

0004

ACT 007/034
Folder #2

SC³

SOLDIER CREEK COAL CO.

Telephone (801) 637-6360

P.O. Box 1
Price, Utah 84501

DATE:

Oct. 18, 1991

TO:

Priscilla Burton

FROM:

Johnny Pappas

SUBJECT:

Test Plot - Please review and
make my recommendation

NUMBER
OF
PAGES

5
(Excluding Cover Sheet)

TELECOPIER NUMBER: (801) 637-0108

Draft

Test Plots

In consultation with DCGM, a test plot was established during late November, 1988 at a location along the south side of the loadout area, near the railroad tracks (Exhibit 5.2-1). The seed mix described in Table 7.2-5 was used at this test plot to evaluate the efficacy of the proposed reclamation methods described in the approved MRP.

However, the monitoring of this test plot showed the vegetation growth to be insufficient for demonstrating reclaimability of the site. It should also be noted that the Carbon County area has been experiencing drought conditions since the establishment of the test plot in 1988. The drought has not only affected the vegetation in the area, but also the wildlife. Regardless of the drought, a Division Order was issued on August 26, 1991, requiring Soldier Creek Coal Company (SC³) to establish a new test plot and develop new methods for demonstrating the reclaimability of the site. Therefore, a new location (Exhibit 5.2-1) and seed mixes (Table 7.2.5a) was selected for the new test plot.

Test Plot Design

The following design will be used in the construction of the new test plots, whereby, if the vegetation growth is sufficient to prove reclaimability of the site, then all relevant techniques, amendments and seed species will be utilized in amending the existing site preparation and seeding procedure in the approved MRP.

There will be two main treatments:

1. Organic matter (cow manure) addition with gouging
2. Sulfur coated urea (45-0-0) addition with gouging and a control with no treatment, but with gouging. Gouging will be performed on ^{half} of the plots (5 of the 10 plots).

All plots will be mulched with 2 tons/acre of straw or hay that is anchored to the soil.

Gouging is a water harvesting technique where pits, approximately 10 inches deep by 18 inches wide by 25 inches long are dug by a backhoe or other piece of equipment. Gouging has many beneficial effects, including decreasing erosion and increasing the amount of water available at the bottom of the pits.

Each treatment will cover 100 ft² and will be replicated twice, for a total of 200 ft² per treatment. Between each plot, to allow for the edge effect, there will be a 5 ft. buffer zone. The supplemental seed mix will not be replicated twice, but will be spread over both treatments. Total area required for this test plot is 1700 ft².

Below is a layout of the test plot.



45-0-0 Supplemental Seed (gouge)	45-0-0 Main Seed (gouge)	Organic Supplemental (gouge)	Blank	Organic Main Seed (gouge)
Control Main Seed (gouge)	Organic Main Seed	Control Supplemental	45-0-0 Main Seed	Control Main Seed

Procedure

First, the plots will be staked, labeled and in situ soil sampled for nitrate-nitrogen concentrations. The organic amendment and sulfur coated urea will be applied to the appropriate plots. The entire area will then be ripped to 18-24 inches and disked to leave a moderately rough surface and ensure inversion of the soil. Next, gouging will be performed on half of the plots, while straw or hay mulch is applied and disked into the soil, to the remaining plots. The appropriate seed mix will then be broadcast or hydroseeded over all plots. Seeding will take place in late October to late November. Finally, mulch will be applied and anchored to those plots where gouging was performed. The mulch applied to those plots, where the mulch was not disked into the soil, will be either crimped or anchored with netting. If netting is used, the seed should first be raked by hand into the soil.

The seed mix in Table 7.2-5a is modified from the approved mix in the MRP and is based mainly on what is in the reference area. The organic matter treatment will be composted cow manure and obtained from a local farm. The manure will be tested for nitrate and ammonium levels and the treatment levels adjusted accordingly.

In each treatment there is 100 ft². The depth of amendments is 18 inches. This translates into a 5.55 yd³ volume of soil to be amended. To achieve the goal of a 40% organic matter: 60%^{1/2} soil in an eighteen inch depth over a 100 ft² treatment, a seven inch layer of organic matter will be placed on the organic plots prior to ripping. This translates to 2.22 yd³ of organic amendment for each of the three organic treatments. To avoid overdosing the plants, treatment levels may require adjustment once the nitrate-nitrogen concentrations are known. The sulfur coated area (45-0-0) will be applied at 40 pounds per acre prior to ripping.

Evaluation

Test plots will be monitored yearly for the first five years for cover by species and total cover. This should be done at the end of the growing season (late August to September). This information will be forwarded to DOGM during the annual report. In addition to the cover by species and total cover, the woody plant density will be sampled during the fifth year.

Further evaluation of the soils will be done during the collection of data after five years. During this evaluation, soil will be collected and tested from each treatment by depth (0-6", 6-12", and 12-18"), a total of six samples. The nitrate-nitrogen concentration, along with the fifth year vegetation sampling, will also be submitted to the Division during the annual report.

Table 7.2-5a
Seed Mix for Banning Test Plots

<u>Species</u> Common Name	Scientific Name	<u>Rate</u> lbs PLS/Acre
<u>Shrubs</u>		
Shadscale	Atriplex confertifolia	2.0
Gardner Saltbrush	Atriplex gardneri	1.0
Fourwing Saltbrush	Atriplex canescens	2.0
Fringed Sagebrush	Artemisia frigida	0.5
Winter Fat	Eurotia lanata	1.0
<u>Grass</u>		
Indian Ricegrass	Stip hymenoides	1.0
Squirrel tail	Sitanion hystrix	1.0
Sand Dropseed	Sporobolus Cryptandrus	0.5
Great Basin Wildrye	Elymus cinereus	1.0
<u>Forbs</u>		
Scarlet Globemallow	Sphaeralcea coccinea	0.5
Yellow Sweetclover	Melilotus officinalis	0.5
		<hr/> 11.0 lbs/Ac
<u>Supplemental Test Plots</u>		
<u>Grasses</u>		
Hycrest Crested Wheatgrass	Agropyron cristatum	8.0 lbs/Ac
Tall Wheatgrass	Agropyron elongatum	4.0 lbs/Ac
Russian Wildrye	Elymus junceus	4.0 lbs/Ac
		<hr/> 16.0 lbs/Ac

0.54 ACRE INCIDENTAL
BOUNDARY CHANGE
(SUBSTATION CONSTRUCTION)

REGRADE EXISTING CHAN-
NEL TO 0.2% SLOPE TO NEW P
(SIDECAST EXCESS MATE
DOWNSTREAM SIDE)

TEST PLOT BOUNDARY

DRIVE

Fenced
TEST
PLOT

TEST PLOT
(SMALL AREA EXEMPTION)

SUBSURFACE
DUST SUPPRESSANT
STORAGE TANK

