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

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September 18, 1996

TO: Folder #2

THRU: Joe Helfrich, Permit Supervisor *JH*

FROM: Robert Davidson, Soils Reclamation Specialist *RAD*

RE: Technical Analysis of Hiawatha Topsoil Borrow Area "A", Hiawatha Mine, United States Fuel Company, ACT/007/011-96C, Folder #2, Carbon County, Utah

SYNOPSIS

U. S. Fuel Company originally submitted to the Division on 8/20/96 an amendment for the Topsoil Borrow Area "A" in preparation to continue reclamation of Slurry Pond #5. A revised submittal was received on 9/6/96. This TA reviews the soils portion of the permit amendment ACT/007/011-96C.

RECLAMATION PLAN TOPSOIL AND SUBSOIL

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

Analysis:

In order to continue with the reclamation of Slurry Pond #5, United State Fuel Company has submitted an amendment to the MRP to open Topsoil Borrow Area "A". In essence, the amendment shows removing the top 7 feet rather than 6 feet of soil with an effective surface area reduction from the original 20 to 16.85 acres. Based on the amended cross sectional area and profile data of Borrow Area "A", the projected cumulative volume of substitute topsoil is 138,426 yd³. Soil borrow will affect horizons A1 (0" to 3" or 4944 yd³), B1 (3" to 11" or 13,183 yd³), C1 (11" to 37" or 42,846 yd³), C2 (37" to 78" or 67,565 yd³), and C3 (78" to 94" or 9,888 yd³). Beyond the C3 horizon are cobbles and boulders.

The lower section of Borrow Area "A" was used for equipment storage and has already had the A1 and B1 horizons removed from the east one-half of the site. This topsoil



stockpile sits at the western edge of the equipment storage area. The A and B horizons will be removed separately from the remainder of Area "A" and stockpiled for later redistribution within the stripped borrow area.

The total depth of the A and B horizons is 11 inches and provides an estimated 18,127 yd³ of soil while the C horizons are 73 inches thick and amount to 120,299 yd³ of soil. Therefore, a total of 120,299 in-place yd³ substitute topsoil is available for reclaiming Slurry Ponds 5 and 5A. The total surface area of the slurry ponds is 60.3 acres and will require 129,712 yd³ of material for the 16" of substitute topsoil cover. The 120,299 yd³ volume will provide a 15 inch thick soil layer. The amended MRP states "since the substitute topsoil will not be compacted beyond 90%, a 10% swell factor will provide a total available material of 120,299 x 1.10 or 132,329 yd³."

Since the volume of the A and B horizon soil provides little benefit for appreciable cover on the slurry pond surface, this topsoil is better used to successfully reclaim the borrow pit area providing an effective 11 inch topsoil replacement depth. Therefore, the stockpiled A and B horizon topsoil will be used to reclaim the Topsoil Borrow Area "A". Prior to soil replacement, Borrow Area "A" will be prepared for reclamation by shaping and grading the side slopes and floor and installing diversion and erosion control features. After the topsoil is replaced on the borrow area, the surface will be disced to a depth of 10"-12" at approximate right angles to the slope. The discing will be discontinuous to reduce the formation of rills and gullies from runoff. The soil will then be upgraded in accordance with requirements of Table II-8 and reseeded according to the plan. *Live haul of the A and B horizon topsoil will heighten the reclamation success and recovery of the Topsoil Borrow Area "A".*

The MRP explains measures to physically and chemically amend the C horizon soils by providing fertilizers and organic mulch. Proper surface roughening and seeding density will further ensure revegetation success of the Slurry Pond #5.

The surface of Slurry Pond #5 has been graded at a slope 5:1. *The surface of Slurry Pond #5 has been appreciable altered since the MRP was originally approved. Therefore, additional sampling of the newly disturbed surface material is required to ascertain the toxic and acid forming properties before reclamation proceeds with Slurry Pond #5. The sampled material will be analyzed according to the Divisions guidelines for management of topsoil and overburden¹. Analyses will specifically include water soluble selenium and boron, % coal fines, pH, EC and acid/base potential using the recommended laboratory methods from Table 6.*

¹ Leatherwood, J., and Duce, D., 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.

Findings:

The permittee must provide the following, prior to approval, in accordance with the requirements of:

30 CFR 817.22 (b) and R645-301-233 and 553.252. Topsoil Substitutes and Supplements. The surface of Slurry Pond #5 has been appreciable altered since the MRP was originally approved. Therefore, additional sampling of the newly disturbed surface material is required to ascertain the toxic and acid forming properties before reclamation proceeds with Slurry Pond #5. The sampled material will be analyzed according to the Divisions guidelines for management of topsoil and overburden¹. Analyses will specifically include water soluble selenium and boron, % coal fines, pH, EC and acid/base potential using the recommended laboratory methods from Table 6 as listed within the guidelines.