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TO: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist

DATE: January 25, 1993

RE: Response to Technical Deficiency Review of Chapter 4, U. S. Fuel Co., Hiawatha Mines, Folder #2, ACT/007/011, Carbon County, Utah

SUMMARY

U. S. Fuel responded on October 30, 1992, to the Division Order issued at the time of permit renewal. This submittal includes plans to retain the roads leading to the mines. Comments concerning the postmining land use have been received from the State Divisions of Water Rights and Wildlife Resources and from the Southeastern Utah Association of Local Governments.

ANALYSIS

R645-301-411. Environmental Description

Original Deficiency:

The application must discuss the cemetery within the Town of Hiawatha and public parks within and adjacent to and units of the National System of Trails or the Wild and Scenic Rivers within the permit area.

Response and Analysis:

Upon final reclamation, the cemetery will be cleaned of coal fines but otherwise left intact. There are no public parks or units of the National System of trails within the permit area. The plan lists several parks and recreation facilities within the region.

U. S. Fuel has complied with this requirement.

Deficiencies:

None.

R645-301-412. **Reclamation Plan**

Original Deficiency:

1. *The proposed post-mining land use for the roads must be identified in the plan and must be consistent within the plan. If the Applicant proposes to retain the roads, further information must be provided on what water supply system facilities need to be maintained by the Town of Hiawatha.*

Response and Analysis:

The access roads leading to the mine sites are not proposed to be reclaimed but will be left in place to support other postmining land uses of wildlife habitat, ranching, and recreation. The plan no longer indicates that the Hiawatha water supply system needs to be maintained, but it states that U. S. Fuel owns ranch sites and agricultural lands outside the permit boundary on Miller Creek and Cedar Creek. Several thousand acres of rangeland have been leased to local ranching families for many decades.

The approved previous plan did not anticipate the use of the roads for anything other than maintaining the water supply system. It stated, "The roads which lead to the mine entries and water supply facilities, as well as the underground impoundment and it's [sic] diversion, located on the North Fork, Middle Fork and South Fork areas will be reclaimed after mining activities have ceased and upon the positive determination that the Town of Hiawatha will no longer exist after mining operations have ceased. Therefore, U. S. Fuel commits to reclaim the roads, diversions and underground impoundment, with the understanding that at a future date, the utilization of the area as a water supply for a postmining land use may be accepted...by the appropriate regulatory authority...when it can be shown that the Town of Hiawatha will remain viable." (pp. III-90-91) The TEA also states that the roads will be reclaimed (p. 54).

The reclamation plan includes plans to dismantle the water supply system in North Fork and in the mines. The reservoir in the No. 2 mine will be drained. Since the justification for retaining the roads will no longer exist, the commitment to reclaim the roads becomes the approved plan. Any deviation from this approved postmining land use becomes a significant permit revision. In order to retain the roads for a use other than to maintain the water supply system, U. S. Fuel needs to meet the regulatory requirements for a significant permit revision outlined in R645-301-414 and R645-300-120, including the public notice process. Until this is done, the approved postmining land use for the roads should be considered to be the same as the land use prior to any mining, ie. wildlife use and grazing.

Although Chapter 4 says that the access roads will not be reclaimed so as to support grazing, wildlife, and recreation land uses, Chapter 5 states on pages 56 and 58, "The portal areas will be reclaimed strictly for wildlife use, while the reclamation around Hiawatha will be designed to accommodate both cattle and wildlife." Correspondence contained in Appendix III-8 of the previous plan dated February 14, 1984 from John Livesay of Wildlife Resources stated, "...wildlife would be most benefited by decommissioning of the roads along with other surface facilities." This same letter said, "...the Division would prefer to see the roads reclaimed and revegetated with a habitat more suitable to the needs of wildlife..." Since wildlife habitat will be the postmining land use in the portal areas, the roads should be reclaimed.

Deficiencies:

1. The roads leading to the portals in North, Middle, and South Forks must be reclaimed in accordance with the commitments made in the previous mining and reclamation plan.

Original Deficiency:

2. *The plan must contain copies of comments concerning the proposed post-mining land use by the legal or equitable owners of record of the surface of the proposed permit area and Utah and local governments agencies which would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.*

Response and Analysis:

The plan contains copies of letters sent to the State Divisions of State Lands and Forestry, Water Rights, and Wildlife Resources; the Southeastern Utah Association of Local Governments; Carbon County; and the Manti-Lasal National Forest asking for comments on the postmining land use. Comments were received from three of these agencies.

William Howell of the Southeastern Utah Association of Local Governments stated that the county is interested in the preservation of any significant historical features that hark back to carbon County's coal mining past. Also, he said that the county would like to retain all roads that have utility for access to otherwise inaccessible regions of the county and might be interested in assuming responsibility for roads that might otherwise be abandoned.

The State Division of Water Rights stated that they would only be concerned with the reclamation work if it pertains to any approved stream alteration permits and the water rights associated with mining, domestic and agricultural uses. Change applications might need to be filed with Water Rights.

The letter from Wildlife Resources gave some general comments on the mining and reclamation plan but did not express any concerns with the postmining land use.

Deficiencies:

None.

Original Deficiency:

3. *Wording on page 8 which implies that no reclamation will occur after mining has ceased must be revised. Also, the reclamation plan section of this chapter must restate the intended land uses for all parts of the permit area.*

Response and Analysis:

These changes have been made in the plan.

Deficiencies:

None.

R645-301-420. Air Quality

Original Deficiency:

The Applicant must submit a copy for insertion into the plan of the most current Air Quality Approval Order.

Response and Analysis:

A copy of the Air Quality Approval Order dated July 25, 1989, has been included as Appendix IV-6.

Deficiencies:

None.

RECOMMENDATIONS

The change in land use for the access roads was not submitted in accordance with the requirements of R645-301-412.300 and should therefore be denied. Other deficiencies noted in this chapter have been adequately addressed.

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January 11, 1993

TO: Daron Haddock, Permit Supervisor

FROM: Priscilla Burton, Soils Reclamation Specialist

RE: Response to Division Order 92A. Hiawatha Mine. U.S. Fuel Co. ACT/007/011-92A. Carbon County. Utah. Folder #2.

SUMMARY:

U.S. Fuel Co. was issued a permit renewal on 3/13/92 for the Hiawatha Mine. The renewal included a Division Order to address deficiencies with the Hiawatha Mining and Reclamation Plan. A summary of U.S. Fuel's responses can be found in ACT/007/011, folder #2. The following deficiencies have been addressed: R645-301-121.200 deficiencies #1 - 7, and #9; R645-301-122 deficiency #1; R645-301-130 deficiencies #1-3; R645-301-221 deficiencies #1 and 2; R645-301-222 deficiencies #1 - 5; R645-301-224 deficiency #2; R645-301-230 Deficiencies #1-9; R645-301-233.300 Deficiencies #1-4; R645-301-240 Deficiencies #1-5.

Where responses received (11/13/92) do not adequately address the deficiencies, they are discussed below. First, the deficiency is re-iterated in italics as written in the Order, followed by a summation of information presented and remaining issues to be resolved concerning the stated regulation. An itemized list of deficiencies requiring further response is provided in the conclusion section.

DEFICIENCY REVIEW:

R645-301-121.200. Be clear and concise.

Deficiency #8

Correlate areas of soil salvage and in Middle and South Forks with the activities described in the Table of Reclamation Cost Estimates in Chapter VIII and with the substitute topsoil locations identified in Chapter II. Correlate the areas of topsoil redistribution described in Chapter II with those described in the seed mix Tables of Chapter III.

Analysis/Compliance:

Although page 37 of Chapter II specifies 3 areas of intensive (1.5' depth) soil salvage for substitute topsoil, page 11 of the "Reclamation Cost Estimate Middle Fork Facilities Area" indicates that six inches will be salvaged and stored from the entire 21 acre disturbed site. The discrepancy between the topsoil plan described in Chapter II for Middle Fork and the plan described in Chapter VIII, Table VIII-6 should be explained.

The same confusion exists for South Fork. Chapter II indicates that there will be 1.5' of salvage from Areas A and B to respread over 9.3 acres of the mine pad. Table VIII-8 indicates that there will be 4,033 yd^3 salvaged from 5 acres, and that 7.4 acres will have contaminated materials removed.

Deficiencies:

The main issue is what will transpire during reclamation of the site. Will the substitute topsoil be harvested from the locations A,B, and C of Middle Fork (Dwg II-3) and locations A and B of South Fork (Dwg II-2)? If so, shouldn't a cost estimate for this activity be included in Chap VIII? If not, shouldn't the substitute topsoil recovery plan described in Chap II be rewritten?

There is a miscalculation in the yardage of material required to cover 149 acres with 1.5 feet in Table VIII-4 of Chapter VIII. I calculate that for topsoil placement in the refuse areas, 360,580 yd^3 will be required, not 312,901 yd^3 as stated.

R645-301-222 Soil Survey

Deficiency #6

Present recent productivity information for the reference areas at the mine site and tie these in to the soil types present in the reference areas, see also deficiency #2 under R645-301-321.

Analysis/Compliance:

U.S. Fuel has contacted the Price Office of the SCS without response. Reference areas should be evaluated at the first opportunity next season. Please continue the effort to have the SCS evaluation performed.

The Hiawatha Preparation plant was constructed on soils which are designated by the SCS as Map Units 50, 53, and 113. Map units 50 and 53 support sagebrush grasslands and are

placed in the Upland Loam (Big Basin Sagebrush) range site by the SCS. For both the Haverdad Loam and the Hernandez Family, moist 1-6% slopes, the potential plant community is 60% grasses, 30% shrubs, and 10% forbs (relative cover). The characteristics of this range site are found in Table 4, pg 166 of the 1988 SCS Carbon County Soil Survey. Favorable range conditions exist where there is 1100 - 1300 lbs/A productivity annually.

Site specific surveys of adjacent sagebrush reference areas are presented in Tables 21, 22, 28, 53 of Appendix III-2 of Chapter III of the Mining and Reclamation Plan. Sagebrush Reference Area 3 (SBR3) is dominated by Big Basin Sagebrush and has 31% absolute plant cover and 17% litter (52% bare ground). Productivity of this area was 1500 lbs/A in 1981, primarily due to Big Basin Sagebrush.

Map unit 113 is the Strych, very stony loam, 3-15% slopes which supports the pinyon/juniper community type and is placed in the Upland Stony Loam (Pinyon-Utah Juniper) range type (Table 4, pg 176 of the 1988 SCS Carbon Co. Survey). Understory vegetation for this range site has been projected by the SCS as potentially achieving a relative cover composition of 45:10:45 (grass:forb:shrub) where the overstory canopy is 30% cover (pg. 80, Carbon Co. Soil Survey, SCS, 1988). Favorable range conditions exist on Strych soils (Map Unit 113) where there is 850 - 1000 lbs/A productivity. A survey of the pinyon/juniper reference area was conducted in 1980 (Tables 7, 34, 35, 55, App III-2 of Chap III) and again in 1992 (Chapter III, App III-3). The Pinyon Juniper Reference Area 5 is dominated by Utah juniper and has 43% absolute plant cover and 15% litter. Productivity of PJR5 was 300 lbs/A in 1981 (App III-2, Table 55.)

Reclamation plans for the preparation plant area have been based upon the achievement of a pinyon/juniper vegetation type.

Deficiency:

U.S. Fuel has contacted the Price Office of the SCS without response. Reference areas should be evaluated at the first opportunity next season. Please continue the effort to have the SCS evaluation performed.

R645-301-224. Substitute Topsoil.

Deficiency #1

See further discussion under R645-301-233.(300)

R645-301-224. *Deficiency #3*

Develop test plots in conjunction with the Division that have the objective of determining that 2 feet of cover is as adequate as four feet over the coal mine waste. Develop test plots in conjunction with the Division that have the objective of determining that the C3 and C4 horizons of Hernandez loam and Haverdad loam can be reclaimed using the methodologies described in the MRP. Provide for adequate evaluation and statistical analysis based on a reference area comparison.

Analysis/Compliance:

Study Site 1

1992 vegetation evaluations of study site #1 have been provided in App III-5. Total cover percentages in all treatments approach those of PJR5 and SBR3, although some adjustments must be made for weed cover which was included in the analysis. A comparison of the 6" treatments to the 12 and 16" cover treatments shows that independent of refuse age and seed mix, increased cover allows greater diversity and more shrub establishment. (Please see further information on the adequacy of each treatment in the discussion under R645-301-341.300).

The Division should not approve of less cover than 16 inches which was previously committed to by OSM in their 1985 correspondence to US Fuel Co. (restated below).

OSM has worked extensively with U.S. Fuel to develop baseline data for characterizing the refuse waste material as subsoil plant growth media and to design a reclamation plan for the slurry pond/refuse embankments specific to the site and refuse material, and to characterize substitute topsoil materials. OSM is requiring a redistribution of 16 inches of substitute topsoil. U.S. Fuel has identified sufficient substitute topsoil material in four borrow areas to cover regraded refuse waste areas with 16 inches of soil. U.S. Fuel is conducting field trial testing of 6, 12, and 16 inches of topsoil and has proposed to redistribute 6 inches, if the field trials prove that revegetation can be accomplished with less topsoil; OSM may revise its 16 inch substitute topsoil requirement. However the bond has been calculated for redistribution of 16 inches.

Table 9 of Chapter VI provides an analysis of a composite sample recently taken from slurry ponds 1,4,and 5. The pH value of the slurry is 5.7 and the CaCO3 content of the material is low. Acidity based upon total sulfur content is -21; based upon the pyritic fraction of the material it is +5. The original laboratory sheets should be provided along with the summary presented in Table 9.

The pH of this material is considerably lower than native soils, to which the revegetation species are adapted. To alleviate the situation, scarification of cover material into the top six inches of the slurry (providing a gradual tranistion in pH values and textures) would be a sensible practice. The final topsoil layer should be applied to a mixed cover/slurry layer.

Study Site 2

1992 vegetation evaluations of study site #2 have been provided in App III-5. The mulch, fertilization and stripping depth of 1.4' were the same in the two treatments. Seed mix 1 produced 32% total cover, with a relative cover composition of 55 shrubs: 33% forbs: 12% grasses, and 6% total litter. Seed mix 2 produced 40% total cover, with a relative cover composition of 21% shrubs: 68% forbs: 10% grasses, and 8% total litter. This study shows that the methodology used can achieve revegetation success on the C1 horizon, which is described in Attachment 2 of this submittal as having subangular blocky structure and a slightly hard consistency. The final reclamation plan actually calls for the removal of 6' of soil from Area A (location of Study site #2). Reclamation of the borrow site would occur utilizing the C22 horizon which is described in Attachment 2 as subangular blocky and hard. This may present a greater challange to U.S. Fuel than did Study Site #2, however, with a deep ripping plan (aready committed to) and the addition of an organic amendment (hay mulch, composted manure, sludge, composted sawdust etc.) to reduce bulk density, the C22 horizon of Area A and the C3 and C4 horizons of other borrow areas should be reclaimable.

Deficiencies:

The final reclamation plan for the borrow areas, U.S. Fuel should provide for the addition of an organic amendment to the surface of the borrow areas prior to scarifying the soil and seeding.

The original laboratory sheets should be provided along with the summary presented in Table 9 for the samples of the refuse analyzed in 1992.

R645-301-233.300. Results of Physical and Chemical Analyses of Overburden and Topsoil

Deficiency #5

Evaluate alternative plans for borrow material sources and borrow reclamation techniques.

Analysis/Compliance:

U.S. Fuel Co. indicates that the best available material is located in adjacent borrow areas A, B, C, and D. The plan calls for removal of 6 feet of soil from 20 acres of borrow area A, yielding 194,084 yd^3 of soil. Borrow areas B and C (21.25 acres, 4.5' deep) will generate 153,912 yd^3 of soil. Borrow Area D will be stripped of 1.83 feet over 10 acres yielding 30,114 yd^3.

The Division is charged with limiting the extent of disturbance to that which is absolutely necessary. In this spirit, the following alternatives are discussed. The use of borrow

materials from Areas A-D could potentially be limited to 121,193 yd^3, 6" over the 149 acres of refuse to be topsoiled, if six inches of sludge could be incorporated with cover material, which would be generated from the borrow areas and the storage and rail road yards. The combined cover/sludge material would be a foot deep (240,386 yd^3 over 149 acres, half soil, half sludge). The cover material may include cobbles and gravels in its matrix (as were noted in the road cuts of the present disturbed area), limited only by the ability to rip the material into the slurry as suggested in Deficiency #3 of R645-301-224.

Under this scenario only the final six inches of substitute topsoil would be imported from the borrow areas. Harvesting 1.83 ft of soil from 1/2 of borrow area A, and all of borrow areas B, C, and D, would generate the required topsoil, reducing the disturbance by 10 acres in size. This scenario would also reduce the degree of disturbance to the borrow area, since the massive structure of the C3 and C4 horizons encountered at 4.5' and 6' removal depths would not be encountered. This would alleviate the need for an organic amendment described above in the discussion of R645-301-224, Deficiency #3, Study Site #2.

To generate 6" of subsoil cover from the railroad and storage yards (53 acres), 1.5 ft removal depth is required in addition to the planned 1.5' removal from this location.

Deficiency:

Alternative plans for borrow sources and techniques should be discussed with the Division to try and limit the extent of additional disturbances. The disturbance of 52 additional acres could be minimized through the use of sludge amendments and/or increasing the amount of borrowed materials from within the present disturbance.

R645-301-240 Reclamation Plan

Deficiency #6

Revise the reclamation plan for the Hiawatha slurry and refuse sites to include methods a, b, c below and supporting test trials (as outlined in deficiency #3 under R645-301-224):

a. a minimum of 24" of cover over the slurry and refuse areas

and

b. 1.5 T/ac of topmulch (per consultant's recommendation in Attachment I of Appx II-3), or mulch treatment #2 as described in Appendix III-4.

and

c. irrigation if the above treatments are unsuccessful and reseeding is required.

Analysis/Compliance:

During a June 1992 meeting, U.S. Fuel reserved the right to evaluate the success of reclamation without irrigation prior to initiating irrigation. The Division agreed with this approach.

Previous agreements between OSM and U.S. Fuel had set the upper limit of cover material at 16". U.S. Fuel has formed a reclamation plan upon this agreement. (Reclamation test plots were designed to test the hypothesis that less cover (6") may be adequate, enough borrow material for 16" was located and characterized.) In light of these facts, and based upon the slurry sampling conducted in 1992 and the test plot results, the Division should set the cover requirement at no less than 16 inches of cover.

Deficiency:

U.S. Fuel indicates that all references to topmulch have been changed to state that 1.5 tons per acre will be used. However, Chapter VIII, uses 1 Ton/acre in bonding estimates. These calculations should be changed to reflect the new commitment.

CONCLUSION:

As discussed in the body of this document, further information is required for a determination of compliance with the following deficiencies of Division Order 92C:

R645-301-121.200	Deficiency #8
R645-301-222	Deficiency #6
R645-301-224	Deficiency #1, Deficiency #3
R645-301-233.300	Deficiency #5
R645-301-240	Deficiency #6