

232. TOPSOIL AND SUBSOIL REMOVAL.

The subsoil stored in the Subsoil Area was removed from the Refuse Expansion Area. According to estimates by CPMC, approximately 235,000 cubic yards of soil are available and stored in this pile. Subsoil handling plans for the proposed refuse expansion areas and subsoil stockpile construction were closely reviewed during the permitting process.

The soil salvage from the Refuse Expansion Area has been evaluated for its suitability as cover for the Coal Refuse Pile Area; 25 samples from the Refuse Expansion Area were analyzed to establish suitability of soil (topsoil or soil substitute material based on the UDOGM Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining). Based on site-specific data included in Section 243, the soils have suitable soil profiles. Site-specific field and laboratory data from sample/test pit locations were compared with criteria and threshold values contained in the UDOGM table "Overburden Evaluation for Vegetative Root Zone" (Leatherwood and Duce 1988), and the following conclusions were made:

- Twenty-three of the twenty-five samples have soil reaction (pH) values are rated good with values ranging from 7 to 8.2. Two samples received poor rating with values of 8.5 and 8.6.
- Twenty-one of the twenty-five samples have a good electrical conductivity (EC) rating. Four samples received fair ratings with values ranging from 2.13 to 3.92, which is considered very slightly saline.
- All twenty-five samples have Sodium Adsorption Ratio (SAR) values that are rated good.
- All soil textures are rated good and include loam, clay loam, sandy clay loam, and sandy loam.
- Organic matter percentages were high in the surface and upper subsoil layers ranging from 0.95 to 2.04 percent with 0.88 being the average percent throughout the remainder of the soil profiles.

Prior to any surface disturbance in previously undisturbed areas or reclaimed areas, topsoil will be removed. Handling of topsoil will involve removal of vegetation, topsoil stripping, stockpiling, and replacement of the topsoil on the areas to be reclaimed. Topsoil removal and handling will be accomplished with front-end loaders and trucks. Topsoil storage piles will be adjacent to existing topsoil piles or other areas adjacent to the disturbance. Trees and large shrubs will be removed prior to topsoil removal. Small shrubs, grasses, and forbs will be collected with the topsoil material since these materials increase both the available organic matter in the soil and the available seed stock. Topsoil storage piles will be contoured to minimize soil loss and seeded with the interim seed mixture as discussed in Section 341.210. A small berm will be constructed at the base of the any new topsoil piles as interim containment of soil that may be displaced while vegetation becomes established.

Should the salvage of soils from the Subsoil Area require more than one season, the Subsoil Area will be seeded with a quick growing vegetative cover to help control erosion from wind and water. An interim seed mix is listed in Section 300, Table 341.210a. Alternate sediment controls will be placed around the stockpile to assist in the containment of soils and runoff. These are further discussed in Section 553.100.

240. RECLAMATION PLAN.

Reclamation will restore the land and vegetation to as near a natural and productive condition as possible. Efforts to restore wildlife habitat and specific periods of habitation by wildlife species of the disturbed and adjacent area are discussed in Section 300. Erosion hazards will be minimized and, where possible, eliminated.

241. GENERAL REQUIREMENTS.

Reclamation of the SCA - Star Point Permit Area is discussed in Sections 242, 243, and 244, respectively.

242. SOIL REDISTRIBUTION.

Prior to soil redistribution, random soil sampling will be conducted across areas scheduled to receive 12-inches or less of soil cover. Soil sampling will include a visual check for oil & grease staining, testing for soil growth parameters, and testing for compaction conditions. At the time of reclamation, in the areas where there is refuse, sampling will be conducted for acid/toxic parameters as discussed in Section 542.700. Areas not covered with refuse will be sampled for soil growth parameters such as ph, SAR, EC, nitrate, phosphorus, and organic matter. The disturbed area will be regraded as needed to agree with the general reclamation topography concepts (Section 500). In areas where roads, buildings, or parking lots existed or where the surface is overcompacted, regraded land will be scarified-ripped by a ripper-equipped tractor or other appropriate equipment. The surface will be ripped to between 246 and 3624 inches where possible to reduce surface compaction, to provide a roughened surface to increase cover soil adherence, and promote root penetration.

244. SOIL STABILIZATION.

To reduce the extent of potential slippage on the interface between the regraded fill and the respread subsoil, SCA will ~~deep gouge, scarify, or rip~~rip the ~~soil~~soil prior to spreading subsoil material on sloped surfaces steeper than 6H:1V. To the extent that slope permits, ripping will be done on the contour. Whenever slope conditions do not allow for the safe operation equipment, the subsoil material will be applied in an uneven and in a roughened condition to achieve an end result similar to ripping.

After the surface is prepared, the subsoil will be placed and treated as described in Section 542.200. Following placement of the growth media and prior to application of the reclamation seed mixes, hay and/or straw mulch, or other suitable substitute with a high organic matter content, ~~may~~will be incorporated into the growth media at a rate of ~~up to~~2 tons per acre. This would be done to improve soil structure for aeration purposes, increase micropore space, and improve the water-holding capacity of the soil. ~~If SCA chooses to incorporate hay or straw, Utah certified noxious weed free straw mulch or hay mulch would~~will be used. Incorporation of this mulch will occur either by plowing along the contour, ~~deep gouging~~, or a combination of these methods.

Once the subsoil material has been placed and either after or during incorporation of the mulch (depending on the method), the surface soil will be gouged at several locations to a depth of approximately 12 to 18 inches using the bucket of a trackhoe. The gouging depth will be reduced in refuse areas covered with less than four feet of soil. -The purpose of this gouging will be to reduce compaction of the upper soil and to increase water infiltration.

Following the ~~deep gouging~~, the resoiled areas will be seeded with the appropriate seed mix. In conjunction with the initial mulching or the seeding process, fertilizer will be applied at the specified rates as described in Section 243. Following seeding, an additional 1.5 to 2 tons per acre of straw mulch will be spread over the seeded growth media by mechanical blowers or hand spreading. This mulch will either be crimped with the trackhoe bucket or shovel or sprayed with a tackifier following spreading to retain it on the reseeded slopes. Methods used to evaluate success of revegetation and stabilization are discussed in Section 300.

To avoid unnecessary compaction to respread soil materials, SCA will implement the following operational procedures:

1. Subsoil will not be respread during winter or spring when moisture will increase the likelihood of compaction;
2. Once redistributed onto regraded slopes, every attempt will be made to avoid the trafficking of heavy equipment across these areas; and

recommended for broadcast seeding as shown on Table 341.210a. All areas to be broadcast seeded will be seeded at rates that provide coverage as shown on the table. Areas to be drill seeded will contain half the seeding rate scheduled for broadcast application.

341.230. Mulching Techniques.

Two previous mulching studies were implemented by CPMC to test the effectiveness of various kinds and application rates of mulches. In 1980, Native Plants established three test plot areas to compare the effectiveness of mulching on plants. Results from this study have been presented to Division, originally submitted CPMC's permit application in 1981 as Appendix 9I and submitted in the 1983 Annual Reclamation Report.

Prior to the application of reclamation seed mixes, hay and/or straw mulch (~~up to~~ 2 tons per acre), or other suitable substitute will be incorporated into the growth media. Incorporation of the mulch will occur either by plowing along the contour, deep gouging, or a combination of these methods. The mulch will be spread using chopper and blowers or hand spread. Utah certified noxious weed free straw, ~~native or hay mulch, or wood fiber hydromulch may~~ will be used. Hydro-seed application will include tackifier (60120 lb/acre) and wood fiber hydromulch (5001,000 lb/acre). Erosion netting may be used as an aid to soil, seed, and moisture retention. Installation and maintenance of the erosion netting will be dependent upon type, branch, and field conditions.

Once the growth media are emplaced and either after or during incorporation of the initial mulch, the surface soil will be gouged. ~~It is recognized that this deep gouging process may extend below the thickness of the growth media, however the materials beneath are neither acid non toxic forming as described in Section 623. Preparation of the rough graded surface, placement of the growth media and media thicknesses are discussed in Section 240.~~

341.240. Irrigation and Pest and Disease Control.

SCA has no plans to use irrigation in the revegetation of any areas proposed for reclamation in the SCA - Star Point Permit Area. Past experience with reclamation has not encountered a need to implement pest and disease control measures to achieve successful reclamation and at the present time, no such need is anticipated. In the event that such a need develops to control pest or disease, SCA will contact the Utah State University Extension Office for appropriate treatment measures. Upon receipt of proposed control measures, SCA will send appropriate notification to DOGM.

Railroad systems near to the SCA - Star Point Permit Area consist of spur lines and main rail lines owned by Utah Railway Company (URC). A small portion of railroad passes through the southeast corner of the SCA - Star Point Permit Area east of the refuse pile. SCA does not control any trackage of any of the rails.

527.210. Design and Specifications.

Ancillary Road G (Access to Pond 6) – The access road to Pond 6 is called Road G. The road is approximately 10 to 12 feet wide and the grade ranges from 0 to 15%. This road is dirt. Between stations 109+00 to 122+00 where grades are steeper, water bars are spaced at approximately 40 feet.

Ancillary Road H (Access to Pond 5) – The access road to Pond 5 is called Road H. The road is approximately 10 to 12 feet wide and the grade ranges from 0.8 to 12.2%. This road is dirt.

Ancillary Road L (Access to Excess Spoil Disposal Area) – The access road to the ~~Excess Spoil~~ proposed Disposal Area disposal area is called Road L. The road is approximately 10 to 25 feet wide and the grade ranges from 0% to 7.3%. This road is dirt. The road provides additional access to the north side of the refuse pile as well as Pond 9.

Future Primary Road K (Access to Subsoil Area) – The access road to the Subsoil Area is called Road K. The proposed road is approximately 10 to 25 feet wide and the grade ranges from 13% to 23%. Water bars are spaced at approximately 40 feet where grades are steeper between Stations 2+00 and Station 3+70.80. This road will be a dirt road. Prior to construction of Road K, topsoil will be salvaged in accordance with the plan outlined in Section 232.

Future Primary Road M (Access to Refuse Pile B and C) – The access road to Refuse Pile B and C is called Road M. The proposed road is approximately 10 to 24 feet wide and the grade ranges from 0% to 10.9%. This road will be a dirt road.

Primary Haul Road – This is the access road to the coal refuse pile. The road is approximately 12 to 30 feet wide and the grade ranges from 0 to 11%. This road is dirt.

527.220. Relocation of a Natural Drainageway.

No natural drainage will be relocated because of roads.

527.230. Maintenance and Repairs.

All roads will be maintained in safe condition. If a road is damaged it will be repaired as soon as practical.

527.240. Geotechnical Analysis.

No alternative specifications are required.

528. HANDLING AND DISPOSAL OF COAL, OVERBURDEN, EXCESS SPOIL, AND COAL MINE WASTE.

528.100. Coal Removal, Handling, Storage, Cleaning, and Transportation Areas and Structures.

All coal refuse, which is to be mined, is located within the permit boundary. The coal refuse will be excavated as explained in Section 523. All processing of the coal refuse will be completed in an approved manner outside of this SCA - Star Point Permit Area. Coal Refuse that is unusable (rejects) will be discarded in the excess spoil disposal area as shown in Map 521.100a. Normally coal mine wastes would be disposed of in a refuse pile. However, due to the nature of this operation, that of excavating the existing refuse piles for fuel, disposal of rejects back on the refuse pile where they came from would impede the ability to continue the excavation.

528.200. Overburden.

Since the coal refuse pile is currently exposed, there is no overburden.

528.300-321. Spoil, Coal Mine Waste.

Excess spoil will be placed in the ~~Excess Spoil Disposal Area~~ disposal area as designed on Map 521.100f. The operator may segregate clean spoil materials such as boulders and clean excess spoil, and set aside these materials within the disposal area or on a portion of the refuse pile to be used for enhancements to the reclamation. A relatively small amount of coal mine waste (rejects) that is unusable will also be discarded in the ~~excess spoil disposal area~~ disposal area. This site is located to replace empty treatment ponds that the original owner, CPMC, used to remove fines from water in its water reuse program. The current design capacity of the ~~Excess Spoil Disposal Area~~ disposal area is 145,000 cubic yards. This capacity represents 3.1% of the volume of the coal refuse pile. SCA expects that ~~spoil disposal areadisposal area~~ disposal area is more than adequate for the small amount of coal mine waste and excess spoil anticipated, however, if more disposal is required, the current design would require modification or a second disposal site will need to be designated.

533.500. Submerged Highwalls.

There are no submerged highwalls within the SCA - Star Point Permit Area.

533.600-700. MSHA Impoundments.

There are no impoundments that meet or exceed 30 CFR 77.216(a) criteria.

534. ROADS.

There are three ancillary roads, Road G, Road H, and Road L, which are within the SCA - Star Point Permit Area. In addition, there is one existing primary road, the Haul Road, and two proposed primary roads, Road K to access the Subsoil Area and Road M to access Refuse Pile B and C. The plan, profile, and cross section of Roads G, H, K, L, M and the Haul Road are shown on Maps 534.100a through 534.100f. All other roads are temporary pit roads, which may change per progress of excavation. Existing access roads are in place to the Subsoil Area, additional roads may be desired at the time of reclamation to improve the operation of hauling topsoil material. Prior to construction of Road K, topsoil will be salvaged in accordance with the plan outlined in Section 232. Additional design and sediment control facilities for these roads if needed will be provided prior to construction of new roads. Road specifications can be found on Table 534.200a, Road Specifications. Exhibit 534 includes the calculation of the road embankments meeting the safety factor of 1.3 or greater.

TABLE 534.200a. Road Specifications

ROAD*	SURFACE TYPE	SURFACE WIDTH	LENGTH	MAXIMUM GRADE %	MINIMUM GRADE %	AVERAGE GRADE %
G'	Dirt & Gravel	10-12'	0.4 miles	14.6	0	4.7
H	Dirt & Gravel	12-24'	0.6 miles	12.24	0.83	3.8
K	Dirt & Gravel	12-24'	0.05 miles	22.6	11.5	17.3
L	Dirt & Gravel	10-24''	0.3 miles	7.3	-4.30	3.3
M	Dirt & Gravel	10-24'''	0.05 miles	10.9	0	8.5
Haul Road	Dirt & Gravel	12-30'	0.16 miles	10.88	0	4.6

TABLE 542.200a. Cut and Fill Balance for Bonding Scenario Reclamation

Area	Cut Quantity (yd ³)	Fill Quantity (yd ³)
Refuse Pile General Grading	270,000	270,000
Pond 6 Removal	1,850	1,450 850
Road G Removal	1,700	1,700
Subsoil Redistribution	235,300	
Refuse and Spoil Pile Disposal Area Soil Cover		235,700 300
Total	508,850	508,850

TABLE 542.200b. Cut and Fill Balance for Final Reclamation

Area	Cut Quantity (yd ³)	Fill Quantity (yd ³)
General Grading, Refuse Disposal	50,000	5450,000
Pond 6 Removal	1,850	1,450 850
Road G Removal	1,700	1,700
Subsoil Redistribution	30,400 000- 65,000235,300	
Refuse and Spoil Pile Disposal Area Soil Cover		30,000 - 65,000111,600
Redistribute Remaining Salvaged Subsoil		123,700
Total	80,000 - 115,000288,850	98,950 80,000- 115,000288,850

Demolition. Prior to significant grading activities in the SCA - Star Point Permit Area, existing buildings, walls, utilities, and other aboveground structures and materials will be removed from the area. To the extent possible, these structures and facilities will be salvaged. Those materials requiring off-site disposal will be placed in a permitted landfill. Final decisions regarding salvage or disposal of structures and equipment will be made just prior to reclamation following an assessment of the salvageability of the structures and equipment. If foundations will not interfere with regrading activities, they will be left in place for on-site burial. Foundations which will be within four feet of the reclaimed surface will be broken up to the extent practical prior to backfilling. Other foundations may be left intact.

CPMC, the previous owner of the pile, had an approved reclamation plan which placed a 18-inch soil cover on 3:1 slopes with 15-foot wide terraces located every 30 vertical feet. The flat top of the pile and the terraces would have four feet of cover and would be deeply gouged, ripped and scarified to prevent heavy runoff down the slope. This soil cover reclamation recommendation is discussed in Exhibit 542.700a. In the event that the Bonding Scenario reclamation occurs, the SCA Reclamation Plans call for utilizing the same depth of soil cover over the pile.

It is anticipated that in the event of the final reclamation that significantly less soil cover is required than the bonding scenario. The actual amount needed is dependant on the ability to clean quality of the soil materials beneath the pile which will be determined by soil testing as described in Section 242. Coal Refuse that is unusable (rejects) will be placed in the spoils areas and covered with a minimum of four feet of soil from the Subsoil Area during final backfilling and grading. Prior to reclamation of the coal refuse pile areas under the Bonding Scenario, soil samples will be collected from the surface at a frequency of approximately one per acre across the refuse pile areas. The samples will be analyzed in accordance with current Division guidelines to determine presence of potential acid or toxic forming materials. If acid or toxic forming materials are found, four feet of soil cover will be placed over them, or the materials will be moved to the excess spoil disposal area and covered.

Disposal of Non-Coal Mine Wastes. All non-coal (non-waste rock) waste generated from mining and reclamation operations will be salvaged or disposed of in a permitted landfill. Non-coal waste that is generated during the course of reclamation that cannot be salvaged will be disposed of at an off-site permitted facility.

542.800. Reclamation Cost Estimate.

The estimated cost to reclaim the site is provided in Section 800, Bonding. (Refer to Exhibits 830.100a and 830.100b)

550. RECLAMATION DESIGN CRITERIA.

551. CASING AND SEALING OF UNDERGROUND OPENINGS.

Since there are no underground mining operations in the SCA - Star Point Permit Area, there are no underground openings on the site, which require casing or sealing.

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NORTH



SCALE OF FEET

SUBSOIL MATERIAL QUANTITIES

- 4' Subsoil Material X 2.7 Acres = 17,200 CY
- 1' Subsoil Material x 59 AC = 94,400 CY
- Remaining Subsoil Material up to = 123,700 CY
- Total Subsoil Cover up to 235,300 CY
- No Subsoil Cover Required = 21.3 AC
- Reclaimed Areas = 3.59 AC

Notes:

1. At the time of final reclamation four feet of soil material will be placed over the disposal area.
2. At the time of final reclamation a minimum of twelve inches of soil material will be placed over areas previously covered by refuse to enhance revegetation.
3. At the time of final reclamation, all disturbed areas will be gouged to assist revegetation. Areas where the existing ground is over compacted and areas scheduled to receive subsoil cover will be ripped to a minimum of 24" deep.
4. Some areas may be regraded as necessary to meet the post-mining land use prior to placement of soil material or scarification of existing soil.
5. Minimal grading will be utilized to redistribute the dumped soil materials sufficient to cover the reclaimed sites. The soil materials will be spread unevenly and gouged to create small depressions which will retain moisture, minimize erosion, create and enhance wildlife habitat, and assist revegetation.
6. In accordance with R645-301.212 all salvaged subsoil materials in the subsoil pile will be redistributed for reclamation.

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DIV. OF OIL, GAS & MINING



DATE: 05-22-03
 DRAWN BY: SEE SCALE BAR
 PROJECT NUMBER: BSUN010600

SCA / STAR POINT WASTE FUEL
 FINAL RECLAMATION
 SUBSOIL COVER PLAN

PSOMAS
 2925 East Coliseum Parkway, Suite 120
 Salt Lake City, UT 84117 (801) 710-5782 (FAX)

ISSUED: CEA
 CHECKED: CEA
 DESIGNED: SSC

MAP NUMBER

542.200g