



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

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May 17, 1994

To: File

From: Susan M. White, Senior Reclamation Biologist *SMW*

Re: Coarse Refuse Road, Sunnyside Refuse and Slurry,
Sunnyside Cogeneration Associates, ACT/007/035, Folder
#2, Carbon County, Utah

Analysis:

The operator submitted a plan for the final reclamation of the Old Coarse Refuse Road as a response to N93-32-5-2. The road reclamation plan was submitted as a permit amendment. Currently SCA does not have an approved reclamation plan on file. This memo will review the Coarse Refuse Road reclamation plan.

The operator proposes to remove the coal waste material from the road outcrops, place the coal waste material on the road cuts, cover the coal waste material and revegetate the disturbance. The revegetation plan is essentially the same as the unapproved plan on record with the Division except the proposed changes to page 900-18 and a new page 1000-4. These pages suggest that erosion control matting will not be used or used at the discretion of the operator on slopes 2:1 or steeper. These changes are denied unless a demonstration is made consistent with R645-301-341.300 that revegetation is feasible pursuant to R645-300-133.710.

Prior to on site work, the deficiencies identified in my memo dated May 11, 1994, Technical Analysis of the Application For Permit Right, pertaining to revegetation and subsequent success standards must be addressed. I have attached the pertinent sections to this memo. Briefly those issues are to modify the seed mixture, define surface roughness, and contingency stabilization.

The Technical Analysis does not make a finding that revegetation as required by R645-301-350 can be met. The vegetation data presented in the plan demonstrates that the success standards have not been met with regard to vegetative cover and species diversity on areas which have had interim stabilization methods applied. The test plots have not demonstrated that four feet of cover over coal waste material is



adequate for successful revegetation. However, my intent is not to have the operator address this issue prior to implementation of the Old Coarse Refuse Road reclamation, but rather to make the operator aware of the situation and that second attempts at reclamation may be necessary to meet the required success standards.

FINDINGS:

The above referenced amendment cannot be approved until the following deficiencies are addressed.

1. The phrase "as determined necessary" must be deleted from page 900-18 in regards to netting.
2. The plan must commit to netting all slopes 2:1 or steeper or demonstrate that it is not necessary.
3. Rabbitbrush must be eliminated from the Atriplex/Grass seed mixture and Gardner saltbush and Slender wheatgrass added.
4. The commitment to leave the soil surface in a roughened condition must be further defined. The dimensions of the roughness and techniques to obtain the roughness must be defined.
5. A commitment must be made that the last pass by equipment on slopes less than 2:1 will be made on the contour.
- 6, A contingency plan for stabilizing areas which are not seeded within the seeding window must be described.

The operator must be aware that a finding of reclaimability cannot at this time be made for this site. The Old Coarse Refuse Road is a very steep area and revegetation will be difficult. Implementation of the approved plan will require close supervision to insure that all details are implemented exactly as required.

cc: Darron Haddock
Joe Helfrich

enclosures

Technical Analysis
ACT/007/035
May 11, 1994
Page 8

riparian areas are being polluted. However, the plan does not address this and instead states that no polluted waters enter Icelander Creek. The requirements of R645-301-342.100 must be addressed as they concern the seep area. The plan must also include a description of the terrestrial wildlife enhancement measures.

R645-301-342.200 requires that plant species to be used on reclaimed areas be selected for their ability to support wildlife. The Pinyon/Juniper/Sagebrush seed mixture must be modified to reduce or completely delete Rabbitbrush. Fourwing saltbush must be added to the mixture. The Atriplex/Grass seed mixture must be modified to reduce or eliminate Rabbitbrush.

CONTEMPORANEOUS RECLAMATION

Analysis:

Areas of contemporaneous reclamation are designated on Plate 9-3. Reclamation will proceed as described in Chapter 9. Page 900-24 commits to the reclamation of areas 2 acres or larger as they become available.

Findings:

The plan meets the minimum regulatory requirements of this section.

REVEGETATION

Analysis:

Revegetation: General requirements.

The details of the revegetation procedures are given on page 900-17 to 900-20. The seed mixtures are specified on Plate 10-1. A Pinyon/Juniper/Sagebrush and Atriplex/Grass are the two seed mixtures proposed for final reclamation. Basically the Atriplex/Grass mixture will be used on the outslopes of the refuse embankment and roadcut. The remainder of the site will be seeded with the Pinyon/Juniper/Sagebrush mixture. The seed mixture is composed primarily of species native to the area. Slender wheatgrass (*Elymus trachycaulum*) is not included in the seed mixture. Horse Canyon used this species when seeding in 1991 and early data indicate high occurrence on site. The plan should include this species in both seed mixtures. Gardener saltbush (*Atriplex gardneri* var. *cuneata*) has shown successful seeding results on heavy clay soils in Carbon and Emery Counties

Technical Analysis

ACT/007/035

May 11, 1994

Page 9

and should be added to the Atriplex/Grass seed mixture.

All seeding will be done by broadcast methods. Either hydroseeding or hand broadcasting methods. All seeded areas will be raked to ensure good soil/seed contact (page 900-19). This method has proven to be acceptable to the Division in past reclamation projects. A commitment is made to limit the amount of time the seed is in the hydroseeder to 30 minutes (page 900-17).

A commitment is made in the plan to leave the site in a roughened state (page 900-17). This roughened state has proven to be very important to the success of the reclamation project. Therefore, this commitment must be further defined and the dimensions of the roughness given (for example 1 to 2 feet deep by 3 feet wide depression every 4 feet or discontinuous deep ripping on the contour). Techniques must be described for the various slopes encountered. The commitment must also be made that the last pass on any surface by equipment be made on the contour on all slopes less than 2:1. The outslopes of the first and second lift of the refuse pile shows evidence of equipment having run vertically on the slope and success has been marginal.

Revegetation: Timing.

The plan commits to planting between October 1st and November 30 (page 900-17). This is the normally accepted time of year to be seeding in the region. The plan does not provide for a contingency if seeding is not completed by November 30. A contingency plan should include some type of interim erosion control such as seeding with an annual grain, mulching or netting until the seeding window has opened.

Revegetation: Mulching and other soil stabilizing practices.

The plan commits to applying 2 tons per acre wood fiber plus tackifier by a hydroseeder as a mulch (page 900-20) on slopes less than 2:1. Hydromulching has been effective in controlling erosion and stabilizing the soil surface on slopes less than 2:1. The success of hydromulch and subsequent seed germination has been variable in the arid west. The Sunnyside area should receive adequate precipitation for the use of hydromulch. Long fiber mulch such as alfalfa or grass hay have been successfully used for erosion control and seed germination in Carbon County. Erosion control matting will be used on all slopes 2:1 or steeper. Erosion control matting is essential for stabilizing soil surface and seeded slopes on these steep areas.

Revegetation: Standards for success.

Technical Analysis
ACT/007/035
May 11, 1994
Page 10

The success of the revegetation will be compared to two reference areas (Appendix 3-3, Table 6 is missing). The majority of the site will be compared with the Pinyon/Juniper/Sagebrush reference area (Plate 10-1). The embankments of the refuse pile and the south facing ridge line will meet the Atriplex/Grass reference area standard. Quantitative monitoring will be done in years 2,3,5,9 and 10 for vegetative cover and woody plant density. Year 5 sampling will evaluate the 80/60 rule for shrub establishment.

The minimum tree and shrub numbers used for determining success on both the Pinyon/Juniper/Sagebrush and Atriplex/Grass areas is recommended to be 1000 per acre. The Division has set this standard based on existing shrub densities (1319/acre on the Atriplex/Grass reference area and 2923/acre on the Pinyon/Juniper/Sagebrush reference area) within the region and similar standards required by other coal mines within the area. The Division is currently waiting for concurrence from other agencies.

An extensive evaluation was made in 1992 of Sunnyside revegetation efforts. The data is reported in Appendix 3-5. Pages 21 to 30 are missing from the report, which qualify my findings. Vegetation data was collected and reported from five sites (excluding Sacco Test Plot) in the SCA permit area. Of those five sites, two would meet the vegetation cover requirement of the reference area and none would meet the diversity requirement. Vegetative cover has a high annual weed component which was not included in my evaluation of the seeding. The fact that weed seed is so available on site and in topsoil piles can be very limiting to revegetation success. The statement is made on page 900-23 that mulching during seeding will control weed emergence. The operator must explain this method of weed control and describe how the mulch will selectively prevent weed seed from germinating and not desirable seed.

Sacco Flats test plots were designed to test the minimum amount of plant growth medium required over refuse to meet the vegetation success standards. The design included exposed coarse refuse, topsoil and up to 48 inches of borrow material. The test plots were installed in 1983(?). The 1992 vegetation inventory (Appendix 3-5) data summary demonstrate that 48 inches of borrow material produced the greatest perennial cover (25 percent). Perennial cover decreased with a corresponding decrease in plant growth medium over coarse refuse. The most successful plot, 48 inches of borrow, is still not sufficient to meet the revegetation success standard for bond release. This fact makes a finding of reclaimability impossible to make. The data shows that the greater the amount of material over the coarse refuse

Technical Analysis
ACT/007/035
May 11, 1994
Page 11

material the greater the perennial cover. The operator must investigate using more than 48 inches of growth medium over the refuse material and/or other treatment methods necessary to meet the revegetation success standard.

The plan includes (page 900-22 and 900-23) maintenance related commitments. The operator should be aware that any maintenance or replanting after reclamation is completed and during the liability period has the potential to reset the bond clock as described in R645-301-357.100. The liability period for this site is a minimum of ten years.

Findings:

R645-301-341.210 will be met when Slender wheatgrass is added to both seed mixtures and Gardner saltbush is added to the Atriplex/Grass seed mixture. Additionally, from the previous section, Fourwing saltbush must be added and Rabbitbrush greatly reduced or eliminated from the seed mixtures.

Surface roughness is extremely important to revegetation success. Therefore, the plan must provide specific details of the roughness as required by R645-301-341.220. A commitment must also be made to require the last pass by equipment during reclamation be made on the contour on all slopes less than 2:1.

The plan must describe a contingency for stabilizing areas which are not seeded within the seeding window as described in R645-301-354. The plan may include annual grain seeding, mulching, netting or other methods of control.

The plan must commit to a success standard of 1000 shrub or trees per acre as required by R645-301-356.231.

The plan must include Table 6 to Appendix 3-3 and pages 21 to 30 of Appendix 3-5.

The plan does not demonstrate that the R645-301-350 standards for revegetation success can be met. In fact, the plan demonstrates the contrary. The plan must include steps according to R645-301-341.300 to demonstrate that revegetation is feasible. These steps must address how the coarse refuse material will be revegetated since the initial test methods did not produce vegetation that met success standards. The plan must also include test methods to demonstrate that species diversity can be met. Weed control on topsoil piles and borrow areas must be described and methods to reduce weed competition during revegetation must be demonstrated.