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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

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November 10, 1992

Mr. Richard Allison, Jr.
Project Supervisor
AMAX Coal Company, Belle Ayr Mine
2273 Bishop Road
P. O. Box 3005
Gillette, Wyoming 82717-3005

Dear Mr. Allison;

Re: 2nd Round of Deficiencies in Revegetation Plan, AMAX Coal Company, Castle Gate Mine, ACT/007/004, Folder #3, Carbon County, Utah

The Division has completed a review of AMAX's submittal received on October 8, 1992, intended to satisfy the Division Order with respect to revegetation at the Castle Gate Mine. A large number of the deficiencies that were identified by the Division, in a letter dated September 24, 1992, have been corrected, however, there are still a few deficiencies that have not been adequately addressed. The enclosed technical memo by Paul Baker outlines the problems that remain.

Please review the memo and respond to the deficiencies as quickly as possible. Our original schedule for resubmittal of the revegetation plan was set for two weeks following the date the review was completed. With this in mind you should respond by November 25, 1992. You will recall that the settlement agreement allowed for two reviews of your plans. Your next response should complete the revegetation plan and any further reviews are not anticipated. Please call me or Paul Baker if you have any questions.

Sincerely

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock
Permit Supervisor

Enclosure

cc: P. Baker
REVEROUN.AMA



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TO: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist 

DATE: November 5, 1992

RE: Chapter 9 Resubmittal, AMAX Coal Co., Castle Gate Mine, Folder #2, ACT/007/004, Carbon County, Utah

SUMMARY

AMAX has responded to the deficiencies outlined in the September 22, 1992, review of Chapter 9. Chapter 9 or the plans for the particular areas of the mine need to give more specific information on where the species lists will be used. AMAX and the Division have made general agreements on the use of reference areas for species composition, diversity, and utility for the postmining land use. Abandoned Mine Reclamation projects within the permit area will be used for these standards. The performance standards also require that the vegetation be adequate to control erosion, and this revised Chapter 9 makes a proposal for erosion standards.

ANALYSIS

R645-301-341.100

Revegetation Schedule

Proposal:

This section of Chapter 9 includes a general schedule for reclamation in the various canyons and for performing major steps in reclamation. On page 13 under R645-301-354, the plan says that planting will typically occur after October 15 and before the ground freezes. Spring planting will occur between March 15 and May 15, and drainages will be planted in mid-April when possible.

Analysis:

AMAX has complied with this regulation.

Deficiencies:

None.

R645-301-341.210 Species and Quantities of Plant Materials

Proposal:

Previously mined areas will be planted with species list 1. SMCRA areas, chiefly Crandall Canyon, will be revegetated with the mixture presented in species list 3. Wildlife areas will be revegetated, where appropriate, with the mixtures presented in species lists 1 and 3. Shrubs for wildlife may be planted from seed or by transplanting.

The summary of responses to the previous review states that planting mix 2 from the existing plan will be incorporated in the Crandall Canyon MRP.

Analysis:

All of the species lists presented in this revision of Chapter 9 are acceptable, but the plan needs to clarify some of the plans for the use of these mixtures.

The review of the previous Chapter 9 submittal required that planting mix 2 from the existing plan or another seed or planting mix which would make it possible to achieve the general requirements and standards for success of R645-301-353 and R645-301-356 be included in the MRP for the north-facing slopes of Crandall Canyon. The reference to planting mix 2 was a mistake; the deficiency should have said planting mix 1.

Species list 3 that is planned for use in Crandall Canyon and in wildlife areas is primarily a mixture of riparian species. The plan may be meant to say that species list 2 will be used in Crandall Canyon. If species list 2 is not to be used in Crandall Canyon, there is apparently no place where it is to be used.

The wildlife areas where species list 3 is to be used need to be defined either in Chapter 9 or in the chapters discussing the various areas of the mine. This has been done for Sowbelly Gulch. The most recent submittal for the Castle Gate Preparation Plant area shows that planting mix 4 will be used along the Price River. This planting list has been renumbered for the newest submittal of Chapter 9 and corresponds to species list 3. If there are other wildlife areas where this mix will be used, they should be delineated. Species list 3 could be used for the main channels in all of the canyons or species list 1 from the proposed Chapter 9 could be supplemented with planting mix 2 from the existing plan.

Deficiencies:

1. The use of species lists 2 and 3 needs to be further specified, either in Chapter 9 or in chapters dealing with specific areas of the mine. This should include restoration of plant communities in drainage areas.

R645-301-341.220 Planting and Seeding Methods

Proposal:

Fertilizer, if needed, will be broadcast either prior to seeding, with the hydroseeder, or following plant establishment depending on the condition of the growth medium and the success of establishment. Seed and fertilizer will not be mixed together in the hydroseeding slurry.

Seed will be applied with either a drill, by hydroseeder, or by broadcasting. Where a drill is to be used, a broadcast seeder will be attached to the drill or broadcast methods will be used to ensure separate shallow seeding of small seeds and fluffy or trashy seeds.

Analysis:

AMAX has complied with this regulation.

Deficiencies:

None.

R645-301-341.230 Mulching Techniques

Proposal:

Following seeding, seeded areas will be mulched or other soil stabilizing practices will be used to ensure the establishment of vegetation in accordance with the performance standards.

Native hay or straw will be applied at a rate of no less than two tons per acre and will be crimped along the contour. Where tub mulching is not practical or where hydroseeding is the method of seed application, hydromulching with wood fiber, paper fiber, or a wood/paper fiber mixture at a rate of 2000 per acre will follow seeding. Tackifier will be included with the mulch.

Where synthetic mulches promise superior performance, they may be used and

this use reported in the annual report. Synthetic mulches will be approved by UDOGM prior to use. Areas inaccessible to hydromulching will be mulched with straw or other appropriate material and tacked with nylon netting. Fiber matting or geosynthetics may be used in place of mulch and nylon net in inaccessible areas.

Analysis:

AMAX has complied with this regulation.

Deficiencies:

None.

R645-301-341.240 Irrigation and Pest and Disease Control

Proposal:

No irrigation is planned, but transplants will be watered on a case-by-case basis to minimize drought kill. No pest or disease control measures are anticipated to be necessary. Should such control become necessary, a plan will be developed in consultation with Carbon County Weed and Pest and reported in the annual report. Approval for pest and disease control measures will be obtained from UDOGM prior to implementation of the program.

Analysis:

AMAX has complied with this regulation.

Deficiencies:

None.

R645-301-341.250 Success Determination Methods

Proposal:

Success determination measures are discussed under the performance standards headings.

For areas that were not previously mined, such as Crandall Canyon, reference

areas are identified in the specific sections giving the reclamation plans for those areas. The responses to the review of Chapter 9 states that the grass-sage reference area in Sowbelly Gulch will be used to evaluate the success of revegetation in Crandall Canyon.

Revegetation standards for success for previously mined areas will be measured in accordance with R645-301-356.250. AML reference areas will be used to evaluate previously mined areas in accordance with R645-301-356.100 through 210.

Control of erosion on previously mined areas will be demonstrated by the lack of active rills and gullies not consistent with the postmining land use. Active rills and gullies are those in which vegetation has not established. Control of erosion on cut slopes and highwalls in previously mined areas means that these areas function in a way geomorphically similar to steep slopes and cliffs in the local area.

Analysis:

Exhibit 9-4 of the existing plan shows the vegetation types in Crandall Canyon. There are limited areas of grass-sage, including the area of the leach field disturbance, but the majority of the vegetation types bordering disturbed areas are conifer, mixed brush, pinyon-juniper, and riparian. Therefore, the grass-sage reference area in Sowbelly Gulch would only be an appropriate reference area for the leach field.

The current plan states that the Castle Gate mixed brush, Crandall conifer, Crandall riparian bottom, and Barn Canyon grass-sage reference areas will be used in Crandall Canyon. This combination of reference areas would be appropriate, but the plan needs to delineate which reference areas would be used for which locations. A suggested approach is that all areas within some distance of the center of the stream channel would be compared to the riparian reference area, north-facing slopes would be compared to the conifer reference area, and south-facing slopes would be compared to a mixed brush or pinyon-juniper reference area.

Use of the AML sites within the permit area for establishing standards for compatibility with the postmining land use, diversity, seasonal characteristics, and permanence is acceptable. There are numerous portals that have been closed within the permit area, and it is preferred that not all of these very small reseeded disturbances be included as part of a reference area. The regulations and, by reference, the "Vegetation Information Guidelines" do not require that specific methods be used to compare the parameters in the general requirements (R645-301-353). The Motyka Index which has been discussed with AMAX would be an acceptable index of comparison. For the Motyka Index comparisons, the following life-form categories are suggested:

1. Non-weedy Shrubs (Weedy shrubs would include broom snakeweed and

greasewood)

2. Introduced Perennial Grasses

3. Native Perennial Grasses

4. Non-weedy Broadleaf Forbs (Weedy forbs would include all introduced annual, biennial, and perennial broadleaf forbs except sweet clover, alfalfa, and possibly some other forbs that would be compatible with the postmining land use)

5. Weeds (Weeds would include all annual grasses, declared noxious weeds, and other plants which do not have utility for the postmining land use)

The portion of the total vegetation cover contributed by each of these components would be compared between reference and revegetated areas, and the index would need to be at least 70% for the standard to have been achieved.

When the AML reference areas are decided upon, they will need to be included on a map.

The standard for deciding if vegetation cover is adequate to control erosion may need to be developed further. Two of the options being considered by the Division are comparison to an undisturbed area and setting an acceptable limit of erosion in consultation with the Soil Conservation Service or another agency. The standard proposed in this revision of Chapter 9 may also be acceptable. The Division is currently working with OSM in an attempt to decide on adequate erosion standards. For the present, this section of the plan does not need to be developed further, but some revision may be needed in the future.

Deficiencies:

1. The plan needs to delineate which reference areas (or other standards for success) will be used for which areas of Crandall Canyon. The Sowbelly grass-sage reference area is appropriate for the area near the leach field. The reference areas or other standards for success need to correspond to vegetation types existing prior to disturbance as far as possible.
2. The plan needs to propose methods to be used to compare species composition so that revegetation diversity, seasonal characteristics, permanence, and utility for the postmining land use can be judged.
3. When they are decided upon, the reference areas for the pre-SMCRA disturbance areas will need to be included on a map.

Proposal:

The plan does not contain any discussion of this regulation, but the summary of responses to the Division's review states that AMAX will attempt to obtain the requested information as soon as possible and that AMAX's files do not contain any record of this test plot.

Analysis:

I have made a search of the Division's files and have contacted Lynn Kunzler about this test plot. The Division's files only contain general references to the plot and no details. Mr. Kunzler told me that the purpose of the plot was an attempt to establish more shrubs on the Goose Island refuse pile and that shrubs were transplanted and given some protection from wildlife. Randy Harden of the Division's staff has stated that he thought that the shrubs may have been irrigated. I have not been able to find information on what species of shrubs were used or what kind of wildlife protection they were given, and I have not been able to confirm whether or not the shrubs were irrigated or, if so, how frequently. If no information is found in AMAX's files and if no one currently with AMAX can provide further information, then the plan should simply give the brief description included here.

Deficiencies:

1. Available information on the test plot at Goose Island needs to be included in the plan.

R645-301-342

Fish and Wildlife

Proposal:

Wildlife enhancement will be created by the development of micro-topographic features, such as swales and rises created during regrading; by the establishment of rock piles; and by the use of the species in the seed and planting mixes. Where natural materials are available for the creation of snags and roosts, such snags and roosts will be constructed. Wetland areas will be created wherever topography and hydrology lend themselves to their creation.

Analysis:

AMAX has complied with this regulation.

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Deficiencies:

None.

RECOMMENDATIONS

Some details of the revegetation plans for drainage channel areas and for Crandall Canyon still need to be clarified and finalized, but the revegetation plan is adequate that it can be used in the No. 4 Mine area of Hardscrabble Canyon and in Sowbelly Gulch.

Other items that still need to be addressed include the methods that will be used to compare species composition so that revegetation diversity, seasonal characteristics, permanence, and utility for the postmining land use can be judged. Also, the reference areas or other standards for success for Crandall Canyon need to be specified to include areas representative of premining vegetation.