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DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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July 2, 2001

TO:



THRU:

Pete Hess, Senior Reclamation Specialist and Team Lead

*SM for PHH*

FROM:



Priscilla W. Burton, Soils Reclamation Specialist

RE:

Willow Creek Reclamation Plan Section 5 Exhibits 13 & 17, Plateau Mining Corp., Willow Creek Mine, C [REDACTED] B

**SUMMARY:**

This submittal updates to Section 5.2 SOIL REPLACEMENT PLANS, Section 5.3 REVEGETATION PRACTICES, Section 5.4 RECLAMATION OF MINING DISTURBANCE, Section 5.5 HYDROLOGIC RESOURCE RESTORATION, Exhibit 13 DRAINAGE AND SEDIMENT CONTROL PLAN, and Exhibit 17 BONDING AND INSURANCE INFORMATION for the Willow Creek Mine.

**TECHNICAL ANALYSIS:**

**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.

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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:**

Soil resource information is provided in Section 3.1.2 of the MRP. The Permittee will test soil material in operation's pads for suitability and fertility parameters (Section 4.2.2.2) before utilizing them as substitute topsoil material.

### **Findings:**

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

## **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.

#### Minimum Regulatory Requirements:

##### General

Disturbed areas shall be backfilled and graded to: achieve the approximate original contour; eliminate all highwalls, spoil piles, and depressions; achieve a post-mining slope that does not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long term static safety factor of 1.3 and to prevent slides; minimize erosion and water pollution both on and off the site; and, support the approved post-mining land use.

Exposed coal seams, acid- and toxic-forming materials, and combustible materials exposed, used, or produced during mining shall be adequately covered with nontoxic and noncombustible materials, or treated, to control the impact on surface and ground water, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved post-mining land use.

Preparation of final-graded surfaces shall be conducted in a manner that minimizes erosion and provides a surface for replacement of topsoil that will minimize slippage.

**Analysis:**

The Willow Creek Mine has a total of 55.57 acres of disturbance (Section 3.1.2.4). Section 5.4, RECLAMATION OF MINING DISTURBANCE, describes the backfilling and grading plans for the Willow Creek Facilities area. On pages 5.4-12 through 5.4-18 of Section 5.4.2.2 Reclamation Plan, it is noted that approximately 407,507 cubic yards of material will be moved at the main mine facilities area and 3,862 cubic yards of material will be moved at Barn Canyon during grading and topsoil application. Table 5.4.1 and 5.4.2 illustrate the cut and fill quantities.

As noted in Section 3.1.2.4, less than four feet of cover has been demonstrated to be adequate over coal waste, but the Permittee is striving during operations to stockpile all suitable soil to achieve the deepest cover possible. The final topsoil depth over coal waste will depend upon the amount of topsoil and substitute topsoil that Plateau Mining Corporation has salvaged. At present, the replacement topsoil depths for the Willow Creek Facilities reclamation are listed in Section 5.2 on page 5.2.2 and are based upon the existing soil stockpile volumes (as of February 2001):

- Willow Creek Surface Facilities Area 17.7 inches
- Willow Creek Prep. Plant and Loadout Areas existing pad materials
- Schoolhouse Canyon Refuse Pile 27 inches
- Crandall Canyon Area variable
- Barn Canyon variable
- Clean Coal Storage Area and Pond 011 Expansion 20 inches

The Division calculated twelve inches as the final topsoil or substitute topsoil depth in Crandall Canyon (see technical deficiency review of the Crandall Canyon Reclamation Plan Exhibit 20, SR01A). These twelve inches of cover will come from the soils in the pad and not from stockpiled topsoil. After reclamation is complete at Crandall Canyon, Section 5.2 on page 5.2.2 should be updated to reflect the actual depth of soil replaced rather than "variable" depth.

The Barn Canyon disturbance of 0.46 acres was expected to generate 906 cubic yards of topsoil to be replaced at Barn Canyon and 1,646 cubic yards of subsoil for use elsewhere at the mine site (AM98G). However, this construction activity was never undertaken. The Soil Recovery and Storage Plans Table 4.2-1 will be updated with salvage information after Barn Canyon is developed. An update to Section 5.2 on page 5.2.2 is requested at that time.

Graded areas will be left rough (Backfilling and Grading to Establish Final Configuration page 5.4-16) and will be ripped prior to soil replacement (Soil/Substitute Replacement page 5.4-17).

**Findings:**

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

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## TOPSOIL AND SUBSOIL

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

### Minimum Regulatory Requirements:

#### Redistribution

Topsoil materials shall be redistributed in a manner that: achieves an approximately uniform, stable thickness consistent with the approved post-mining land use, contours, and surface-water drainage systems; prevents excess compaction of the materials; and, protects the materials from wind and water erosion before and after seeding and planting.

Before redistribution of the material, the regarded land shall be treated if necessary to reduce potential slippage of the redistribution material and to promote root penetration. If no harm will be caused to the redistributed material and reestablished vegetation, such treatment may be conducted after such material is replaced.

The Division may choose not to require the redistribution of topsoil or topsoil substitutes on the approved post-mining embankments of permanent impoundments or of roads if it determines that placement of topsoil or topsoil substitutes on such embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation, and, such embankments will be otherwise stabilized.

Nutrients and soil amendments shall be applied to the initially redistributed material when necessary to establish the vegetative cover.

The Division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, removed and segregated, stockpiled, be redistributed as subsoil in accordance with the requirements of the above if it finds that such subsoil layers are necessary to comply with the revegetation requirements.

### Analysis:

Section 5.2, SOIL REPLACEMENT PLANS, describes the soil reclamation plans for the Willow Creek Facilities area.

Details for soil replacement plans for Willow Creek Facilities Area are found in Section 5.4.2, RECLAMATION PLANS AND PRACTICES. Other locations within the MRP for soil replacement details include the Castle Gate Prep Plant, Loadout, and Schoolhouse Canyon Refuse pile – Exhibit 19, Castle Gate MRP (Section 3.4); Crandall Canyon – Exhibit 20, Crandall Canyon MRP (Section 3.7-5(5)); and Section 3.1.2.4 SOIL AVAILABILITY AND SUITABILITY.

This submittal removes the commitment to analyze topsoil for fertility after replacement (Sections 5.2.1.2 and 5.2.2.3). The Division is in agreement that testing of stockpiled topsoil material is redundant since the material was tested prior to stockpiling and should retain the qualities that made it desirable. Also, the Division recognizes that fertilizer applications have not been successful in improving productivity of native vegetation; therefore, applications of fertilizer have been removed from the plan.

This submittal also removes from Section 5.2.2.3 the commitment to add finely chopped hay from the current years crop to the deep-ripped subsoil. Apparently the commitment was made in the MRP to promote the re-establishment of organic matter and microorganisms in the soil. However, mycorrhizae will invade with the wind and this particular step is not necessary since straw is being placed on the redistributed topsoil and over the seed (pages 5.2-3 and 5.2-4 and Section 5.2.2.4 SOIL STABILIZATION MEASURES). The previous Technical Analysis for the Willow Creek Mine requested that final soil reclamation efforts include restoration of the soil's living and structural integrity using best available technology to restore microbial activity, organic matter, and soil surface stabilization. This is still a worthy goal.

Following completion of final backfilling, grading, and drainage reestablishment for surface disturbance areas, stockpiled soil will be hauled and spread on the regraded surface. Soil stabilization and enhancement measures include establishment of effective drainages, leaving the soil surface in a roughened condition, deep-ripping the regraded surfaces, and mulching subsequent to seeding with straw or native hay. Alternative Sediment Control Measures (ASCM's) will be selectively used. ASCM's include soil pitting, surface ripping, contour furrowing, and installation of silt fences and hay bales.

Certified noxious weed free hay (2 tons/acre) will be placed on the soil. The soil will then be gouged and seeded (pages 5.2-3 and 5.2-4). After seeding 1 to 1.5 tons/acre of straw mulch will be applied to the surface, followed by 0.25 tons/acre of tackifier (Section 5.2.2.4 SOIL STABILIZATION MEASURES).

### **Findings:**

Information provided in the proposed amendment is adequate to meet the minimum reclamation topsoil and subsoil requirements of the Regulations.

## **STABILIZATION OF SURFACE AREAS**

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

Minimum Regulatory Requirements:

All exposed surface areas shall be protected and stabilized to effectively control erosion and air pollution attendant to erosion. Rills and gullies which form in areas that have been regraded and topsoiled and which either disrupt the approved post-mining land use or the reestablishment of the vegetative cover, or, cause or contribute to a violation of water quality standards for receiving streams, shall be filled, regraded, or otherwise stabilized; topsoil shall be replaced; and the areas shall be reseeded or replanted.

### **Analysis:**

Certified noxious weed free hay (2 tons/acre) will be placed on the soil. The soil will then be gouged and seeded (pages 5.2-3 and 5.2-4). After seeding 1 to 1.5 tons/acre of straw

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mulch will be applied to the surface, followed by 0.25 tons/acre of tackifier (Section 5.2.2.4 SOIL STABILIZATION MEASURES).

The site will be inspected quarterly for "indications of significant erosion, siltation, surface instability, drainage problems, seeding failure, weed infestations, or other conditions which could adversely impact reclamation success" (Section 5.3.2.2).

Problems will be addressed in a timely manner consistent with practices described in Section 5.4.2.3, Post Reclamation Management and Monitoring. Within sixty days of identification of gullies that are nine inches in depth, the Permittee will stabilize the eroded area and control upslope drainage to limit flow volume and velocity. Supplemental grading, riprap, straw bales, sediment fences, erosion control netting, supplemental seeding, mulching or a combination of the above methods may be employed. Where gullies are identified which are greater than twelve inches in depth, the use of berms and contour furrows may be implemented in addition to the control strategies outlined above.

**Findings:**

Information received in the amendment meets the minimum requirements for stabilization of surface areas during reclamation as required by the Regulations.

**RECOMMENDATION:**

The submittal is recommended for approval.