

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

OK

September 11, 2006

TO: Internal File

THRU: *D* Dana Dean, P.E., Senior Reclamation Hydrologist *D.D.*

FROM: Priscilla Burton, CPSSc, Environmental Scientist *PWB by an*

RE: Proposed Expansion of Disturbed Area, Savage Industries, Inc., Savage Coal Terminal, C/007/0022, Task ID #2613

SUMMARY:

Savage Services Corp. proposes to construct settling ponds in the northwest corner of the permit area on 6.61 acres of undisturbed ground (near the lowland vegetation reference area). The initial application was recorded in the 2006 Incoming File as Record 13 and reviewed as Task 2524. Additional information was received on August 25, 2006, August 30, 2006, and Sept. 8.

TECHNICAL MEMO

TECHNICAL ANALYSIS:

GENERAL CONTENTS

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The mean annual precipitation for the site is about 10 inches (Table 11-1 and section 11.1.2). The site receives most of its precipitation from August through September, making it a candidate for July seeding of warm season species. Page 3-58 indicates that seeding will occur immediately after topsoil placement. This is acceptable because good seed/soil contact is vital to establishment.

Findings:

The information provided meets the requirements of the Regulations.

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.

Analysis:

Settling Pond Construction [09082006]

In July 2006, a soil survey was conducted of the 6.61 acre expansion area (Appendix 8-3). The locations of the three soil pits are shown on revised Plate 8-1 along with the five soil types as indicated by Appendix 8-3. The 2006 survey expanded upon and modified the original soil survey of the area by James P. Walsh and Associates in July 1980 (MRP, Section 8, p8-1, which is referred to but not included with the plan). [Note: The MRP does not contain survey information to confirm the Sa and ChC soil map units in the north west corner of the permit area (shown on Plate 8-1).]

The soil map unit to be disturbed by the settling ponds is Billings silty clay 1 – 3% slopes, moist. The soils to be disturbed were derived from Mancos Shale and deposited by water. Laboratory reports confirm the saline/sodic chemistry and the clay texture of the soil. Dispersion of the illitic and kaolinitic clays confounded the hydrometer method of particle size analysis of the subsoil horizons and no data was reported for texture. Mechanical analysis of texture indicated 40 – 50% clays in the subsoil. Interestingly, the laboratory reports indicates an unusually high amount of phosphorus in the surface 12 inches (average 6.51 mg/Kg phosphorus) and a negligible amount of potassium throughout the soil profile (average 0.45 mg/Kg potassium in the surface six inches). The pH values are slightly above neutral (7.7) at SP1 and SP2 gradually climbing up to 8.5. The SAR values of 5 to 6 were noted in the surface horizons of SP1 and SP2. Subsurface SAR values climbed to 30 at depth in pits SP1 and SP2.

Survey site SP3 which was the most saline/sodic of the sampled soils with pH values at the surface of 8.3 to 8.6, EC values at the surface of 14 – 20 mmhos/cm, SAR values at the surface of 40 to 116, is representative of the vegetation reference area. The vegetation is salt desert shrub with the predominant vegetation being shadscale and greasewood.

Findings:

The Permittee has provided the required information, however, the Division requests that the following information is included in the MRP, subsequent to approval and in accordance with

R645-301-222, The mapping units BIBE and BIBM listed on Plate 8-1 should be given as Billings Silty Clay (not salty clay) and the laboratory Analysis sheets from Brigham Young University Plant and Soils Laboratory must accompany the consultant's report in Appendix 8-3.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

Settling Pond Construction [09082006]

In 1989 the Division found by reason of statutory exclusion that the site is not within an alluvial valley floor, although approximately 12.9% of the permit area was previously cropland

TECHNICAL MEMO

(MRP, Section 9.3.2.2). Figure 7-6A illustrates the mixture of agricultural, and industrial land use in the vicinity of the Savage Coal Terminal.

Plate 6-1 illustrates that the location of the Savage Coal Terminal straddles the Quaternary pediment mantle and the Quaternary Alluvium. The settling ponds lie within the Billings silty clay which is characteristic of alluvial fans and flood plains. The Billings silty clay is a Torriorthent, meaning that it was formed from water deposition.

Irrigation canals run adjacent to the permit area on the south and east borders. Figure 7-6 "Location of Irrigation Canals" has been updated, although the date on the figure remains 5/16/83.

Findings:

The information provided meets the minimum requirements of the regulations, however, the Division requests that the following information is included in the MRP, subsequent to approval and in accordance with

R645-302-321.230, Figure 7-6 "Location of Irrigation Canals" was recently updated, but the date on the figure remains 5/16/83, please indicate the new date on Figure 7-6.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

Settling Pond Construction [09082006]

In June of 1980, the Soil Conservation Service determined that the site did not contain prime farmland, Figure 8-1, page 8-23. The soils to be disturbed for the settling ponds include Billings Silty Clay loam (Map Unit #8 in the Carbon County Soil Survey). According to the Carbon County soil survey information, land use of the Billings silty clay unit is crop production (alfalfa, grass and grain) and wildlife habitat and range. The soil survey indicates the subsoils are saline/sodic with a high clay content.

Findings:

The Division concludes that there is no prime farmland within the permit area.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Settling Pond Construction [09082006]

Plate 3-2 illustrates a topsoil and subsoil stockpile location adjacent to the Savage office. The construction of the topsoil pile is described in Sec. 3.5.2. The volume of soil expected to be recovered prior to pond construction is calculated by the applicant in Table 8-6 to be approximately 5,977 yd³. However, this is based upon a 6 – 7 inch topsoil salvage depth. The soil consultant's work in Appendix 8-3 recommends a salvage depth of 24 – 26 inches, however the Division notes a decrease in the quality of the material at 12 inches (EC and SAR values jump below this depth). The Table 8-6 and page 8-36 projections should be adjusted accordingly to indicate topsoil salvage from the KmB and BiBm soils to a depth of 12 inches. Subsoil from a depth of 12 to 24 inches should be salvaged from KmB and BiBm soils as well. **BiBe soils are of such poor quality that they should not be salvaged.**

Based upon the soil survey, the Division recommends the use of potassium fertilizer to establish vegetation on the topsoil and subsoil piles.

Volume of topsoil (13,298 yd³) and subsoil (36,177 yd³) currently stockpiled by the coal stockpiles is given in Table 8-6 of the MRP (total = 49,475 yd³). A separate accounting for the settling pond topsoil should be tabulated, since there will be a separate topsoil stockpile.

Plate 8-2 and Appendix 8-1 provides as-built information for the subsoil/topsoil stockpile created in 2002. Cross sections and volumes are provided to arrive at 49,285.93 yd³. A commitment to provide an as-built of the settling topsoil and subsoil piles should be included in the plan.

TECHNICAL MEMO

Findings:

The information provided meets the requirements of the regulations, however, the Division requests that the following information is included in the MRP, subsequent to approval and in accordance with:

R645-301-234, Based upon the 2006 soil survey information, Table 8-6 and page 8-36 and Table 8-9 projections should be adjusted to indicate topsoil salvage from the KmB and BiBm soils to a depth of 12 inches and subsoil salvage from 12 – 24 inches from these two soil types. **BiBe soils are of such poor quality that they should not be salvaged.** • Volume of topsoil (13,298 yd³) and subsoil (36,177 yd³) currently stockpiled by the coal stockpiles is given in Table 8-6 of the MRP (total = 49,475 yd³). A separate accounting for the settling pond topsoil should be tabulated by map unit and acreage disturbed, since there will be a separate topsoil stockpile. • Based upon the soil survey, the Division recommends the use of potassium fertilizer to establish vegetation on the topsoil and subsoil piles. • A commitment to provide an as-built of the settling topsoil and subsoil piles should be included in the plan.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution

Currently, there are 112.6 acres disturbed and 40,475 cubic yards of topsoil and subsoil stored at the site.

Changes have been made to the Topsoil Mass Balance Table 8-9 to reflect the additional 6.61-acre settling pond disturbance, however the information does not reflect the as built information in Appendix 8-1 which indicates that 49,285.93 yd³ are currently stockpiled and the soil survey that indicates 24 inches from two soil types, but not the entire 6.61 acres can be salvaged as topsoil and subsoil. Currently the mass balance for the mine site is as follows:

- Topsoil available = 49,285.93 cu yds stockpiled + additional topsoil from the proposed settling pond disturbance, yet to be calculated.

- Disturbed area = 132.5 acres
- Post Law Disturbance = 55.3 acres
- Topsoil required (Post Law) = 44,608 cubic yards, reflecting the commitment to re-apply six inches of topsoil to post-law areas
- Max area for 6" redistribution = 83.79 acres, reflecting the area that could be covered to a depth of six inches by the stored soil.

Findings:

The information provided in Table 8-9 is not accurate given the recent as-built information in Appendix 8-1 and based upon the soil survey conducted in 2006. Please refer to the deficiency written under R645-301-234 (Operation Plan Topsoil Subsoil).

STABILIZATION OF SURFACE AREAS

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

Analysis:

Settling Pond Construction [09082006]

The mean annual precipitation for the site is about 10 inches (Table 11-1 and section 11.1.2). The site receives most of its precipitation from August through September, making it a candidate for July seeding of warm season species. A summer (July) seeding is acceptable because several of the species are warm season and summer seeding will allow their establishment. If seeded in the fall, warm season species usually cannot compete with the other weed and seeded species and will not be seen.

Section 3.5.2 of the proposal indicates that topsoil will be reclaimed contemporaneously with the first suitable growing season and that seeding will immediately topsoil placement regardless of season, whether on the stockpile or at final reclamation. This is acceptable, because past experience with the soils at this site indicates that seeding must immediately follow topsoiling to allow good seed/soil contact regardless of season, whether on the stockpile or at final reclamation.

Findings:

The information provided meets the requirements of the regulations.

TECHNICAL MEMO

RECOMMENDATIONS:

The application is not recommended for approval.

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