DEER CREEK MINE
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VOLUME 11
NORTH RILDA PORTAL FACILITIES

R645-301-200 SOILS SECTION

ENTIRE SECTION

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R645-301-200 SOILS SECTION

TABLE OF CONTENTS

LIST OF APPENDICES

(Refer to Volume 11: Appendix Volume)

Appendix A	Report: Soil Inventory and Assessment, Rilda Canyon Portal and Facilities Site, Deer Creek Mine, EIS Environmental and Engineering Consulting, May 2004.
Appendix B	Report: Soil Survey Report of the New North Rilda Canyon Portal Facilities Area, Mt. Nebo Scientific, July 2004. Soil Storage Addendum March 2005.
Appendix C	Prime Farmland Determination: NRCS, October 2004.

LIST OF MAPS

200-1	Soils Classification Map
200-2	Soils Stripping and Storage Location Map

R645-301-210 INTRODUCTION

Mining in the Rilda Canyon area has been conducted since the 1940's. Four historic mines (Helco Mine, Leroy Mine, Jeppson Mine, and Rominger Mine) are located in Rilda Canyon that were reclaimed by Abandoned Mined Lands in 1988. In 1995, PacifiCorp expanded its Deer Creek Mining operations into the North Rilda area. Approximately 23 million tons of minable coal is anticipated to be mined from the this area during life-of-mine production. Surface ventilation facilities were constructed in the Left Fork of Rilda Canyon to provide for ventilation to the North Fork area. Because of the need to expand the mining operations farther to the northeast (Mill Fork State Lease #48258), surface facilities are required in Rilda Canyon. This includes all support facilities for underground mining operations with the exclusion of coal transportation.

Five soil survey's or investigations have been conducted in the Rilda Canyon area: Gainer, 1983, Furst 10/90, Furst, 12/91, EIS Environmental and Engineering Consulting, 5/04, and Nyenhuis, 7/04. The soils investigation provided by Furst can be found in Volume1, Part 2 (Environmental Resources), pages 2-181.1 through 2-181.39. These reports discuss soil resources of the Left Fork of Rilda Canyon. The EIS report discusses soil resources in the area of the historic Leroy, Jeppson, and Rominger mines, refer to Volume 11 Appendix Volume - Soils: Appendix A. This area was initially proposed for surface facilities. However, because of concerns of culverting approximately 1500 feet of the Rilda Creek, the site location was moved approximately ½ mile up canyon. The Nyenhuis report discusses soil resources of the proposed Rilda Canyon Portal Facilities, refer to Volume 11 Appendix Volume - Soils: Appendix B.

Soil segregation locations have been established in the Left Fork Rilda Canyon Fan Facilities area (refer Volume 4 Map 2-17A) and the Rilda Canyon Portal Facilities area (refer to Map 200-1, Soils Stripping and Storage Location Map). These areas store topsoil and subsoil salvage from each of these disturbed areas.

The following sections detail investigations of the soil environment in Rilda Canyon. Through these investigations, detailed procedures are designed for the removal and storage, sampling, analysis, and replacement of soil during reclamation of the disturbed sites.

R645-301-220 ENVIRONMENTAL DESCRIPTION

The proposed Rilda Canyon Portal Facilities is located on the north side of Rilda Canyon, a tributary of Huntington Creek. The surface facilities will be located in an east-west trending canyon below the intersection of the right and left forks of Rilda Canyon. The elevation differences in the area of the mine site range from approximately 7,300 feet above mean sea level near the sediment storage area to 7,725 feet near the forks of Rilda Canyon.

R645-301-221 Prime Farmland Investigation

As stated in the regulations, all permit applications, whether or not Prime Farmland is present, will include the results of a reconnaissance inspection of the proposed permit area to indicate whether Prime Farmland exists as given under R645-302-313.

PacifiCorp has consulted with the National Resources Conservation Service (formally the Soil Conservation Service) on three separate occasions for Prime Farmland Determination related to the Deer Creek Mine permit boundary;

- November 10, 1983 (refer to Volume 1, pages 2-215 through 2-2118)
- March 27, 1991 (refer to Volume 1, pages 2-218.1 through 2-218.2)
- October 14, 2004 (refer to Volume 11 Appendix Volume Soils: Appendix C)

Based on the NRCS investigations of all of the lands within the Deer Creek Mine (including the proposed Rilda Canyon Portal Facilities) it has been determined that these lands do not qualify as "Prime Farmland" for the following reasons:

- Soils contain more than 10% percent surface rock fragments, or
- Percent slope multiplied by K (erodibility factor) exceeds 2
- Area is above all existing irrigation systems

R645-301-222 Soil Survey

Previous Studies

The soils in the area have been included in previous baseline studies of the general permit area. Furthermore, the soils of the area have been mapped previously by the operator in anticipation to include the area for future mining (see Volume 4, Map 2-16, "Future Permit Area"). A field survey of the soils of the permit area was conducted by T.H. Furst in 1990. Field work and

laboratory analyses of Soil Pedon 3 in the study described and classified the soils mapped in the North Rilda Area. The soils have been classified as mixed Typic Cryoborolls, loamy-skeletal, 25-40% slopes. The pedon contained >0.6% organic carbon throughout the soil solum, and the percent base saturation was most likely >50% throughout the soil solum (inferred from the pH). Soil textures ranged from sandy loam in the A and Bw1 horizons to loam in the Bw2 horizon. Electrical conductivity ranged from 0.4-0.5 mmhos/cm and the sodium adsorption ratio for all horizons was less than 3.4. Soil reaction (pH) ranged from 8.0 to 8.1. SAR values were also low enough to be rated as "good" by DOGM guidelines. Alkalinity (HCO3) was less than 4 meq/L, whereas, the saturation percentages of all horizons ranged from 44.6% to 52.6%. Available water capacity ranged from 0.10 to 0.15 inches of water per inch (depth) of soil. Calculations of the total available water revealed that about 3.6 inches of water would be available on a whole pedon basis when the displacement of soil material by coarse fragments was taken into account.

The soils were generally described "as a dark grayish brown loamy surface layer about 40 cm thick, underlain by a pale brown clay subsoil 40 cm thick, over a light gray calcareous substratum with up to 50% sandstone fragments". A general soil map for the permit area which includes the North Rilda Area has been provided as Volume 4, Map 2-16 in the Deer Creek MRP. For additional information about the soils in the area refer to Volume 1, Part 2 of the MRP.

2003-2004 Studies

PacifiCorp retained Environmental Industrial Services (Soil Scientist: Dan Larsen) to conduct a soil inventory to aid in the development and reclamation associated with the proposed expansion of the Deer Creek Mine in Rilda Canyon. The EIS report discusses the inventory and assessment of soil resources of the historic mining areas of the Leroy and Rominger mines. This report is included since an area below the Leroy Mine portal area is proposed for disturbance. PacifiCorp plans to construct a sedimentation pond within this area. The EIS report lists this area as soil map unit D "disturbed". This soil consists of mixed soil materials and waste coal. The area below the Leroy Mine had been previously reclaimed. Two soil pits revealed a layer of about one to two feet of cobbly sandy loam soil over waste coal materials in most areas. Coal deposits are up to eight feet in depth.

As stated earlier, PacifiCorp's original proposal was to construct the facilities in the area of the historic Leroy, Jeppson, and Rominger mines. However, because of concerns of culverting approximately 1500 feet of the Rilda Creek, the site location was moved approximately ½ mile up canyon. As a result, PacifiCorp retained Mr. Jim Nyenhuis, Certified Professional Soil Scientist/Soil Classifier (ARCPACS 2753), to map the revised location at the Order 1 level of intensity for the proposed area, refer to Volume 11 Appendix Volume - Soils: Appendix B. The study area was approximately 16 acres in size and was composed of the proposed surface facility

area, intersection of the right and left forks, and the alluvial bottom to the south of the facilities. Field work including soil sampling was completed in July 2004. Pacificorp contracted Mr. Jim Nyenhuis to supplement the initial study of the proposed facilities near the intersection of the right and left forks to include an in-depth analysis of the topsoil and subsoil storage areas. Topsoil/subsoil material will be stockpiled at separate locations approximately 0.5 miles down canyon from the mine site. The topsoil site is located away from any drainages in a fairly flat previously disturbed area directly below the reclaimed Helco Mine portal site. The subsoil/construction fill site is located in Rominger Canyon. The canyon was previously disturbed to access the Rominger and Jeppson coal mines. Appendix B has been amended in to include soil descriptions and sampling analysis of the soil storage locations.

R645-301-222.100 Map Delineating Soils

A site specific, Order 1 soil survey for the proposed mine site area was performed by Mr. Jim Nyenhuis and Dan Larsen during 2003 and 2004. Detailed reports of the on-site field work and laboratory analyses along with soil maps are presented in Volume 11 Appendix Volume - Soils: Appendix A & B.

R645-301-222.200-300 Soil Identification and Descriptions

Soil types of the proposed disturbed area are identified on maps located in Volume 11 Appendix Volume - Soils: Appendix A 2003-4 EIS report: Sediment Pond Area and Appendix B, 2004 Mt. Nebo Report: Mine Facility and Soil Storage areas. During 2003 and 2004, Mr. Dan Larsen, Soil Scientist from EIS and Mr. Jim Nyenhuis from MT. NEBO conducted field mapping of the proposed mine facility, sediment pond and soil storage areas. Soil profiles were exposed either by hand tools or a backhoe to examine the full soil sequence at various locations around the proposed disturbed area. Soil sampling and subsequent analyses were used to determine suitability for reclamation purposes. Soils data from previous investigations conducted in the 1990's, as well as aerial photography, and detailed site investigations were used to define the boundaries of each map unit. This information was then used to prepare a detailed map unit description for each of the mapping units delineated during the Order 1 Survey at the mine site sediment pond and soil storage areas (refer to Map 200-1).

Five map units were within the study area:

*	Map Unit A	Alluvium Bottomland Soils
*	Map Unit B	Steep Rocky Slopes, Haplustepts, Ustorthents
*	Map Unit E	Colluvial Toeslopes, Bench (referred to Map Unit C by EIS: Appendix A)
*	Map Unit F	Steep Facing Slopes; Cryoborolls
*	Map Unit D	D Disturbed Land, Soil, Coal, Stones, Fill Material DR Disturbed Land (Old Mine Access Road) DF Disturbed Fan Site (Leroy Portal Area) RD Rilda Canyon Road (Emery County #306)

Pedon Descriptions

Map Unit A: Alluvial Bottom Land Soils

Alluvial bottomland (Map Unit A) is located along Rilda Creek and in the confluence area of the Left and Right Forks of Rilda Creek. Alluvial bottomland is south of the Rilda Canyon Road and will not be disturbed by mining activities. An area within the bottomland along the Right Fork of the Rilda Creek, near the confluence with the Left Fork of Rilda Creek, includes the proposed relocation of the Spring Collection Study Area for the North Emery Water Users Association. Slope range of the map unit is 0 to 15 percent. Vegetation within the alluvial bottomland is a mixture of Douglas fir, aspen, and spruce with an understory of grasses and grape holly. Elevation ranges from about 7,600 to 7,750' MSL. The map unit is considered to be in a "frigid" soil temperature regime.

Soils within Map Unit A are very deep (>60" to bedrock), well to somewhat poorly drained, and are developing primarily in streamlain alluvium with some slopewash colluvial material. Soil textures are primarily sandy loam or sandy clay loam. Coarse fragment content is generally less than 15% in the surface layer, and increases to about 20% or more in the subsoil and substratum. Stones and boulders are scattered on the soil surface. Brycan bouldery very fine sandy loam is the dominant soil within the alluvial bottomland, and is described below. Schupert gravelly very fine sandy loam occupies the narrow channel

bottom of Rilda Creek within the study area, and was described in the previous survey for the fan installation project (Furst, 1991).

Schupert is a very deep, well drained, slowly permeable soil forming in streamlain alluvium. It is classified as a "Fine-loamy, mixed, superactive, calcareous, frigid Typic Ustifluvent." The most recent official NRCS soil series description for Schupert, dated March 2003, is on file.

Soils within the Alluvial Bottomland have been described and/or sampled at four locations (S1, S4, S7, and RC2). Evaluation of the field and laboratory data indicates the soil most closely correlates to the Brycan soil series.

Brycan bouldery very fine sandy loam is a very deep, well drained, moderately permeable soil with slow runoff forming primarily in streamlain alluvium. It is moderately to strongly calcareous. The surface layer meets criteria for a mollic epipedon. Brycan is classified as a "Fine-loamy, mixed, superactive, frigid Cumulic Haplustoll". The most recent official NRCS soil series description for Brycan, dated June 2000, is on file.

Sample site RC2 was located in the Proposed Spring Collection Study Area in the west extension of the study area. At typical sample site RC2, Brycan has a very dark grayish brown (10YR 3/2, dry) sandy loam surface layer about 6 inches thick. The subsoil is a brown (10YR 4/3, dry) sandy clay loam about 12 inches thick. The underlying "BC" transition layer is a brown (10YR 5/3, dry) sandy loam to a depth of about 30 inches. The "C" horizon substratum is a brown (10YR 5/3, dry) sandy loam to a sampled depth of 66 inches. Coarse fragment content ranges from about 10 to 20 percent throughout the soil profile. Scattered stones and boulders are on the soil surface.

Map Unit B: Steep Rocky Slopes; Haplustepts, Ustorthents

Map Unit B was mapped in the northwest corner of the west extension of the facility area and the canyon side slopes of the subsoil/construction storage area. The area west of the facilities will not be disturbed by mining activities nor is it in the spring collection area. PacifiCorp is proposing to store and protect topsoil in-place in the subsoil/construction fill storage area (refer to R645-302-212 for details related to the experimental practice). Soils within Unit B have been described and/or sampled at three locations (S5, S6, and RC6). Map Unit B consists of steep to very steep, well drained, rocky slopes. Stones and boulders are commonly scattered on the surface. Sandstone rock outcrop is nearby. Vegetation is dominantly pinyon and juniper. Soil depth ranges from shallow to very deep in stony colluvium. Soils have little profile development, and are high in carbonates. The surface

layer is less than 5 inches thick, and can be dark colored in certain areas. The subsoil and substratum layers are often very cobbly to very stony sandy loam to loam with 20 to 35% carbonates.

Map Unit E: Colluvial Toeslopes; Bench

Map Unit E (Colluvial Toeslopes; Bench) is the dominant map unit on the current study area. It is the site for all of the proposed mining and related facilities. Map Unit E occupies a gently sloping alluvial fan toeslope-bench situated between the Star Point Sandstone outcrop located near the base of the steep mountain sideslope and the alluvial bottomland of Rilda Creek to the south. As such, it is a south-facing slope with mixed, diverse vegetation including Ponderosa pine, Juniper, Douglas fir, some spruce, mountain mahogany, sagebrush, and mixed grasses. Elevation ranges from about 7,600 to 7,730' MSL. The map unit is considered to be in a "frigid" soil temperature regime, and an "ustic" soil moisture regime.

Three representative sites were fully described and sampled within Map Unit E (RC1, RC3, and RC4). All three sites were located midway across the unit, and indicated very deep, well drained soils. Results from seismic testing across this bench indicate an approximate depth of unconsolidated materials (soil above unweathered materials) of 5' on the north end nearby to the Star Point Sandstone outcrop, increasing to a total depth of 50 to 75' on the south end of the bench which ends just north of Rilda Creek alluvial bottomland. Three seismic lines were run across the bench, and the methods and results are contained in a separate report (AMEC Consultants, 2004).

Evaluation of the field and laboratory data for Map Unit E indicates that the soil most closely correlates to the Osote soil series. Osote is an established soil series of small extent mapped in south-central Utah. The most recent official NRCS soil series description for Osote, dated February 1999, is on file. Osote is a very deep, well drained, slowly permeable soil forming in colluvium and slopewash alluvium from sandstone and shale materials. Osote is slightly to strongly calcareous. The surface layer meets criteria for a mollic epipedon. Osote is classified as a "Fine-loamy, mixed, superactive, frigid Typic Calciustoll".

Based on a review of all three sample pedons (RC1, RC3, and RC4), Osote typically has a brown (10YR 4/3, dry) sandy loam to loam surface layer about 9 to 16 inches thick. The lower part of this layer is a "Bw" cambic horizon. The subsoil "Bk" calcic horizon is a brown to light yellowish brown (10YR 5/3 to 10YR 6/4, dry) strongly calcareous sandy loam, sandy clay loam, or loam to a depth of about 20 to 38 inches. The underlying "C" horizon substratum is a yellowish brown to light yellowish brown (10YR 5/4 to 10YR 6/4, dry) sandy

loam, sandy clay loam, or loam to a depth of 60 inches (5') on the north side of Map Unit E, and exceeding 84 inches (7') on the south side of the map unit. Slightly weathered, unconsolidated colluvial material extends to a depth of 50 to 75' on the south side of the unit (AMEC Consultants, 2004). For a full description of the map units, laboratory results, evaluation of soil suitablility and topsoil volume refer to Volume 11 Appendix Volume - Soils: Appendix B.

Map Unit F: Steep North Facing Slopes; Cryoborolls

One delineation of Map Unit F (Steep North Facing Slopes; Cryoborolls) was mapped on a north-facing slope above the south side of the Right Fork of Rilda Creek in the western extension area. This area will not be disturbed by mining activities nor is it in the proposed Spring Collection Study Area. It was not sampled for laboratory analysis. Soils on this steep, north-facing slope are best classified as "loamy or loamy-skeletal, mixed, Typic Cryoborolls" with typical slopes of 25 to 60% or more. This map unit dominantly has Douglas Fir and spruce vegetation, with some aspen.

In a typical profile, Typic Cryoborolls have a stony to bouldery sandy loam to loam, dark-colored, surface layer ranging from 10 to 18 inches thick. The surface layer meets criteria for a mollic epipedon. The subsoil is a brown stony to very stony sandy loam or loam. Typic Cryoborolls are well drained.

Map Unit D: Disturbed Land Including Subcategories

Disturbed Land

The soils in this map unit have been disturbed by previously mining activities and road construction. They consist of mixed soil materials and waste coal. In the area that had been reclaimed below the Leroy Mine, three soils pits (S2, S3 and RC8) along with four geotechnical trenches (pits 7, 8, 10 and 11) revealed a layer of about one to two feet of cobby sandy loam soil over coal waste materials. The coal deposits are up to eight feet in depth (refer to Geotechnical Pit Photos in Volume 11 Appendix Volume: Soils - Appendix A). In addition to the area below the Leroy Mine, geotechnical trenches were excavated in the disturbed lands along Emery County Road #306 (pits 4, 6, and 9) and in the Rominger Mine area (pits 13 and 14).

Disturbed Land - DR: Old Mine Access Road

This unit designates the narrow access road leading to reclaimed Leroy Mine. This single track road cuts through Soil Unit B on a steep, rocky, south facing slope. The surface of the old road consists of gravely to stony soil materials derived mostly from sloughing and erosion of the cut slope and subsoil in the road base. Soil textures are mostly sandy loam with intrusions of loam. The materials in the upper 8 to 24 inches show good rooting potential. Underlying materials are very stony. Soils within this unit have been described and/or sampled at one location (S6). Geotechnical trenches were excavated along the access road, refer to Volume 11 Appendix Volume: Soils - Appendix A.

Disturbed Land - DF: Leroy Mine Site

This is bench and cut slope at the location of the Leroy Mine portals. It includes a relatively flat area which has very little soil material over sandstone bedrock and a cut slope having poor quality soil materials. Soil sample, RIL1303, site S-5 was collected from the cutslope to characterize the soil materials at this location. A single geotechnical trench was excavated across the portal area (pit 1), refer to Volume 11 Appendix Volume: Soils - Appendix A.

Disturbed Land - RD: Emery County Road #306

Map Unit RD consists of the present road corridor in Rilda Canyon. It was not evaluated as a soil map unit although there are suitable soil materials beneath the road.

In addition to the survey conducted related to the portal facility area, PacifiCorp consulted with Mr. Jim Nyenhuis in preparing a soil classification map for the proposed soil storage sites located near the portal facilities area (refer to Volume 11 Appendix Volume - Soils: Appendix B). The topsoil storage site is located on a gentle alluvial/colluvial fan slope directly below the reclaimed Helco Mine portals on what was the coal storage area for the mine. This site was reclaimed in the late 70's by the lease holder and again by AML in 1988. The primary plant community in this area is disturbed Sagebrush/Grass community (refer to Volume 11 Appendix Volume - Biology: Appendix A for a complete description of the area). Approximately 60% of the area is mapped as Unit D (Disturbed Land; soil, coal, stones, fill material), with remaining area mapped as Unit A.

The subsoil/construction fill storage site is located in a narrow canyon used as access/coal storage for the reclaimed Rominger and Jeppson mines. Access to the canyon is directly from Emery County Road #306. The primary plant communities in this area is native,

Douglas Fir/White Fir, Pinyon-Juniper/Curl Leaf Mountain Mahogany/Ponderosa Pine, Pinyon-Juniper/Curl Leaf Mountain Mahogany and Previously Disturbed AML (refer to Volume 11 Appendix Volume - Biology: Appendix A for a complete description of the area). Soil units mapped include; Disturbed - valley area and access road on the west side of the canyon, Colluvial toeslopes - collouvial fan (Unit E) located of the west side of the canyon and steep rocky slopes; haplustepts, ustorthents (Unit B) - steep slopes located on the east and west side of the canyon reclamation project (refer to Volume 11 Appendix Volume - Soils: Appendix A and B for soil descriptions of the site).

The following table list the acerage of each soil unit within the extent of the disturbance:

SOIL MAP UNIT	ACREAGE WITHIN DISTURBED AREA (acres)
Map Unit A: Alluvium Bottomland Soils	0.41
Map Unit B: Steep Rocky Slopes, Haplustepts, Ustorthents	1.29
Map Unit D: Previously Disturbed Area, Reclaimed by AML	3.53
Map Unit E: Colluvial Toeslopes, Bench	6.96
Map Unit RD: Rilda Canyon Road	0.91
	Total 13.1

R645-301-222.400 Potential Productivity of Soils

Present and potential productivity of the existing soils was conducted by the Natural Resources Conservation Service and is presented in Volume 11 Appendix Volume - Biology: Appendix B.

R645-301-223 Soil Characterization

The results of the Order 1 Soil Surveys are presented in Volume 11 Appendix Volume - Soils: Appendix A & B. Each distinct soil is presented as a soil map unit with accompanying description, laboratory analyses, and spatial extent clearly defined. Excavation test pits used to conducted the detailed examination, description and sampling of each mapping unit are also displayed on Map 200-1.

R645-301-230 OPERATION PLAN

The following sections describe the methods for the removal and storage of topsoil and subsoil/construction fill from the Rilda Canyon portal facilities. The main facilities area covers approximately 9.0 acres of disturbance that require the removal of topsoil and or subsoil.

R645-301-231 General Requirements

R645-301-231.100 Methods for Removing and Storing Topsoil, Subsoil

All areas to be disturbed at any time during the construction, operation, or reclamation of the mine and its surface facilities will have the available topsoil (i.e. plant growth medium) separately removed and segregated from other colluvial material. The topsoil will be stockpiled in separate pile in the topsoil storage area for use during reclamation (refer to Map 200-1, 200-2 and Engineering Section Maps 500-3 and 500-4 sheet 3 of 4). Based on the survey conducted Mr. Jim Nyenhuis (refer to Volume 11 Appendix Volume - Soils: Appendix B) both the A and portions of the B horizon will be removed and stockpiled. At a minimum, twenty-four inches of topsoil materials will be salvaged from all areas, except the sediment pond area which was previously disturbed by historic coal mining and later reclaimed by AML. Soil removal from the AML area will be segregated and stored as recommended by the qualified soil scientist monitoring the soil removal process. Soil and geophysical surveys conducted at the mine facility and sediment pond areas revealed that the colluvial soil material extends to a depth greater than projected cuts to develope the post construction topography. Based on this analysis, cut material in excess of the upper twenty-four inches of the topsoil will be segregated and stored in the subsoil/construction fill storage area as reclamation fill (refer to Maps 200-1, 200-2 and Engineering Section Maps 500-3 and 500-4 sheet 4 of 5).

The soils will be removed with one or more of the following types of equipment: bulldozer, scraper, front-end loader, and/or trackhoe. A qualified soil scientist will provide on-site consultation during the topsoil removal process to maximize removal of quality topsoil and minimize inclusion and dilution.

Topsoil/subsoil material will be stockpiled at separate locations approximately 0.5 miles down canyon from the mine site. These locations will allow the soil materials to be managed and minimize the potential impacts from the active mining operation.

The topsoil storage site is located away from the main Rilda Canyon drainage in a fairly flat previously disturbed area. As depicted on Maps 200-1, 200-2 and Engineering Section Maps 500-3, 500-4 sheets 3 of 5 , the dimension of the storage pile will be approximately 300 feet in length by 200 feet in width, occupying approximately 1.1 acres. Location of the topsoil storage pile minimizes disturbance by utilizing previously disturbed areas associated with the Helco Mine. During the operations of the Helco Mine, this area was used as coal storage and handling area. Water monitoring well (P4, refer to map 500-3 in the Engineering Section) installed near the proposed pile indicates that the depth of the saturated alluvium is approximately twenty feet below the existing ground surface. As discussed above, this area was used as a coal storage and handling site. To prevent additional compaction of the existing soils, the pile will be constructed over a broad area with track mounted equipment. End dump trucks will haul the soil from facility area to the soil storage site. Trucks will not travel on the storage site, but will dump loads adjacent to Forest Development Road 024. Track mounted equipment will distributed the soil across the site. Construction of the topsoil storage slopes will not exceed 2:1. Maximum heights of the constructed slopes is projected at 40 feet, with average of approximately 20 feet. A conceptual topsoil pile is designed with a capacity of 25,000 yards^3 of soil material. Grubbed vegetation material will be placed on the final surface of the topsoil stockpile in a layer not to exceed 6 inches. Upon completion of the soil storage pile, PacifiCorp will conduct as-built survey of the site to accurately compute the volume of soil retrieved during development of the surface facilities. All appropriate maps and text will be revised to reflect as-built conditions.

The subsoil/construction fill site is located in Rominger Canyon. The canyon was previously disturbed to access the Rominger and Jeppson coal mines. Undisturbed drainage from the area will bypass directly below the pile (refer to Volume 11 Appendix Volume: Hydrology - Appendix B for complete discussion related to hydrologic design). Installation of the bypass culvert will be accomplished by trackhoe(s), moving only the material necessary to install the culvert. As depicted on Maps 200-1, 200-2 and Engineering Section Maps 500-3, 500-4 sheets 4 of 5, the dimension of the storage will be approximately 550 feet in length by 250 feet in width, occupying approximately 3.0 acres. To prevent additional compaction of the

existing soils, the pile will be constructed over a broad area with track mounted equipment. End dump trucks will haul the soil from facility area to the subsoil storage site. Trucks will travel on Emery County #306 to the storage site and access the area using a temporary road adjacent to the undisturbed culvert. Trucks will dump loads adjacent to culvert. Track mounted equipment will distributed across the site. Construction of the soil storage slopes will not exceed 2:1. Maximum heights of the constructed slopes is projected at 70 feet, with an average height of approximately 40 feet. A conceptual subsoil pile is designed with a capacity of 107,000 yards^3 of soil material. The conceptual configuration exceeds the estimated soil requirements (refer to R645-301-500 Engineering Section for mass balance analysis). Excess area will be needed to store large boulders encountered during construction activities and grubbed vegetation. Stored boulders will consist of sandstone and used during final reclamation for development of riprap or placed on the final reclaimed slopes to blend in with surrounding terrain. Grubbed vegetation material will be placed on the final surface of the subsoil stockpile in a layer not exceeding 6 inches. Upon completion of the subsoil storage pile, PacifiCorp will conduct an as-built survey of the site to accurately compute the volume of soil retrieved during development of the surface facilities. All appropriate maps and text will be revised to reflect as-built conditions.

The stockpiled material surface will be pocked to help retain runoff from precipitation events and to reduce erosion. Diversion ditches and culverts will be installed around the perimeter of the piles to divert runoff around the pile and reduce erosion due to runoff from the surrounding area. Silt fencing will be placed along the base of the stockpiles to treat any runoff from the piles and to prevent the loss of soil from the site. The roughened surface of the stockpiles will prevent rapid runoff and help to control erosion until vegetation becomes reestablished.

The stockpile seeding is planned during the fall period with the sagebrush/grass seed mix outlined R645-300 Biology Section Table 300-8. Vegetative cover will protect the soil from wind and water erosion. If supplemental seeding is needed, it will be completed the following year. Sideslopes will be monitored for erosion as well and will be repaired if erosion appears to be excessive.

R645-301-231.200 Demonstration of Suitability

Analyses from the soil samples taken in the proposed disturbed area are listed in Volume 11 Appendix Volume - Soils: Appendix A and B. The suitability of this material for reclamation is discussed in Appendix A and B. Material proposed as a supplement to topsoil has also been tested and mapped. The suitability of this material for vegetative growth has been demonstrated through past reclamation activities in Rilda Canyon (AML reclaimed

mines: Helco, Leroy and Rominger/Jeppson). Approximately 10.7 acres has been disturbed during past mining activities, refer to Engineering Section Map 500-1. Approximately 4.4 acres of the Rilda Canyon Portal Facilites (included soil storage areas) has been previously disturbed by coal mining activities. Vegetation has become re-established quite successfully on the previously disturbed areas even in areas without the benefit of topsoil replacement, reseeding or supplemental irrigation.

During coal mining activities, cuts and fills were made on both north and south facing sides of the canyon. Areas were leveled for staging areas, coal seam exposures, coal handling and drilling pads. The cuts were left in place. In several areas, no reclamation was conducted on the disturbed lands. Natural vegetation has moved in and become established on the previously disturbed areas even without the replacement of topsoil materials and seeding.

R645-301-231.300 Test Plan for Evaluation the Results of Topsoil Handling and Reclamation Procedures

At the time of final reclamation and after the subsoil material has been regraded, the soil material will be sampled on 500 foot intervals to a depth of 48 inches. A soil auger will be used to collect samples by 1.0 foot increments. A field instrument will be used to sample the regraded material for pH and EC parameters. Field sampling will allow immediate identification of salinity, acidity or sodicity problems. Should problem areas be located, sampling will be intensified to a 100 foot square grid described below. Four augered holes will be randomly placed in the regraded area of the mine facility. The randomly selected sites will be sampled along the survey baseline established for the mine facility area. The subsoil material will be sampled at 1.0 foot intervals. Samples will be sent to a certified laboratory to be analyzed for the parameters outlined in Table 6 of the Utah *"Guidelines for Topsoil and Overburden Handling"*. If any potential problems are identified, additional sampling will be conducted in the vicinity of the suspect sample to better define the extent of the area affected. Should a problem be identified, the area would be resampled on a grid of 100 foot centers to define the nature and extent of the problem. The problem area would then be evaluated in consultation with the Division with the most appropriate remedial action implemented.

If testing finds the field parameters are within an acceptable range, redistribution of the topsoil will then be initiated. Topsoil will be sampled as it is hauled from the storage pile for comparison to the baseline data. Amendments would be added to the regraded areas at rates based on their comparison to the baseline soil data. Fertilizer would be added as needed by using a spreader then mixing the fertilizer into the soil, along the contour.

R645-301-231.400 Construction and Maintenance of Topsoil Handling and Storage

Construction of the topsoil storage site will begin by removing any large, existing vegetation and developing a diversion ditch to channel natural undisturbed drainage away from the stockpile location. Existing soil from the storage area will not be removed. A colorful marker fabric, 1.0 foot in width, will be installed on 10.0 foot centers to identify the predisturbed surface. Topsoil will be hauled from the mine facility and sediment pond areas with end dump trucks to develop the storage pile. Once a topsoil stockpile has been developed from materials removed during construction of the proposed mine site, it will remain in place until final reclamation occurs. A field fence will be constructed to surround the topsoil pile to protect it from grazing. In addition to the perimeter fence, a silt fence will be installed at the toe of the pile to prevent loss of soil due to erosion. Maintenance of the topsoil pile throughout the life of the mining operation will consist of; 1) seeding new material added to the stockpile, 2) reseeding where erosion or other elements have caused a loss of vegetation, and 3) maintenance of the ditches, culverts and silt fences.

After the removal of the topsoil, subsoil/construction fill will be hauled from the mine and sediment pond areas and segregated in a separate area (Rominger Mine area) to develop the subsoil storage pile. Construction of the subsoil/construction storage site will begin by removing any large, existing vegetation and installing a culvert to channel natural undisturbed drainage away from the stockpile location. Installation of the bypass culvert will be accomplished by trackhoe(s), moving only the material necessary to install the culvert. Existing soil from the storage area will not be removed (refer to R645-302-200 Special Categories of Mining - Experimental Practice). A colorful marker fabric will be installed over the entire site to identify the predisturbed surface. Once a subsoil/construction stockpile has been developed from material removed during construction of the proposed mine site, it will remain in place until final reclamation occurs. A field fence will constructed at the toe of the slope of the storage pile to protect it from grazing. In addition to the perimeter fence, a silt fence will be installed at the toe of the pile to prevent loss of soil due to erosion. Maintenance of the soil pile throughout the life of the mining operation, will consist of; 1) seeding new material added to the stockpile, 2) reseeding where erosion or other elements have caused a loss of vegetation, and 3) maintenance of the ditches, culverts and silt fence.

R645-301-232 Topsoil and Subsoil Removal

Prior to the removal of the topsoil, all trees and brush will be cleared and removed from the site. Soil will be stripped to various depths up to 2.0 feet depending on soil type and/or topsoil depth. Where thick deposits of topsoil or material from reclaimed AML sites are found, as much soil material as possible will be removed. The coal waste will be removed from the area and disposed of at the existing Deer Creek waste rock site or utilized in the generation of electrical power. Topsoil and subsoil storage is illustrated on Maps 200-1, 200-2, Engineering Section 500-3 and 500-4 sheets 3 of 5 and 4 of 5.

Prior to any surface disturbance of the portal area soil test pits were dug. Soil test pits/trenches were established in the proposed disturbed areas (refer to refer to Volume 11 Appendix Volume - Soils: Appendix A and B). These areas included the pinon/juniper habitat areas, riparian habitat areas, sage/brush grass, mountain brush habitat areas, and AML reclaimed sites. Refer to Map 200-1 for test pit/trench site locations. Samples were taken at various depth intervals and analyzed according to the *Guidelines for Management of Topsoil and Overburded for Underground and Surface Coal Mining* (Leatherwood and Duce, 1988). Analyses of these pre-construction samples are found in Volume 11 Appendix Volume - Soils: Appendix A and B.

As documented during the soil survey (refer to Volume 11 Appendix Volume - Soils: Appendix A) and geotechnical investigation (refer to Volume 11 Appendix Volume - Engineering: Appendix F - 2004 AMEC/LGS Geophysics) an area of buried coal was encountered covering approximately 0.7 acres with an average depth of 4.0 feet. The buried coal is located directly below the reclaimed Leroy Mine portals. During development of the drainage control and sediment pond, the buried coal will be removed and transported either to the Deer Creek Waste Rock Storage Site or utilized for power generation if coal quality allows (refer to Volume 11 Appendix Volume - Soils: Appendix A for analysis of the coal waste material). A portion of the buried coal is located outside the proposed disturbed area as shown of Map 200-2. Energy West will cooperate with AML to enhance this area during site development.

Based on soil, geophysical and geotechnical surveys and knowledge of the site, it is estimated that at least 19,700 cubic yards of suitable topsoil material can be recovered and stockpiled during construction activities. The upper 24 inches of recommended topsoil salvage will include portions of the A and B horizons (refer to Volume 11 Appendix Volume - Soils: Appendix A & B). This volume was estimated utilizing digitized based maps where the area is multiplied by the salvage depth of 24 inches. In addition to the topsoil,

approximately 97,300 cubic yards of subsoil/construction fill will be salvaged consisting of a combination of B and C soil horizons, see following table:

TOPSOIL SALVAGE VOLUMES			
SOIL SALVAGE AREA	***Acres***	***Salvage Depth (inches)***	***Estimated Volume (cubic yards)***
Mine Facility: North of Emery County Road #306	4.5	24 (1)	14,500
Mine Facility: South of Emery County Road #306	1.6	24 (1)	5,200
Sediment Pond Area	1.0	(2)	3,200 (2)
SUBSOIL SALVAGE VOLUME			
Mine Facility: North of Emery County Road #306	4.5	Refer to Engineering Section Table 1 and Map 500-4 sheet 2 of 4	97,300

(1) Based on recommendations from the Order 1 survey conducted by Mr. Jim Nyenhuis (refer to Volume 11 Appendix Volume - Soils: Appendix B)

(2) Sediment Pond Area: Soil salvaged from this area will be used to enhance the previously AML reclaimed area, excess soil material will be segregated and stored as recommended by the qualified soil scientist monitoring the soil removal process. Re-exposed A & B horizons located below the coal waste will be sampled to determine final placement as topsoil for the AML reclaimed area or for storage in either the topsoil or subsoil/construction storage piles. The estimate on soil resource is based on the existence of 24 inches of native soil horizons below the buried coal waste. Disturbed soil with coal in the profile will not be salvaged. Coal waste encountered during soil salvaging and construction of the sediment pond will be segregated separately and transported to the Deer Creek Waste Rock Site for disposal or utilized power generation if coal quality allows.

A volume of approximately 19,700 cubic yards would be needed to cover the regraded mine site (at the time of final reclamation) with twenty-four inches of topsoil material. Actual soil depth at the time of reclamation will be dependent upon the soil salvaged during construction of the facilities. Upon completion of the construction activities and development of the soil storage site, the topsoil and subsoil piles will be surveyed to document the actual amounts salvaged.

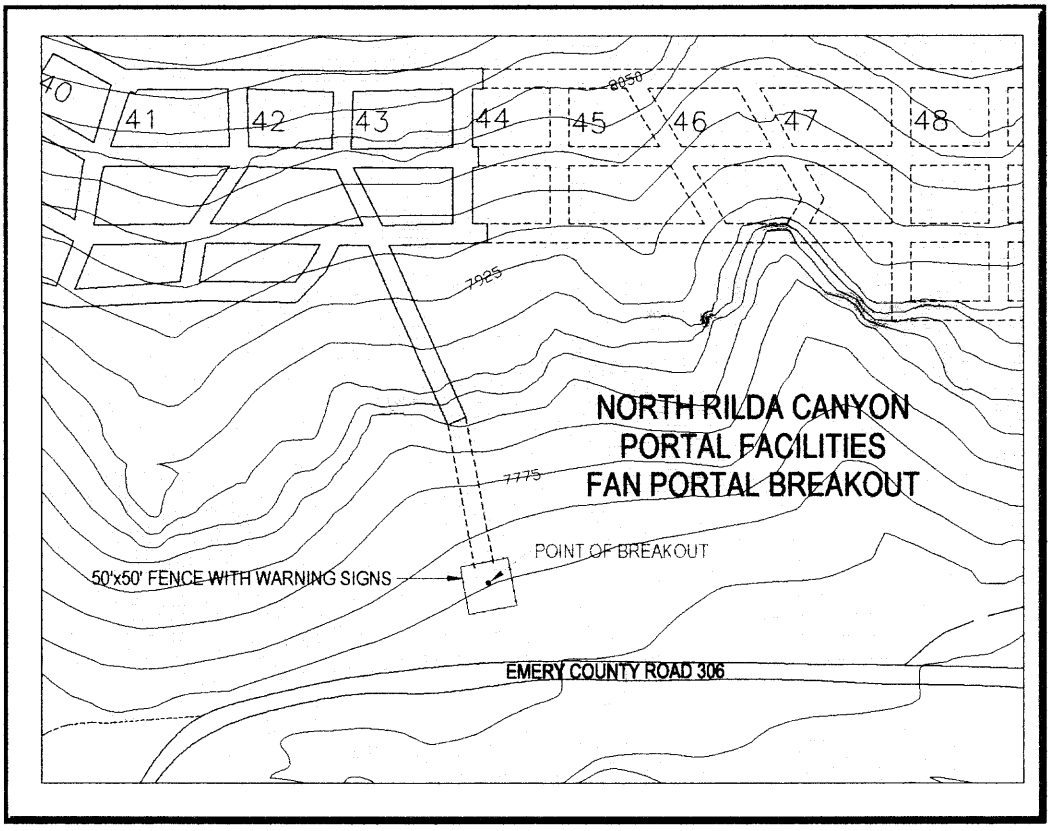
R645-301-232.500 Subsoil Segregation

After removing and storing the topsoil, the underlying strata of soil will be removed, segregated, and stockpiled separately. There is an estimated 97,300 cubic yards of subsoil that will be utilized for reclamation (refer to Engineering chapter, R645-301-553: Backfilling and Grading for cut/fill construction estimates). Subsoil storage is located approximately 0.5 miles below the portal facilities in Rominger Canyon. Refer to Maps 200-1, 200-2, Engineering Section 500-3, 500-4 sheets 3 fo 5 and 4 of 5, to review the soil storage locations. Approximately 3.0 acres will be disturbed for subsoil storage including access to the site. A portion (approximately 1.4 acres) of this location was previously disturbed by historic coal mining activities and reclaimed by AML during reclamation of the Rominger and Leroy mines in 1988. Portals were not backfilled during the AML project. Concrete block stoppings were installed to prevent access to the mines. As discussed above, brush and boulders will be cleared from the site before storing soil. Boulders larger than 1.0 foot in diameter will be segregated and stockpiled and utilized for reclamation. A colorful marker fabric will be installed over the entire site to identify the predisturbed surface.

R645-301-232.600 Timing

To alleviate ventilation concerns at the Deer Creek Mine, the Bureau of Land Management (BLM) during a telephone conference on August 23, 2005, recommended that Energy West submit an R_2P_2 request to allow the continuation of the Rilda Canyon fan portal rock slope development to intercept the outcrop in Rilda Canyon. Approving the development of a portal from within the mine to the surface is consistent with the stipulations outlined in the Federal Lease U-06039 (Special Stipulation #14). In an email received by the BLM, the Manti LaSal Forest Supervisor agreed to allow Energy West to develop the fan portal breakout as long as no equipment is used on the surface and the public is protected from potential harm, no permanent structures will be constructed until Energy West receives approval from the Assistant Secretary of Land and Minerals at the Department of Interior. During the phone conference, OSM personnel indicted the proposed action is not considered mine plan modification.

The area affected by the portal development, approximately 30x40 feet (0.028 acres, refer to R645-301-200: Figure 1). As outlined in the BLM R_2P_2 request, Energy West will follow the outlined steps:



R645-301-200: Figure 1 North Rilda Canyon Portal Facilities - Point of Breakout

1. All rock slope development will be from within the mine to the outcrop of the Star Point Sandstone.

2) Colluvial material encountered at the outcrop interface will be stored within the mine.

3) During the final breakout process, mine personnel will be stationed at the outcrop to warn/prevent unwarranted access and to monitor the area for any unsafe condition(s).

4) If any rocks are dislodged as a result of the portal development which impact public safety, Energy West will immediately rectify the situation.

5) Warning signs will be installed along Emery County Road #306 warn the public of the portal development process.
6) A temporary fence will be erected around the breakout area to prevent unwarranted access.
7) Silt fence will be erected downslope of the portal breakout to prevent additional contribution of suspended solids to the receiving stream.
8) Warning signs will be installed along the exterior of the fence, including; NO SMOKING, NO UNAUTHORIZED PERSONNEL BEYOND THIS POINT, DANGER.
9) No equipment will be used on the surface except for hand tools to remove material to prevent unsafe conditions.
10) All slopes, ribs or faces of the opening or unstable areas in the surrounding area will be scaled, secured and supported before completion.
11) The exiting brow of the mine opening will be secured and the exit of the mine opening will be posted off with timber and fencing upon completion of the mine development.
12) No permanent structures will be constructed until Energy West receives approval from the Assistant Secretary of Land and Minerals at the Department of Interior

Development of the fan portal from within the mine is consistent with the engineering plans outlined in the permit. Exception to the plan is soil stripping prior to development of the portals. As discussed earlier, development of the fan portal from within the mine will involve an area approximately 30 x 40 feet, or 0.028 acres. During development of the fan portal, all material extracted will be stored within the mine. The exact location of the Star Point Sandstone and colluvial interface is unknown, thereby estimating the subsoil quantity is not possible. Energy West will take all precautions necessary to minimize disruption to the surface topography. The amount of topsoil stored within the mine, assuming a two foot salvage depth, would be approximately 89 yd^3. Depending on the conditions of the rock interface, if Energy West is unable to segregate the soil, final reclamation of this area will not be compromised. Energy West commits to removing the extracted soil material temporarily stored in the mine and placing it in the approved soil storage area as outlined in Soils Section upon approval from the Assistant Secretary of Land and Minerals at the Department of Interior.
All soil resource material to be removed and stockpiled will be salvaged prior to significant surface disturbance. Vegetation and boulders that might interfere with topsoil salvage will be removed prior to salvaging the soil. Boulders encountered during site development will be stored within the salvage soil or in boulder piles and randomly scattered upon final

reclamation to restore the natural appearance of the area and provide habitat for wildlife and microclimate for plants.

R645-301-233 Topsoil Substitutes and Supplements

Inspections of the disturbed areas of Rilda Canyon related to the historic coal mining activites have shown that the regraded colluvium materials have provided a suitable growth medium for sustaining native vegetation on previously disturbed surfaces. Even without replacement of the topsoil material, existing revegetation at the sites indicate that excavated, regraded materials are capable of successfully supporting vegetation that existed prior to disturbance with minimal surface preparation. The revegetation has occurred without the addition of mulch, seed, nutrients or supplements and without the installation of erosion protection. Based on the soil surveys conducted for the Rilda Canyon Portal Facilities, substitute topsoil will not be required for final reclamation of the mine site.

R645-301-234 Topsoil Storage

As required under R645-301-234, permanent stockpiles of topsoil and subsoil, for use during final reclamation, will be placed on a stable surface within the permit area where it will not be subject to significant disturbance, wind erosion, or compaction during life of mine. The stockpile locations are considered ASCA areas where BTCA technique's will be used for the treatment of runoff water from the area. Refer to R645-301-700 for details concerning ASCA areas. The stockpile locations are presented on Maps 200-1, 200-2, Engineering Section Maps 500-3, 500-4 sheets 3 of 4. The topsoil storage pile site will occupy approximately 1.1 acres. Stockpile slopes will not exceed 2:1. The soil depth within the topsoil stockpile will range from 0 to 40.0 feet, however, the average depth will be 20.0 feet. Depths in the subsoil/construction fill pile will range from 0 to 70.0 feet with an average depth of 40.0 feet. The conceptual piles are designed with a capacity as follows; 1) topsoil - 25,000 cubic yards and 2) subsoil/construction fill - 107,000 cubic yards of soil material. Slopes will be irregular, pocked, mulched and covered with approximately 6.0 inches of grubbed vegetation to help retain precipitation and minimize runoff.

Revegetation of the topsoil storage pile will be with an effective cover sagebrush/grass (refer to R645-301-300: Biology Table 300-8 for seed mix). The stockpile will not be disturbed prior to final topsoil redistribution without prior approval by the Division. According to Neinhaus, 2004, the quality of the subsoil (below 2 feet depth) varies little from the top 2 feet of material. Revegetation of the subsoil storage piles will be identical to the topsoil pile.

The stockpiles will be a BCTA area, with runoff being treated by a combination of irregular surface, pocking, mulch, grubbed vegetation material, vegetation, and silt fencing. Diversion ditches/culverts will be placed above the stockpiles to divert undisturbed drainage to culverts or away from and past the stockpile area. The pile surfaces will be roughened and pocked to minimize surface runoff. A silt fence will be placed along the base of the stockpiles to treat any runoff from the pile surface and to retain material within the stockpile area. A perimeter fence will be installed to control grazing.

R645-301-240 RECLAMATION PLAN

As mining activities at the Deer Creek Mine ceases and the utilization of the surface facilities is no longer needed, land reclamation processes will commence. Reclamation of all disturbed areas will follow the requirements of R645-301. The Soils Reclamation plan for the Rilda Canyon Portal Facilities is detailed below.

R645-301-242 Soil Redistribution

At the time of reclamation of the Rilda Canyon Portal Facilities, PacifiCorp will reduce the footprint of the Portal Facility Area disturbed area by redistributing soil material to be consistent with the postmining land use of the area. This will be accomplished by cutting and/or filling the areas disturbed by mining activities. Prior to initiating regrading process at the facility area, the entire area will ripped with a dozer to a depth of approximately two feet to reduce soil compaction.

Soil will be removed from the soil storage sites until excavation encounters the indicator fabric placed during development of the site. Topsoil materials that were previously stockpiled will be redistributed in a uniform thickness on the scarified, postmining regraded subsoil surface. The material will be hauled to the regraded area by dump truck. Track-mounted equipment will be used to recontour the disturbed area. Refer to R645-301-500: Engineering where a detailed plan for recontouring the area is presented. Travel over redistributed soil material will be minimized to the extent possible. This will be accomplished by reclaiming the mine in specific sequences, utilizing existing roads and travelways to live haul soil material. It is important to understand that while reclamation will be specifically sequenced, various stages will be occurring simultaneously throughout the site. The regraded surface will be staked to indicate the depth of topsoil to be applied. After the topsoil has been spread and leveled, it will be pocked/scarified along contour, unless prohibited by slope configuration or grade. At this time other additives would be incorporated into the soil if deemed necessary by soil sampling. Seeding and mulching will be completed soon after redistribution of the topsoil to minimize wind and water erosion. A volume of approximately 19,700 cubic yards would be needed to cover the regraded mine site

(6.1 acres, excludes Emery County Road #306 and the sediment pond area) with 24.0 inches of topsoil material. Actual soil depth at the time of reclamation will be dependent upon the soil salvaged during construction of the facilities. The sediment pond area, approximately 1.0 acre, will be regraded and covered with available soil salvaged from this area. As discussed in R645-301-553: Backfilling and Grading, there is approximately 6,000 cubic yards of excess soil material for reclamation. If additional soil is available, it will be used to create mounds, extrusions, etc. to provide a natural aesthetic appearance to the reclaimed slopes.

The soil storage sites will be reclaimed by first removing the indicator fabric, then on slopes greater than 2H:1V, the entire surface will be treated with anionic polyacrylamide (PAM). On slopes less than 2H:1V, post pile bulk density data will be compared to baseline data, if the density values exceed the baseline by twenty-five percent, the entire surface will be ripped with a dozer to the lowest attainable depth allowed by field conditions. Prior to the implementation, PacifiCorp will consult with Division and Forest Service personnel. Boulders will be randomly placed on the surface similar to pre-existing conditions, estimated at approximately five percent coverage. Revegetation of the soil storage piles will be with an effective vegetative cover (refer to R645-301-300: Biology Tables 300-7 and 300-8 for seed mixtures).

R645-301-243 Soil Nutrients and Amendments

Nutrients and soil amendments will be applied to the redistributed material when deemed necessary by assessment of the laboratory analyses. Laboratory analyses for the redistributed topsoil will be compared to soil samples collected from the baseline studies. Nutrients and amendments will be added, to make the redistributed soil similar to the undisturbed soils and aid in establishment of the vegetative cover. The nutrients can be added by hydroseeding, by broadcasting or by drilling. If the nutrients and amendments are broadcast to the ground surface they will be intermixed with the soil during placement.

The topsoil will be sampled as it is being put in place as described in R645-301-231.300. Random grab samples will be collected from the regraded surface during redistribution of the topsoil. Three composite samples will be collected for each of the areas to be topsoiled: mine facility and sediment pond areas. Soil nutrients and amendments will be added as dictated by the results of the tests in comparison with baseline sampling results.

To increase the fertility of the topsoil during reclamation, PacifiCorp will enhance the establishment of locally adapted microrhizomes by mixing 1 cubic foot of undisturbed topsoil from areas adjacent to the disturbed area to the hydroseeder prior to application. The supernatant from this slurry mixture will be applied to regraded topsoil during the reclamation process.

R645-301-244 Soil Stabilization

Various sized rocks and boulders (litter) will be randomly placed on slopes of reclaimed areas to control slope slippage, promote microhabitats, and provide a natural aesthetic appearance. Where it is deemed necessary, especially on slopes greater than 20%, a soil tackifier (refer to R645-301-300: Biology, Seeding Techniques) will be incorporated into the reclamation process to stabilize soil material.

Rills and gullies, which develop in areas that have been regraded and topsoiled and which either; 1) disrupts the approved postmining land use or the reestablishment of the vegetative cover, or 2) causes or contributes to the violation of water quality standards for receiving streams will be filled, regraded, or otherwise stabilized.

R645-301-250 PERFORMANCE STANDARDS

All topsoil and subsoil will be removed , maintained and redistributed according to the plan given under R645-301-230 and R645-301-240.

All stockpiled topsoil and subsoil will be located, maintained and redistributed according to plans given under R645-301-230 and R645-301-240.

R645-302-200 SPECIAL CATEGORIES OF MINING

PacifiCorp is proposing a new mine site facility in Rilda Canyon located approximately 8 miles west of Huntington, Utah. Construction of the mine site would involve salvage and protection of topsoil resources prior to construction of the mine pads and site facilities. Most of the site would have topsoil salvaged and stockpiled with traditional methodologies. However, PacifiCorp proposing to use an experimental practice to protect the existing topsoil resources with the use of colorful marker fabric to identify the predisturbed topography. This experimental practice would be used on approximately 3.0 acres of the 13.1 acres proposed disturbed area. Approximately 1.4 acres of the 3.0 acre site was previously disturbed by historic coal mining activites (refer to Maps 200-1 and 200-2). Details of the proposed experimental practice are provided as the Plan For Experimental Practice : In-Place Topsoil Storage, which follows the specific regulations regarding experimental practices addressed below.

R645-302-210 EXPERIMENTAL PRACTICES MINING

Experimental practices provide a variance from environmental protection performance standards of the Act, of R645-301, and the State Program for experimental or research purposes, or to allow an alternative postmining land use, and may be undertaken if they are approved by the Division and the Office and if they are incorporated in a permit or permit change issued in accordance with the requirements of R645-200, R645-300, R645-301, R645-302-100 through R645-302-280, R645-302-310, R645-320, or R645-303.

R645-302-212 An application for an experimental practice will contain descriptions, maps, plans and data which show:

R645-302-212.100 The nature of the experimental practice, including a description of the performance standards for which variances are requested, the duration of the experimental practice, and any special monitoring which will be conducted;

A variance for the performance standard of the Utah Regs (R645-301-232.100) is being applied for under this experimental practice proposal. This regulation involves topsoil removal and segregation. PacifiCorp is proposing to store and protect topsoil in-place in the subsoil/construction fill storage area. This would involve placing a colorful fabric marker over the intact soil horizons and then filling over the fabric marker to create a soil storage pile. The fill material would contain no toxic or hazardous material. The fill material has

been tested for suitability guidelines (refer to Volume 11 Appendix Volume: Soils - Appendix A & B).

The fill material would remain in-place for the duration of the mining operation, about 17 years, until final reclamation of the mine facility area. During final reclamation, the soil material will be removed and hauled off-site until the marker fabric layer has been exposed. Next, the marker fabric will be removed to expose the original soil surface. The surface would be treated and then revegetated (refer to R645-301-240 Reclamation Plan for more detail on the reclaiming the Experimental Practice areas).

R645-302-212.200 How use of the experimental practice encourages advances in mining and reclamation technology or allows a postmining land use for industrial, commercial, residential, or public use (including recreation facilities) on an experimental basis;

This experimental practice is being proposed to test the feasibility of in-place storage of existing topsoil materials in areas where, 1) original, pre-existing soil structure was disturbed by historical coal mining, and reclaimed, and; 2) native soils lie on steep slopes. The experimental practice will increase the stability of the reclaimed slopes by retaining the original soil profile intact and by treatment with anionic polyacrylamide (PAM) during reclamaitno to enhance soil aggregate stability and increase water infiltration into the profile.

The area being proposed for the soil storage without removal of existing topsoil is limited in areal extent, approximately 3.0 acres (total area for the subsoil/construction fill). Of the 3.0 acres proposed for the experimental practice, 1.4 acres has been previously disturbed by coal mining activities. In Rominger Mine area, the side slopes are rough, steep, irregular with limited soil resources. Soil recovery and replacement from the side slopes would be difficult due to the topography and formational outcrops. Based on visual observations, it was determined that the materials support a variety of vegetation and are relatively stable in the present configuration. Leaving the soil material intact and in place appears to be the most suitable means of protecting the material and providing the best storage for achieving successful revegetation and the ultimate stability of the slopes in this area. Refer to Plan for Experimental Practice : In-Place Topsoil Storage, Mine Facility Construction Plan - Topsoil Salvage and Storage for a description of the in-place topsoil protection measures.

R645-302-212.300 That the experimental practice:

R645-302-212.310 Is potentially more, or at least as, environmentally protective, during and after coal mining and reclamation operations, as would otherwise be required by standards promulgated under R645-301 and R645-302, and

The soil would be protected by the layer of indictor fabric and soil material overlying it. It would be similar to burial within the middle of a large soil stockpile, which it would have been placed in otherwise. By leaving the soil in place, the environment will be better protected at the time of final reclamation because of the increased stability of the soil material resulting from the rocks, roots and natural soil cementation existing in the original soil horizons. Refer to Plan for Experimental Practice : In-Place Topsoil Storage, Mine Facility Construction Plan - Topsoil Salvage and Storage for a description of the in-place topsoil protection measures.

R645-302-212.320 Will not reduce the protection afforded public health and safety below that provided by the requirements of R645-301 and R645-302, and

There will be no diminishment of public health and safety based on the proposed experimental practice.

R645-302-212.400 That the applicant will conduct monitoring of the effects of the experimental practice. The monitoring program will ensure the collection, analysis, and reporting of reliable data that are sufficient to enable the Division and the Office to:

R645-302-212.410 Evaluate the effectiveness of the experimental practice; and

PacifiCorp has demonstrated the success of the experimental practice in previously completed reclamation projects. Buried soil horizons were reclaimed successfully at the Cottonwood Canyon Fan Portal and the Des-Bee-Dove mines under less desirable conditions than the proposed project in Rominger Mine area.

Example of Similar Practice: During the development of the Cottonwood Fan Portal (refer to Cottonwood Permit Volume 11), prior to the State Program, topsoil and subsoil excavated from the site were placed in storage piles on slopes 2H:1V or greater without removing the existing resources. PacifiCorp reclaimed this site in 1998. Soil resources were reclaimed from the storage sites back to approximate original contour. Vegetation has re-established successfully even with area receiving less than normal precipitation (personal communication with Patrick Collins, March 2005).

R645-302-212.420 Identify, at the earliest possible time, potential risk to the environment and public health and safety which may be caused by the experimental practice during and after coal mining and reclamation operations.

After the subsoil/construction fill is removed and the buried soils reclaimed, vegetation monitoring will be utilized to determine the success of the experimental practice (refer to PLAN FOR EXPERIMENTAL PRACTICE: IN-PLACE TOPSOIL STORAGE - 6) Experimental Practice Monitoring for complete details related to monitoring the effectiveness of the experimental practice). It is important to note that only 1.6 acres of the experimental practice area has not been previously disturbed. Potential risk of the experimental practice is minimal due to the limited area and the type of soils involved.

R645-302-213 Applications for experimental practices will comply with the public notice requirements of R645-300-120.

PacifiCorp will included, in the administrative completeness public notice, a statement indicating that an experimental practice is being requested and identification of the regulation for which a variance is being sought.

R645-302-214 No application for an experimental practice under R645-302-210 will be approved until the Division first finds in writing and the Office of Surface Mining then concurs that:

R645-302-214.100 The experimental practice encourages advances in coal mining and reclamation technology or allows a postmining land use for industrial, commercial, residential, or public use (including recreational facilities) on an experimental basis;

PacifiCorp, with the use of the experimental practice plans to demonstrate that in certain situations, soil storage in-place offers the same degree of protection for the topsoil materials, reduces the amount of disturbed area, increases slope stability and decreases sediment production while providing a natural looking land surface. The proposal will provide information on compaction associated with large stockpiles and will evaluate the use of PAM as a reclamation treatment on steep slopes.

R645-302-214.200 The experimental practice is potentially more, or at least as, environmentally protective, during and after coal mining and reclamation operations, as would otherwise be required by standards promulgated under R645-301 and R645-302;

Storage of the topsoil in place under the fill material would be similar to storage of the topsoil in the lower portion of a large topsoil stockpile. The environmental benefit derived from this proposed experimental practice would be that the soil structure and integrity would remain intact and will be present when reclamation starts. Having the rocks, roots and soil cohesiveness present as vegetation is initially being re-established should substantially reduce the potential for erosion and slope failure plus reduce the time it takes to re-establish vegetative cover.

R645-302-214.300 The coal mining and reclamation operations approved for a particular land use or other purpose are not larger or more numerous than necessary to determine the effectiveness and economic feasibility of the experimental practice; and

The experimental practice is being proposed on approximately 3.0 acres. This is only that area which lies in and adjacent to the Rilda Canyon Facilities which would be filled in during construction activities. The majority of the area containing topsoil would have the topsoil removed and stockpiled prior to construction of the proposed mine site. The topsoil pile is located below the reclaimed Helco Mine portals. The stockpiled topsoil would be stored until final reclamation when, after final slope regrading to approximate original contour, it would be placed back over the regraded surface areas from which it was removed.

The experimental practice is being proposed primarily for that area that was previously disturbed historical mining activities and where topsoil is limited and removal, storage and replacement would be impractical. See Plan for Experimental Practice : In-Place Topsoil Storage, Mine Facility Construction Plan - Topsoil Salvage and Storage for details concerning the mine facility area.

R645-302-214.400 The experimental practice does not reduce the protection afforded public health and safety below that provided by standards promulgated under R645-301 and R645-302.

The proposed experimental practice should have no negative effect on public health and safety. It should, if anything, increase the stability of the reclaimed slopes thus assisting in providing safe and stable slopes.

R645-302-215 Experimental practices granting variances from the special environmental protection performance standards of Sections 515 and 516 of the Federal Act applicable to prime farmlands will be approved only after consultation with the SCS.

No prime farmlands have been identified in the Rilda Canyon drainage system (refer to Volume 11 Appendix Volume: Soils - Appendix C).

R645-302-216 Each person undertaking an experimental practice will conduct the periodic monitoring, recording and reporting program set forth in the application, and will satisfy such additional requirements as the Division or the Office may impose to ensure protection of the public health and safety and the environment.

The experimental practice monitoring includes 1) measurements of bulk density testing of the in-place soils before and after burial to advance understanding of the depth of compaction created by large stockpiles on surface soils; and 2) annual evaluation after reclamation of reclaimed slopes treated with anionic polyacrylamide (PAM) to enhance stability. Refer to Plan for Experimental Practice for details.

R645-302-217 Each experimental practice will be reviewed by the Division at a frequency set forth in the approved permit, but no less frequently than every two and one-half years. After review, the Division may require such reasonable modifications of the experimental practice as are necessary to ensure that the activities fully protect the environment and the public health and safety. Copies of the decision of the Division will be sent to the permittee and will be subject to the provisions for administrative and judicial review of R645-300-200.

PacifiCorp will comply with the directions or revisions required as a result of the Division reviews.

R645-302-218 Revisions or amendments to an experimental practice will be processed in accordance with the requirements of R645-303-220 and approved by the Division. Any revisions which propose significant alterations in the experimental practice will, at a minimum, be subject to notice, hearing, and public participation requirements of R645-300-120 and concurrence by the Office. Revisions that do not propose significant alterations in the experimental practice will not require concurrence by the Office.

Revisions and amendments submitted to the Division by PacifiCorp would be processed in the appropriate manner.

PLAN FOR EXPERIMENTAL PRACTICE: IN-PLACE TOPSOIL STORAGE

The following is the descriptive plan for the proposed experimental practice of in-place topsoil storage in a portion of the Rilda Canyon Portal Facilites. It is organized as follows:

1) General Description of the Rilda Canyon Portal Facility Area and Surface Facilities

2) General Description of the Topsoil Resources in the Minesite Area

3) Mine Facility Construction Plan - Topsoil Salvage and Storage

4) Rilda Canyon Portal Facility Reclamation Plan

5) Reclamation of the Experimental Practice Area

6) Experimental Practice Monitoring

1) General Description of the Rilda Canyon Portal Facility Area and Surface Facilities

The Rilda Canyon Portal Facility will be located in Rilda Canyon below the intersection of the right and left forks where the Hiawatha coal seam outcrops to the surface. The elevation of the minesite ranges from 7725' at the west end to 7600' at the upper (east) end of the mine yard. Because of the narrowness of the canyon in this area, surface facilities will be confined to a narrow strip along the bottom of the canyon north of Rilda Creek. Suitable surface area for the minesite will be created by constructing a series of earthen pads adjacent to the canyon bottom. This will be accomplished by excavating cuts and by leveling out the areas adjacent to the bottom of the canyon drainage. The average gradient of the minesite area is approximately 7%. Therefore, the mine pads will be constructed up through the canyon in a stair step manner. Each individual pad level will be dedicated to a specific function as part of the overall minesite operation. A access road will connect the various pad levels with one another. The entire mine yard area would be approximately 9.0 acres. The proposed minesite is located below where the main canyon branches into two forks.

Located within the main canyon will be the mine office, parking lot, and mine portals. The Emery County public road #306, which provides access to the minesite, will terminate at the east end of the mineyard.

2) General Description of the Topsoil Resources in the Minesite Area

Detailed soil surveys were conducted at the minesite area by Dan Larsen and Jim Nyenhuis, during the 2003-04. These surveys were conducted in close consultation with DOGM's technical staff. As a result of these surveys, the topsoil resources in this area have been extensively defined in terms of soil types, depth and areal extents. The results of these site specific surveys are in close agreement with the regional surveys conducted by the National Resource Conservation Service and previous surveys completed in Rilda Canyon.

Soil types of the proposed disturbed area are identified on maps located in Volume 11 Appendix Volume - Soils: Appendix A 2003-4 EIS report: Sediment Pond Area and Appendix B 2004 MT. NEBO Report: Mine Facility and Soil Storage areas). During 2003 and 2004, Mr. Dan Larsen, Soil Scientist from EIS and Mr. Jim Nyenhuis from MT. NEBO conducted field mapping of the proposed mine facility, sediment pond and soil storage areas. Soil profiles were exposed either by hand tools or a backhoe to examine the full soil sequence at various locations around the proposed disturbed area. Soil sampling and subsequent analyses were used to determine suitability for reclamation purposes. Soils data from previous investigations conducted in the 1990's, as well as aerial photography, and detailed site investigations were used to define the boundaries of each map unit. This information was then used to prepare a detailed map unit description for each of the mapping units delineated during the Order One Survey at the mine site sediment pond and soil storage areas (refer to Map 200-1).

Five map units were within the study area:

*	Map Unit A	Alluvium Bottomland Soils
*	Map Unit B	Steep Rocky Slopes, Haplustepts, Ustorthents
*	Map Unit E	Colluvial Toeslopes, Bench (referred to Map Unit C by EIS: Appendix A)
*	Map Unit F	Steep Facing Slopes; Cryoborolls
*	Map Unit D	D Disturbed Land, Soil, Coal, Stones, Fill Material DR Disturbed Land (Old Mine Access Road) DF Disturbed Fan Site (Leroy Portal Area) RD Rilda Canyon Road (Emery County #306)

Map Unit E (Colluvial Toeslopes, Bench) is the dominant map unit within the proposed disturbed area related to the facilities. As stated in Volume 11 Appendix Volume - Soils: Appendix B, Map Unit E occupies a gently sloping alluvial fan toeslope-bench situated between the Star Point Sandstone outcrop located near the base of the steep mountain sideslope and the alluvial bottomland of Rilda Creek to the south. Map Unit E most closely correlates to the Osote soil series. Osote is a very deep, well drained, slowly permeable soil forming in colluvium and slopewash alluvium from sandstone and shale materials. Osote is slightly to strongly calcareous. The surface layer meets criteria for a millic epipedon. Osote is classified as a "Fine-loamy, mixed, superactive, frigid Typic Calciustoll". Osote typically has a brown (10YR 4/3, dry) sandy loam to loam surface layer about 9 to 16 inches thick, follow by a subsoil "Bk" calcic horizon, brown to light yellow brown (10YR 5/3 to 10YR 6/4, dry) strongly calcareous sandy loam, sandy clay loam, or loam to depth of 20 to 38 inches. The underlying "C" horizon substratum is a yellowish brown to light brown (10YR 5/4 to 10YR 6/4) sandy loam, sandy clay loam, or loam to a depth of 60 inches on the north side of Map Unit E, and exceeding 84 inches on the south side of the map unit. For a full description of the map units, laboratory results, evaluation of soil suitablility and topsoil volume refer to Volume 11 Appendix Volume - Soils: Appendix B.

3) Mine Facility Construction Plan - Topsoil Salvage and Storage

A detailed discussion of the reclamation plan for the Rilda Canyon Portal Facility is presented in the Engineering Section. The following is a summary of the detailed discussion in the Engineering Section. It is also important to remember that although the reclamation tasks are listed below in a

consecutive sequence, it is likely that various stages of these events may be occurring simultaneously in different parts of the mine yard during reclamation.

As stated earlier, the Rilda Canyon mine site will be constructed as a series of level pads located adjacent to Rilda Creek. In some places within the facilities, the level surface areas of the pads will be constructed by excavating the existing topography. In other areas, the pads will be constructed by filling the lower parts of the canyon using existing cut material. As detailed previously, all areas to be disturbed at any time during the construction, operation, or reclamation of the mine and its surface facilities will have the available topsoil (i.e. plant growth medium) separately removed and segregated from other colluvial material. The topsoil will be stockpiled in separate pile in the topsoil storage area for use during reclamation. It should be noted that the proposed experimental practice of protecting the topsoil in place with indicator fabric would only apply to the subsoil/construction fill area of about 3.0 acres.

A topsoil protection plan has been designed for the Rilda Canyon Portal Facilities minesite which incorporates protection of soil resources both by salvaging/stockpiling and by the experimental practice of protecting the in-place soil with a layer of indicator fabric. Various techniques will be utilized depending on the specific area of the mine yard. There a four different scenarios for topsoil salvage.

They include:

Mine Facility Area:

In areas that contain topsoil and are proposed to be excavated during construction of the mine yard, the existing topsoil will first be salvaged and stockpiled. This topsoil material will be excavated with a backhoe, then trucked to the topsoil storage pile where it will be stockpiled and protected during the life of the mine. Based on soil, geophysical and geotechnical surveys and knowledge of the site, it is estimated that at least 19,700 cubic yards of suitable topsoil material can be recovered and stockpiled during construction activities. The upper 24 inches of recommended topsoil salvage will include portions of the A and B horizons (refer to Volume 11 Appendix Volume - Soils: Appendix A & B). This volume was estimated utilizing digitized based maps where the area is multiplied by the salvage depth of 24 inches. In addition to the topsoil, approximately 97,300 cubic yards of subsoil/construction fill will be salvaged consisting of a combination of B and C soil horizons. Salvaging of topsoil in these areas would be accomplished under the on-site direction of a qualified soil scientist.

Sediment Pond Area:

Soil salvaged from this area will be used to enhance the previously AML reclaimed area, excess soil material will be lived hauled to the AML sites or segregated and stored as recommended by the qualified soil scientist monitoring the soil removal process. Re-exposed A & B horizons located below the coal waste will be sampled to determine final placement as topsoil for the AML reclaimed area or for storage in either the topsoil or subsoil/construction storage piles. Estimates on soil resources are based on the existence of 24 inches of native soil horizons below the buried coal waste. Disturbed soil with coal in the profile will not be salvaged. Coal waste encountered during soil salvaging and construction of the sediment pond will be segregated separately and transported to the Deer Creek Waste Rock Site for disposal or utilized for power generation if coal quality allows.

Topsoil Storage Area:

Construction of the topsoil storage site will begin by removing any large, existing vegetation and developing a diversion ditch to channel natural undisturbed drainage away from the stockpile location. Existing soil from the storage will not be removed. A colorful marker fabric one foot in width will be installed on ten foot centers to identify the predisturbed surface. Topsoil will be hauled from the mine facility and sediment pond areas with end dump trucks to develop the storage pile. Once a topsoil stockpile has been developed from material removed during construction of the proposed mine site, it will remain in place until final reclamation occurs. A field fence will constructed around the topsoil pile to protect it from grazing. In addition to the perimeter fence, silt fencing will be installed at the toe of the pile to prevent loss of soil due to erosion. Maintenance of the topsoil pile, during the life of the mining operation, will consist of; seeding new material added to the stockpile, reseeding where erosion or other elements have caused a loss of vegetation, and maintenance of the ditches, culverts and silt fence.

Subsoil/construction Fill - Experimental Practice :

Prior to development of the subsoil storage site, PacifiCorp will collect baseline compaction data (lbs/cu ft) at one foot intervals down to four feet or bedrock in the undisturbed and disturbed soils of Rominger Canyon. PacifiCorp will collect the samples as described in the bulk density section of "Methods of Soil Analysis, Part 4 - Physical Methods, Soil Science Society of America". In addition, PacifiCorp will compare geophysical methods to analyze in-place density values to the Part 4 - Physical Methods procedures mentioned above. If these values are equivalent, baseline compaction data will be collected to a depth of six feet. This data will then be compared to the post reclamation information to reveal the level of compaction which has occurred, and indicate the type

of remediation that will be implemented. Remediation methods will be approved by the Division and Forest Service prior to implementation.

After the removal of the topsoil, subsoil/construction fill will be excavated and hauled from the mine and sediment pond areas and segregated in separate area (Rominger Mine area) to develop the subsoil storage pile. Construction of the subsoil/construction storage site will begin by removing any large, existing vegetation and installing a culvert to channel natural undisturbed drainage away from the stockpile location. Installation of the bypass culvert will accomplished by trackhoe(s), moving only the material necessary to install the culvert. Existing soil from the storage area will not be removed. A soil tackifier will applied to the existing surface at a rate recommended by the supplier. Next, a colorful marker fabric will be installed over the entire surface to identify the predisturbed surface. Once a subsoil/construction stockpile has been developed from material removed during construction of the proposed mine site, it will remain in place until final reclamation occurs. A field fence will constructed at the toe of the slope of the storage pile to protect it from grazing. In addition to the perimeter fence, silt fencing will be installed at the toe of the pile to prevent loss of soil due to erosion. Maintenance of the soil pile, during the life of the mining operation, will consist of; 1) seeding new material added to the stockpile, 2) reseeding where erosion or other elements have caused a loss of vegetation, and 3) maintenance of the ditches, culverts and silt fences will comply to R645-301-742-300.

The regulation for which PacifiCorp is proposing to use an experimental practice is R645-301-232 Topsoil and Subsoil Removal. Rather than removing the topsoil from the subsoil/construction fill area, PacifiCorp proposes to protect the soil resource in-place by covering the soil surface with a indicator fabric, then placing fill material over the fabric. At the time of reclamation, the fill material will be removed. The fabric will then be removed, exposing the original, intact soil surface.

In areas where topsoil is to be protected in-place (about 3.0 acres of the 13.1 acre site), fabric will be used to provide a protective barrier between the existing soil and the fill material which will be used to construct the subsoil storage area. The fill material which will be placed on top of the fabric will be hauled in by trucks from the facility area. The fill material itself is a suitable substitute topsoil medium. It does not contain any toxic or unsuitable material and meets the soil suitability recommended by the DOGM guidelines.

4) Rilda Canyon Portal Facility Reclamation Plan

Reclamation of the minesite will begin once all surface facilities and structures have been demolished and removed. The cut areas will be backfilled and regraded using fill material taken from the subsoil storage area. During construction, material available from the cut slopes was used as fill and was placed into the adjacent pad areas or stored in the subsoil storage pile. During

reclamation, the process will be reversed. Fill will be placed in the cuts in 18"-24" lifts and compacted sufficiently to achieve adequate structural stability. After the cut slopes have been re-contoured and re-topsoiled they will be revegetated.

Reclamation of the mine facility area will proceed as outlined below:

In areas where topsoil previously existed but was removed prior to construction the following method will be used.

1) The entire area will be ripped with a dozer to a depth of approximately two feet to reduce soil compaction.

2) Fill will be removed or cut slopes backfilled until approximate original contour is achieved.

3) Topsoil will be replaced in each area where it previously existed.

4) A weed-free alfalfa hay mulch will be blown over the topsoiled surface at a rate of 2,000 pounds per acre. Fertilizer, if determined necessary by soil testing, would also be applied at this time.

5) The surface will be gouged with irregularly shaped depressions approximately 18" deep x 24" diameter.

6) The appropriate seed mix will be either broadcast or hydroseeded on the area at the rate specified in the Biology section (refer to Biology Section R645-301-341 Revegetation: Description pf Revegetation Operations. The topsoil storage area will be seeded with the White Fir/Aspen seedmix (Biology Section: Table 300-10)and subsoil storage area will be seeded with the Pinyon-Juniper/Mountain Brush seedmix (Biology Section Table 300-8).

7) A wood fiber mulch will be applied to the surface at a rate of 1500 pounds per acre. A tackifier will be used in areas where the slope exceeds 2 horizontal and 1 vertical.

8) If root stock is listed in the seed mix, the containerized plants will be planted at the rate specified in the seed list table, one year after seeding.

Revegetative efforts (including regrading, topsoiling, fertilizing and mulching) will be conducted in the fall (late September - October).

Reseeding will be accomplished by hydroseeding or broadcast seeding the large areas during final reclamation. Hydroseeding will be completed by applying a small amount of mulch with the seed mix to mark the area of coverage during application. Steeper areas of the mine yard, such as the experimental practice area, will be tackified to provide erosion protection.

Rills and gullies of an excessive nature, which form on regraded and retopsoiled areas and disrupt the approved postmining land use or cause or contribute to a violation of water quality standards for receiving streams, will be filled, regraded or stabilized. The area will then be reseeded.

Pesticides and herbicides will be used only if a problem is identified and spraying is deemed necessary to control damage to reclamation. Using weed-free straw/hay will reduce the potential for noxious weeds to become a problem. Pest control measures to be utilized would depend on what type of problem exists.

Revegetation success will be judged on the effectiveness of the vegetation for the approved postmining land use. The sampling techniques for measuring success and methods identified in DOGM's "Vegetation Information and Monitoring Guidelines" will be referenced during the post revegetation evaluation. Annual monitoring will be included as part of the annual report submitted to DOGM.

Based on the information available from the vegetation survey on-site, it appears that reclamation at this site is feasible. Native species have re-established themselves successfully on previous disturbances without seed or mulch application or surface preparation. Also, successful reclamation has been completed on the Helco, Leroy and Rominger mine sites.

5) Reclamation of the Experimental Practice Area

A reclamation plan has been formulated for the experimental practice area below the Rominger Mine based on conversations with DOGM technical specialists and consultants that specialize in specific fields. Because of the experimental practice being proposed, reclamation techniques differ from conventional practices. In the Rominger Mine area, PacifiCorp is proposing to use a indicator fabric to protect topsoil resources in-place along the bottom of the canyon and the adjacent side slopes. During reclamation of the mine yard, the subsoil will be back hauled from the subsoil storage area until the indicator fabric is located. The fabric will then be removed and the approximate original contour restored.

Removal of fill material will be conducted very carefully in order not to disturb the in-place soil resources located under the indicator fabric or the bypass culvert. Fill removal in this area will be

done with small earth-moving equipment (Bobcats, backhoes, etc.) and/or by hand if necessary in order to minimize disturbance of the topsoil. Once the geotextile fabric has been exposed, the fabric will be carefully peeled away from the soil. The condition of the underlying soil materials observed at this time. Removal of the fill to re-expose the underlying original surface will result in the establishment of appropriate original contour (AOC) in these areas.

Reclamation of the experimental practice/geotextile area, where topsoil was protected in-place, will proceed as outlined below:

1) After the fill has been removed, the indicator fabric covering the original ground surface will be removed. Post pile bulk density testing will be conducted and compared to baseline data to determine if the original ground surface will need to be manipulated.

2) A weed-free alfalfa hay mulch will be applied over the re-exposed surface at a rate of 2,000 pounds per acre. Fertilizer, if determined necessary by soil testing, would also be applied at this time.

3) Steep Slopes (greater than 2H:1V): soil surface will be treated with an anionic polyacrylamide (PAM) to increase cohesion and infiltration of the water during revegetation. The PAM product will be applied contemporaneously with the seed mixture. PacifiCorp will review details concerning the application type/rate with the Division prior to implementation.

   Moderate Slopes (2H:1V or less): The surface will be gouged with irregularly shaped depressions with the depth based upon available soil resource. This will also mix the hay and fertilizer into the upper portion of the soil surface.

4) The appropriate seed mix (determined by pre-existing vegetation type) will be either broadcast or hydroseeded on the area at the rate specified in the Biology Section. To increase the fertility of the topsoil during reclamation, PacifiCorp will enhance the establishment of locally adapted microrhizomes by mixing 1 cubic foot of undisturbed topsoil from areas adjacent to the experimental practiced area to the hydroseeder prior to application. The supernatant from this slurry mixture will be applied to experimental practice area during the reclamation process.

5) A wood fiber mulch and tackifier will be applied to the surface at a rate of 1500 pounds per acre.

6) Root stock (treated with PAM) will be planted at the rate specified in the seed list table (refer to Biologic Section).

6) Experimental Practice Monitoring

PacifiCorp will conduct monitoring of the slopes treated with PAM to analyze the effectiveness of the experimental practice. The monitoring program will ensure the collection, analysis, and reporting of reliable data that are sufficient to enable the Division to evaluate the performance experimental practice procedures. Monitoring to be conducted on annual basis by a qualified specialist during the 10 year liabilility period after reclamation and include;

Location:
Date:
Name of Specialist:
% Slope:
Exposure:
Area (acres):
Animal Use/Disturbance
Erosion (degree and type):
Cover: (refer to Biology Section R645-301-340 Table 300-7, qualitative on years 1, 2, 3, 5, 6, 7 and quantitative on years 4, 8, 9 and 10)
Dominant Plant Species Observed
Notes:
Photographs
Reporting: Data will be reported in the Annual Reports.

In addition to reviewing the experimental practice area, the qualified specialist will compare the practice area treated with PAM to the undisturbed areas with similar slopes adjacent to the sites.