsoil salvaged from the site. Only 1.5 acres of the 3.0 total will be redisturbed during final grading and reclamation. The remainder is well vegetated and was not disturbed during post-SMCRA operations (page 3.5-9).

TECHNICAL MEMO

Appendix 3-2, Section 3.1, page 3.5-13 indicates that soils on site will be sampled for pH, Electrical Conductivity, Saturation Percentage, particle size analysis, soluble calcium, magnesium, and sodium, selenium, total nitrogen, nitrate-N, boron, maximum acid potential, neutralization potential, total organic carbon, exchangeable sodium, available water capacity and rock fragments. The sodium adsorption ratio (SAR) will be calculated from the soluble calcium, magnesium and sodium values.

The Division recommends that percent rock fragments is estimated in the field using the examples provided in the Field Book for Describing and Sampling Soils<sup>1</sup> and that available water capacity is estimated by using texture and the Texture and AWC Table below.

TABLE 5 TEXTURE AND AWC\*

Soil Texture	Available Water Capacity cm <sup>3</sup> /cm <sup>3</sup>
Clay	0.14 – 0.16
Silty Clay	0.15 – 0.17
Sandy Clay	0.15 – 0.17
Silty Clay Loam	0.19 – 0.21
Clay Loam	0.19 – 0.21
Sandy Clay Loam	0.14 – 0.16
Silt Loam	0.19 – 0.21
Loam	0.16 – 0.18
Very Fine Sandy Loam	0.15 – 0.17
Fine Sandy Loam	0.13 – 0.15
Sandy Loam	0.11 – 0.13
Loamy Fine Sand	0.09 – 0.10
Loamy Sand	0.06 – 0.08
Fine Sand	0.05 – 0.07
Sand	0.06

\* adapted from Estimation of Soil Moisture Holding Capacity. USDA Forest Service, Southwestern Region. March 1970.

Plateau Mining Corp intends to dig two pits for the purposes of identifying suitable soil. One pit will be located in front of the portals and one at the lower end of the site in locations on

<sup>1</sup> Schoeneberger, P.J. Wysocki, D.A., Benham, E.C., and Broderson, W.D. 1998. Field Book for Describing and Sampling Soils, Version 1.1. available on the internet at [www.statlab.iastate.edu/soils/nssc/field\\_gd/field\\_gd.htm](http://www.statlab.iastate.edu/soils/nssc/field_gd/field_gd.htm)

either side of a rock ledge that runs through the site.<sup>2</sup> The Division requests notification of this activity in advance.

Appendix 3-G provides information from the sediments removed from Pond 10 in 1998 during the pond clean out (page 3.5-15). The material was determined suitable for use as a substitute topsoil at that time and placed on the Gravel Canyon topsoil pile. This analysis could give an indication of the nature of the material at Adit No 1. Unfortunately, Appendix 3-G does not exist in the MRP.

### **Findings:**

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the permittee must provide the following in accordance with:

**R645-301-133.100**, Appendix 3-G referred to on page 3.5-13 of the application could not be found.

**R645-301-224**, The Division requests an opportunity to review the results of the soils analyses referred to in Appendix 3-2, Section 3.1, page 3.5-13, please submit these analytical results as soon as they become available.

## **RECLAMATION PLAN**

### **BACKFILLING AND GRADING**

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

### **Analysis:**

Approximate original contour will be achieved during grading (page 3.5-12). Post mining topography is shown on Exhibit 3.5-3. Associated cross-sections are illustrated on Plate 3.5-3B. Slopes are concave in design and do not exceed 2h:1v (page 3.5-12).

Table 3.5-7 provides a mass balance summary. There is 5,052 cu yds of fill required and 4,878 cu yds of cut available. It is not likely that there will be a shortfall, since a swell factor of 1.0 was used in these calculations.

Coal waste, asphalt, concrete and steel will be buried beneath four feet of clean fill (page 3.5-10). Other non-coal waste will be disposed of in a designated disposal site within the permit area or at a State-approved solid waste disposal facility (page 3.5-11).

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<sup>2</sup> Information gained from a telephone conversation between Vicky Miller, Environmental Engineer with Plateau Mining Corp. and Priscilla Burton, Soils Reclamation Specialist with the Division of Oil Gas & Mining on 6/1/01.

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**Findings:**

Information received in the amendment is considered adequate for the purposes of this regulation.

**TOPSOIL AND SUBSOIL**

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

**Analysis:**

This pre-SMCRA site will be reclaimed using the best available material from within the disturbed area. If an erosion problem occurs at Adit No. 1 or if the regraded surface fails to support vegetation, then topsoil from the Gravel Canyon topsoil pile will be used in a six-inch deep layer over the problem area.

The ephemeral channel at the site will be covered with three inches of soil and seeded and mulched (page 3.5-15 and Section 3.5 Appendix 3.5C page 8).

**Findings:**

Information received in the amendment is considered adequate for the purposes of this regulation.

**STABILIZATION OF SURFACE AREAS**

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

**Analysis:**

The site will be furrowed on the contour. Two tons/acre (page 3.5-13) of hay or straw will be mechanically blown on the regraded surface. The soil surface will then be deep gouged to create water- holding basins and incorporate the straw (page 3.5-13 and 3.5-18). Seed from No. 1 in Chapter 9 will be broadcast over the site. Following the seeding, the site will receive an additional 1 to 1.5 tons per acre of straw much applied with mechanical blowers (page 3.5-14) and then will be sprayed with a hydromulch and tackifier at a rate of 500 lbs per acre.

Before seeding and mulching, silt fences and straw bales will be placed in the channel to control sediment (page 3.5-19). After seeding and mulching, as Appendix 3.5-D demonstrates, the amount of sediment estimated to leave the site drops dramatically from 7 Tons/acre/year to 0.2 Tons/acre/year.

An erosion control mat will be placed in the channel bottom (page 3.5-15 and Section 3.5 Appendix 3.5C page 8). The channel will be seeded and mulched as well.

The site will be inspected quarterly. Gully's greater than nine inches in depth will trigger corrective action (page 3.5-20).

**Findings:**

Information received in the amendment is considered adequate for the purposes of this regulation.

**RECOMMENDATION:**

The Division should not recommend approval until soil analyses are included with the submittal.