



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

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

January 28, 1997

TO: Daron Haddock, Permit Supervisor
FROM: Paul Baker, Reclamation Biologist
Re: Reclamation Plan Review, U. S. Fuel Company, Hiawatha Mine, ACT/007/011, Folder #2, Carbon County, Utah

SUMMARY:

The biology portions of the U. S. Fuel mining and reclamation plan were last reviewed in 1992, but some issues raised during that review were never resolved. Two of the reference areas for determining revegetation success may not have great enough diversity and production from desirable species that they may be used as success standards. In addition, the plan needs to show what standard will be used for areas reclaimed as riparian areas, and it may be more appropriate to use mixed conifer and mountain brush reference areas to show revegetation success in South Fork.

Using the current revegetation methods, it is not expected that the reestablished vegetation will have adequate diversity. Some modifications to the methods are required. Also, the surface preparation plan needs to be revised.

TECHNICAL ANALYSIS:

INTERIM STABILIZATION

Analysis:

Chapter 3 of the plan discusses interim revegetation plans for specific areas but does not have a revegetation seed mixture(s) that applies to the entire area. The areas discussed in the plan are primarily test plots. The plan also discusses what species would be used on topsoil piles.

While it is not anticipated that there will be much more interim revegetation, there could be a need for some in topsoil borrow areas or on the refuse piles until the permanent seed mixture is planted. The plan should show how topsoil would be protected in these areas if seeding with the final reclamation seed mixture is not imminent. A cover crop with an annual grain, perhaps mixed with sweet clover, should help to keep weeds under control. If planted in the spring or summer, an annual grain should be a winter variety that will not set seed without vernalization.

Paul
Jan 28 1997
review of
reclamation plans



Findings:

The mining and reclamation plan does not meet the requirements of this section of the regulations. The permittee needs to make the following changes:

- R645-301-331** The plan needs to contain an interim revegetation plan for disturbed areas that will not be immediately seeded with a final reclamation seed mixture and where erosion or weed establishment could create problems. Areas where such a revegetation plan might be implemented include topsoil borrow areas and places where the plant growth medium has been placed in preparation for final revegetation.

REVEGETATION

Analysis:

The revegetation methods in the plan have been previously reviewed. The permittee may want to make some adjustments to the seed mixes depending on the results of 1996 revegetation efforts.

A few areas near the refuse piles are within the disturbed area but are not disturbed in the sense that topsoil and vegetation have been removed. They have natural vegetation, but they have been heavily affected by coal fines. The permittee needs to mitigate this disturbance.

The permittee commits to rip certain areas to a depth of 18-24 inches; however, the distance between the rips is not specified. To be effective, this distance needs to be no more than four feet.

The seeding and mulching methods in the plan are generally acceptable but need to be modified. The plan says seed would be drilled in areas where it is practical, but drilling tends to increase competition from grasses and decrease shrub establishment. Some important shrub species, such as winterfat and sagebrush, must be planted on the surface, but others, such as bitterbrush and mountain mahogany, establish best when drilled. Various modifications to a drill are possible to allow a combination of drilling and broadcasting. To increase shrub establishment in drill-seeded areas, shrubs should be planted in rows separate from the grasses.

Drill seeding tends to decrease surface roughness, but some roughness should remain after using a rangeland drill. The plan also says some areas would be disced on the contour, but the Division discourages this practice. Discing produces contour furrows that are more prone to

Slurry pond 4
not gouged.

failure than an irregular surface. Creating numerous large (about two feet deep, four feet long, two feet wide) gouges has proven very effective in other areas. The permittee did not gouge the surface of slurry pond 4 but left it fairly rough. This may be the best treatment for areas with a limited amount of soil over refuse as long as the soil has not been compacted by rubber-tired equipment.

Drilling will probably not be practical in the canyons. Serviceberry, mountain mahogany, and Indian ricegrass are important components of the vegetation in these areas, and the seed of these species needs to be buried in order to germinate and establish. Other species in seed mix 3 that should be buried are needle and thread grass, snowberry, and squawbush. The permittee needs to show how seeding or planting will be done to meet the required diversity success standards.

There are some problems with the revegetation success standards that were never resolved in the 1992 review. Reference areas SBR3 and PJR5 do not appear to be acceptable as revegetation standards. SBR3 is in a sagebrush area north of the old railroad yard and consists of nearly a monoculture of basin big sage. According to data in the plan, 86.2% of the vegetation cover in this reference area is from sagebrush. Some of the other species in this reference area, such as broom snakeweed and prickly pear cactus, are considered undesirable for a grazing or wildlife postmining land use.

Reference area PJR5 is in a pinyon-juniper community east of slurry pond 5. Pinyon and juniper comprise 91.19% of the vegetation cover in this reference area, and neither of these species provides much forage for wildlife or livestock. It is essentially a closed, mature stand with very little understory.

All of the reference areas need to be evaluated for their range conditions by the Natural Resource Conservation Service (NRCS, formerly the SCS). It is anticipated that SBR3 and PJR5 are not in fair or better range condition as required for reference areas, and the following two paragraphs assume they are not suitable as revegetation success standards.

There are some areas near SBR3 that have much more grass cover than SBR3. If a potential reference area was delineated beforehand, the NRCS could check this area and make its evaluation. The NRCS normally gives a complete species list and shows cover by species. They also show the soils, aspect, slope, and range condition. Based on the information from the NRCS, it should be possible to show whether the soils and vegetation in the potential reference area are similar to what probably existed in the disturbed areas before any mining. A statistical comparison between the reference area and disturbed areas is, of course, impossible.

Finding an alternative for PJR5 may be more problematic. It may be difficult to find a pinyon-juniper area that is not a mature community. However, if a good sagebrush/grass reference area can be found, it may not be necessary to establish a new pinyon-juniper reference

area.

The riparian reference area is in the Mohrland area and does not appear to be shown on any maps. According to Table 4 in Appendix III-2, the riparian reference area would only be used for a few areas that were proposed to be disturbed but which were never actually disturbed. However, any area where the riparian seed/planting mix is going to be used should be compared to a riparian reference area. These areas include the stream relocation area near slurry pond 1 and areas within 10-40 feet of the sides of the reclaimed channels in South and Middle Forks.

Reference area PJR4 is in South Fork, and Table 4 says it would be used for all disturbed areas at the King 6 Mine. Much of the disturbed area in South Fork is surrounded by mixed conifer and mountain brush communities, and it may be more appropriate to use the reference areas in Middle Fork as success standards. This should be evaluated during the upcoming field season.

It appears the mountain brush and mixed conifer reference areas in Middle Fork are probably acceptable, but a final judgment will have to wait until the NRCS evaluation is complete. The mixed conifer reference area has a large amount of cover from young trees, and the density of trees is very high (1709 per acre). This means there is probably not as much forage as there might be in a community in a lower seral state, but the range condition will still probably be adequate.

The reference areas would be used primarily to set standards for vegetation diversity since the traditional cover standards will only apply to areas disturbed by mining after May 3, 1978. The plan includes methods for comparing diversity between the reclaimed and reference areas. If these areas meet the diversity and erosion control standards, they will probably meet the requirements for the postmining land use as well.

Findings:

The mining and reclamation plan does not meet the requirements of this section of the regulations. The permittee needs to make the following changes:

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| R645-301-341 | A few areas near the refuse piles are within the disturbed area but are not disturbed in the sense that topsoil and vegetation have been removed. They have natural vegetation, but they have been heavily affected by coal fines. The permittee needs to propose a plan to mitigate this disturbance. |
| R645-301-341 | The permittee commits to rip certain areas to a depth of 18-24 inches; however, the distance between the rips is not specified. To be effective, this distance needs to be no more than four feet. |

- R645-301-341.220** According to the plan, drill seeding may be used in certain areas. Where this seeding method would be used, species that require light or a very shallow planting depth to germinate need to be broadcast-seeded.
- R645-301-341.220** It is probably not practical to drill seed in the canyons, but the seed of certain important species needs to be buried to germinate. The permittee needs to show how these species will be established in order to meet diversity requirements.
- R645-301-341.250** The reference areas need to be evaluated by the Natural Resource Conservation Service to determine if they are in fair or better range condition. If, as believed, they are not all in fair or better range condition, the permittee needs to propose different success standards, such as different reference areas.
- R645-301-341.250** The plan shows a riparian reference area, but, according to the plan, this reference area would not be used for comparison to riparian areas in the current permit area. The permittee needs to propose a revegetation success standard for disturbed riparian areas. The current reference area near Mohrland could be used as this standard.

RECOMMENDATIONS:

Certain modifications to the surface preparation and seeding methods are needed in order to decrease compaction, increase surface roughness, and increase establishment of important reclamation species. The mining and reclamation plan needs to be revised to show what revegetation success standard will be used for riparian areas. All reference areas need to be evaluated for range condition by the Natural Resource Conservation Service. It may be necessary to change some of the reference areas.