



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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0010

February 10, 1991

TO: Daron Haddock, Permit Supervisor

FROM:  Priscilla Burton, Soils Reclamation Specialist

RE: Technical Deficiency Review, Conveyor Revision, Utah Fuel Company, Skyline Mine, ACT/007/005-91-1, Folder #2, Carbon County, Utah

## SUMMARY

The construction of 75 towers spaced 60 feet apart along a steep slope adjacent to State Highway 264 is proposed. The towers will provide structural support for the conveyor (approximately 10' 8.5" wide and 11'10.75" high) stretching for 2.1 miles from the crusher building at the main facilities down to the truck dump at the rail loadout. This significant revision was received by the Division on 12/10/91.

Total additional proposed disturbed area is 0.18 acres of sloping, sagebrush/grassland. Each tower location will entail a disturbance of at least 100 sq ft. Further information concerning tower location, slopes, topsoil salvage, and reclamation is requested. Approval of the revision is not recommended at this time.

## ANALYSIS

### 120. Permit Application Format and Contents.

#### Proposal:

The submittal includes an update to Volume A-2.

#### Compliance:

Please submit an updated Table of Contents for Volume A-2.

#### Deficiencies:

1. Submit an updated Table of Contents for Volume A-2.

**123. Applications for permits; permit changes; permit renewals; or transfers, sales or assignments of permit rights will contain the notarized signature of a responsible official of the applicant, that the information contained in the application is true and correct to the best of the official's information and belief.**

Proposal:

The application cover letter is written on company letterhead and signed by Mr. Glen A. Zumwalt, Vice President/General Manager of Utah Fuel Company.

Compliance:

The signature was not notarized.

Deficiencies:

1. Notarize the cover letter signature.

**140. Maps and Plans.**

Proposal:

Vegetation and Soils map sheets were submitted with the application. Along with a permit boundary Map, 3.2.3-3a-h.

The applicant has shown a permit boundary extending the 2.1 mile length of the conveyor. The permit area boundary varies from 137 feet wide at a point on plate 3.2.3-3b (presently disturbed area), down to 25' wide at three points on plate 3.2.3-3f and g. At several points the conveyor is immediately adjacent to the State Highway 264.

Disturbance boundaries for the towers are not outlined on any plates. For each of the conveyor towers, a disturbance of 10' x 10' will occur. Page 3-21 of the application states that 13.8 total acres will be permitted of which 6.00 acres are already disturbed, and 0.18 additional acres will be disturbed during construction of the towers.

Compliance:

The soil survey map was calculated from the Eastings to be a scale of 1" = 100'.

However, no scale is provided. The maps are not certified. The North direction is not indicated. The disturbed area boundaries are not included.

The accompanying Vegetation map sheets provides cut slope (CS) and cleared slope (AR) boundaries. The Overland Conveyor Permit Boundaries Map #3.2.3-3a-h provides a permit area boundary. The boundaries indicated on the vegetation map and the surface facilities map differ at several locations where the cut slope and the cleared slope extend outside of the permit boundaries.

The disturbed area boundary must include the cleared slope (AR) boundary as well as the cut slope (CS) boundary disturbance on all maps and these disturbances must lie within the permit area boundary.

Informational items that would be helpful on these maps are the location of the vegetation reference areas; SCS vegetation Practice and Trial areas; the present and proposed disturbed area boundaries; and the tower locations, if known.

Deficiencies:

1. Revise the soils and vegetation sheets to include all the types of information that are set forth on U.S. Geological Survey of the 1:24,000 scale series.
2. Certify the maps as per R645-301-512, Certification.
3. Provide the disturbed area boundary and permit area boundary on the soils and vegetation map sheets and on the surface facilities maps; site the locations of the SCS Practice and Trial Experimental areas for the conveyor on the soils and vegetation map sheets as per R645-301-521.190.

**221. Prime Farmland Investigation.**

Proposal:

The subject of prime farmland determination is touched on by Dr. Sheldon D. Nelson, Soil Scientist, in a report submitted to Skyline Mines by the consulting firm, Endangered Plant Studies, Inc. (see Volume A-2 addendum). No prime farmlands were found. In addition, the MRP in Section 2.14 provides a Soil Conservation Service (SCS) letter of prime farmland determination for the surface facilities area of the permit. No prime

farmlands were found, however the area evaluated did not include the proposed conveyor site.

Compliance:

Regulation R645-302-313 indicates that the SCS must be consulted for a prime farmland determination. Although the excessive slopes found in the location of the proposed conveyor will eliminate any possibility of prime farmland, the formality of consulting with the SCS must be complied with.

Deficiencies:

1. Obtain a letter from the SCS providing a prime farmland determination for the additional permit area.

**222. Soil Survey.**

Proposal:

A soil survey was conducted by Dr. S. Nelson for Endangered Plant Studies, Inc. (see Volume A-2 addendum). The narrative provides a general environmental description of the soils. Most are described as Mollisols (Borolls) which are deep soils developed in shrub-grass and/or aspen-spruce communities. Entisols exist on a smaller portion of the proposed disturbance.

Nine profiles were exposed for the survey. All soil pits were located on south facing exposures. The vegetation associated with the soil is listed.

Analysis of the "A", "B" and some "C" horizons are presented in Table 1. The soils are deep, (cobble) sandy loams. For example, at site 5 on a 60% slope, the A and B horizon depth is 52 inches. Cobbles increase with depth. Values for pH vary from 5.8 to 7.6, averaging around the ideal 6.8 in the "A" horizon. Organic matter content in the "A" horizon is a low of 1.3% at site 5 to a high of 3.7% at site 7 (also the site of the 5.8 pH value), with a mean in the A horizon of 2.6%.

The reported black soil color of the A horizon along with the high organic matter values indicates that there may be an organic horizon that was not recorded in the consultant's report. (Field notes were not included with the consultant's report.)

The vegetation near the main mine site is Aspen or Spruce. At the end of the present cut-slope disturbance, the vegetation community changes from strictly Aspen to an Aspen, Sagebrush, Sagebrush/Gambel Oak mixed community. Although limited by species number, the Sagebrush is the most productive community for animal fodder @917.1 lbs/ac. production as measured in the reference areas (page 2-57). This community is also the predominant vegetation type to be disturbed by the proposed conveyor route (Chap 2, MRP). Established reference areas as shown on Map 2.7.1-2 appear to lie in the corridor of the proposed conveyor.

Compliance:

Although the aspect of the soil pits is known, the slope was provided for only four of nine pit locations. A general range of slope is provided in the SCS document of 1988 (Volume A-2). Here, the slope of the conveyor bench is described as 50 - 120%. Because the slope of the area in the proposed disturbance will affect the reclamation procedures to be used, further information is requested (please see additional comments under R645-301-240).

Vegetation associated with the soil pit does not always agree with the vegetation map included in the report. For instance, an Aspen community is described around Pit #4 in the soils report. Whereas the vegetation map shows a Spruce community.

The depth of the pits was not consistent from site to site. In some cases digging stopped at 13 inches with the "B" horizon and in others continued down to the end of the "C" horizon at 70 inches. Presentation of field notes describing pit profiles may aide in evaluating this discrepancy. It must be pointed out that two of the pits (#6 and #9) which define shallow soils are located in the previously disturbed soils of the conveyor bench where the topsoil has been removed (see page 3-35 of the application). If topsoil was removed there should be no "A" horizon in the locations of pit #6 and #9.

The Division approved the collection of additional baseline data along the conveyor route on 1/31/92. This data will be collected from 20 backhoe pits and will aid in the evaluation of the reclamation procedures of the slopes.

Further soils information should be available in the Applicant's files as there was some soil evaluation performed for the SCS Plant Materials Center plant adaptation trials described as Trial #3 in the SCS Conveyor Bench Reclamation Plan included in Volume A-2.

Map 2.7.1-2 does not provide adequate scale for location of the reference areas. Please place reference areas on the Overland Conveyor Route and Permit Boundaries map

#3.2.3-3a-h or other appropriate map.

Deficiencies:

1. Resolve the discrepancy between vegetation around soil pit #4 and the vegetation map.
2. Provide the slope at each soil pit location.
3. Provide field notes that describe pit profiles.
4. Indicate depth to bedrock for each site or describe the characteristics of each site which limited pit excavation depth, if rock was not encountered.
5. Clarify whether the soil descriptions provided in pit #6 and #9 are of previously disturbed conveyor bench "B" and "C" horizons rather than the "A" and "C" horizon of an undisturbed soil. If the topsoil has been removed this must be indicated and the soil depth must be adjusted accordingly.
6. Provide the data collected from the 20 additional soil pits recently dug for baseline data (approved 1/31/92).
7. Provide the soil sampling information obtained for development of Trial #3 as described in the SCS Conveyor Bench Reclamation Plan (Vol A-2 of the MRP).
8. Place reference areas on the Overland Conveyor Route and Permit Boundaries Map #3.2.3-3a-h or other appropriate map.

**223. Soil Characterization.**

Proposal:

The soil was placed in the following categories: shallow, cobbly sandy loam, clay loam and very deep.

A set of soils map sheets was provided. The maps outline areas of soil types as described by the accompanying consultant's work and provide locations of the soil pits.

Compliance:

This classification of soils aides in determining salvageable topsoil, but does not follow the standards of the National Cooperative Soil Survey. Excerpts from the SCS Carbon County Survey were included with the consultant's report, but no correlation was drawn between the soil types copied out of the survey and the soil descriptions provided in the report.

Category A, shallow soils, has an A horizon of 13" or a combined A & B of 13 inches. Thirteen inches of topsoil is considered a desirable, deep topsoil.

Evaluation of the Category B, clay loam, was not sampled in any of the nine pits.

Deficiencies:

1. Provide a soil classification according to the standards of the National Cooperative Soil Survey.
2. Provide soil sample analysis and pit profile descriptions for all soils categorized and mapped.

**230. Operation Plan.**

Proposal:

For each tower structure to be constructed in the proposed disturbed area, one hundred square feet (10'x10') will be disturbed (page 3-35 and 3-36 of the application). The existing bench will not be extended for the additional towers. Cut slopes will not exceed 1h:1v in unconsolidated material and 1h:4v in rock (page 4-93A) of the application).

The operation plan includes excavation down to competent rock, installation of concrete, and construction of towers. At each location, the disturbed area will be reseeded and mulched and treated with either straw bales or a silt fence (page 3-64G). The newly disturbed areas will collectively will become Alternate Sediment Control Area 10a (0.18 acres). Straw bales and silt fence will be maintained until vegetation is established.

The previously disturbed area of the conveyor bench is described in ASCA's 8, 9, and 10 (a total of 6 acres). Treatment of these areas is with inslopes and outslopes, directing

runoff to vegetated slopes, rock slopes, strawbales and silt fences.

The applicant is not planning on salvage of any topsoil from the additional disturbance. Ordinarily this regulation (R645-301-232.400) applies to small structures such as fences, signs, power poles, and areas that will not be subject to erosion. An exception to the removal of soils from the area to be disturbed may be also be granted if the Applicant demonstrates that the requirements of R645-301-233 have been fulfilled. Table 2.11-1 of the application (page 2-115) addresses topsoil replacement volumes. According to Table 2.11-1, the combined acreage to receive one foot of replacement topsoil is 42.29 acres and the topsoil available is 55,336 yd<sup>3</sup>.

Compliance:

The conveyor structure as shown on Plate 3.2.3-2 is approximately 10' 8.5" wide and 11'10.75" high, suspended on 75 bent towers, stretching for 2.1 miles from the crusher building at the main facilities down to the truck dump at the rail loadout. The estimated disturbed area of 100 ft<sup>2</sup> is probably smaller than the actual disturbance and may lead to violations being issued for disturbance outside of the disturbed area boundary. When designating the area of disturbance, one should anticipate all of the associated disturbances for construction, maintenance and dismantling of the conveyor structure.

In a related application (Baseline Data Collection), the method of excavation is described using a Caterpillar 215 track mounted backhoe operated from the north shoulder of Highway 264. The hoe will reach up the slope about 25'. This method of excavation and construction of the towers was described to me during a recent inspection of the mine site, but has not been described in the plan.

Division calculations suggest:

$$42.29 \text{ ac} \times 43,560 \text{ ft}^2/\text{ac} \times 1 \text{ ft topsoil} \div 27 \text{ ft}^3/\text{yd}^3 = 68,228 \text{ yd}^3$$

$$17.00 \text{ ac} \times 43,560 \text{ ft}^2/\text{ac} \times 2.5 \text{ ft soil} \div 27 \text{ ft}^3/\text{yd}^3 = 68,567 \text{ yd}^3$$

A deficit of 12,892 yd<sup>3</sup> for the areas to receive one foot of cover and an overall deficit of 20,959 yd<sup>3</sup> for the entire mine site. Consequently, there cannot be an exemption given to the salvage of topsoil from the disturbed area.

Deficiencies:

1. Further describe the disturbed area boundaries and detail the number of towers to be located in the presently undisturbed area.
2. Specify interim seed mixes and mulch rates and describe hydroseed or broadcast (?), hydromulch or crimped straw (?).
3. Provide a plan for the segregation, storage, and redistribution of topsoil for the proposed disturbance.

**232. Topsoil and Subsoil Removal.**

Proposal:

No plan was presented in the narrative.

Table 2.11-2 provides a listing of potential topsoil salvage volumes. The additional disturbance of 0.18 acres is added in with mapping unit 5 (Sagebrush/grass) and the average depth in feet is listed as 0.5.

Compliance:

On the average the proposed conveyor soils have an "A" horizon which is 14" deep (Division calculations). There appears to be little difference between the Means of the combined A, B, or C horizons in any parameter quantified in the consultant's report. The Means of the combined horizons would place the material in the sandy clay loam category of the soil textural triangle. This texture could be improved by selective salvage of soil. For example reducing the volumes taken from site #9.

The entire topsoil deficit noted in the discussion of R645-301-230 could be reduced to zero if there was 2.338 ft of topsoil salvaged from the entire 0.18 acres of anticipated additional disturbance.

Deficiencies:

1. Please see compliance issues under R645-301-230.

**234. Topsoil Storage.**

Proposal:

No topsoil storage is proposed.

Compliance

Please see compliance issues under R645-301-230.

**240. Reclamation Plan.**

Proposal:

The Applicant in consultation with the SCS has developed a revegetation plan for conveyor bench slopes which is presented in Vol A-2. Final reclamation calls for leaving the bench cut and establishing vegetation to reduce erosion on the outslopes using the practices determined through experimentation to be the most successful.

During final reclamation the conveyor will be removed. The only anticipated new disturbance is in the locations of the towers, 0.18 acres. For the existing disturbance, Table 4.2-1 indicates that 0.39 ac of overland conveyor is to be reclaimed. Thus, a total of  $0.18 + 0.39 = .57$  acres to be reclaimed.

The proposed conveyor disturbance will be revegetated according to the MRP, Section 4.71 and 4.72. The reclamation plan discussed in chapter four is based on the final slope configuration. Slopes from  $\frac{1}{2}h:1v$  down to  $2h:1v$  will have shrubs hand planted at 1 meter intervals. These slopes will be interseeded by the species according to aspect, using hydroseeding techniques. Seeding will be followed by mulching with  $\frac{1}{2}$  to 1 ton/ac straw chemically tackified or crimped. Slopes of  $1.5h:1v$  or greater will not receive topsoil, rather basins will be dug in which topsoil is placed for shrub planting. Hydromulch will be used on the untiltopsoiled slopes between these basins. Finally, rocks will be placed at the base of rock cuts to enhance the natural look of the reclamation.

Compliance:

SCS document incorporated as part of the plan in Vol A-2 indicates that evaluation of the conveyor belt slope reclamation practices has occurred at annual intervals since the onset of the experiment. This information should be supplied to the Division in the application

package.

Cut slopes will not exceed 1:1 in unconsolidated material and 1:4 in rock (pg 4-93A). It is likely that the technique of using topsoiled basins at the towers will be the preferred method of reclamation on these steep slopes. Mulching of these treatments should be included in the reclamation plan. A final reclamation configuration map must be provided to determine where the basin technique will be used.

No additional earthwork, seeding, mulching, maintenance or monitoring costs were noted on pages 4-9A and 4-9B on Table 4.2-1.

Deficiencies:

1. Supply the Division with the evaluation of experimental revegetation practices as described in Vol A-2 of the present MRP.
2. Adjust the reclamation costs to include the additional conveyor disturbance.
3. Provide a final reclamation configuration map.
4. Include mulching of the topsoiled basins in the reclamation plan for areas which have 1.5h:1v or greater slope.

**412. Reclamation Plan.**

**412.100. Postmining Land-Use Plan.** Each application will contain a detailed description of the proposed use, following reclamation, of the land within the proposed permit area, including a discussion of the utility and capacity of the reclaimed land to support a variety of alternative uses, and the relationship of the proposed use to existing land-use policies and plans. The plan will explain:

**412.110. How the proposed postmining land use is to be achieved and the necessary support activities which may be needed to achieve the proposed land use;**

Proposal:

The application discusses the use of the land by wildlife, in particular muledeer and

elk. No discussion was found concerning the ability of the land to support a post-mining land use of grazing and wildlife.

Compliance and Deficiency:

1. Submit information in compliance with R645-301-410 through R645-301-412.

**420. Air Quality.**

**422. The application will contain a description of coordination and compliance efforts which have been undertaken by the applicant with the Utah Bureau of Air Quality.**

Proposal:

No description of coordination with the Bureau of Air Quality was found.

Compliance and Deficiency:

1. Include in the proposal the Notice of Intent filed with the Bureau of Air Quality.

## CONCLUSIONS

The proposed conveyor is a concept that should be encouraged by the Division, but the revision presentation is lacking in detail. Several deficiencies have been outlined and must be addressed prior to granting approval for construction to begin.