



United States Department of the Interior

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GEOLOGICAL SURVEY

Office of the District Mining Supervisor
Conservation Division
2040 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104



January 15, 1981

Memorandum

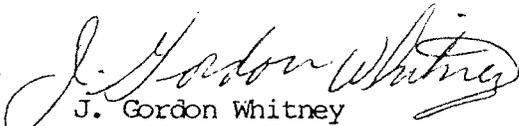
To: Regional Director--Office of Surface Mining--Denver

From: Acting District Mining Supervisor, USGS--CD

Subject: Beaver Creek Coal Company, CV Spur Hydrologic,
Vegetative and Wildlife Data

Your letter dated December 3, 1980, forwarding the subject material (consisting of 74 pages and 6 maps), was received in this office on December 12, 1980. We have reviewed this material relative to USGS--CD responsibility. The Hydrologic Study, Black Footed Ferret Survey and upgraded vegetation data for CV spur will not affect the recovery of the coal which will be mined by underground methods. Because mining of the coal deposit is not affected we have determined that a formal technical analysis report will not be submitted by this office.

Accordingly we have no comments or requirements concerning the data.


J. Gordon Whitney

cc: Denver
Mine Plan File (flat)

U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

NOTICE OF AVAILABILITY
OF A TECHNICAL AND ENVIRONMENTAL ANALYSIS ON
THE MINING AND RECLAMATION PLAN FOR
BEAVER CREEK COAL COMPANY'S
C.V. SPUR COAL PROCESSING AND LOADOUT PLANT
CARBON COUNTY, UTAH

SUMMARY: Pursuant to 786.11 Title 30 and Section 1500.2 of Title 40, Code of Federal Regulations (CFR), notice is given that the Office of Surface Mining (OSM) has received a complete mine and reclamation plan from Beaver Creek Coal Company for their C.V. Spur Coal Processing and Loadout Plant, Carbon County, Utah. The C.V. Spur Coal Processing and Loadout Plant is considered a surface coal mining operation (30 CFR 700.5) and therefore must be permitted (30 CFR 771.19). The plan is available for public review as described below.

If information does not otherwise indicate, it is OSM's intention to approve the proposal. Final action would be taken by the Department at the regional level. Action would consist of recommending approval with stipulations to the Utah Division of Oil, Gas, and Mining (DOG M). This notice is published to solicit public comments on any environmental issues related to the proposal and to obtain public comment on the appropriateness of OSM's intention to approve the proposal.

IDENTIFICATION OF PROPOSAL

Applicant: Beaver Creek Coal Company

Mine Name: C.V. Spur Coal Processing and Loadout Plant

State: Utah

County: Carbon

Section, Township, Range: SW 1/4, Section 11, T 15 S, R 10 E.

OSM Reference No: UT-0065

Name and Address of Applicant: Beaver Creek Coal Company
P.O. Box AV
Price, Utah 84501

DESCRIPTION

In a letter dated August 8, 1980, ARCO Coal Company submitted a mining and reclamation plan for Beaver Creek Coal Company's C.V. Spur Coal Preparation and Loadout Facility. Beaver Creek Coal Company is a wholly owned subsidiary of ACRO Coal Company. Additional information was received on November 17, 1980. OSM and Utah DOGM have jointly prepared a technical and environmental assessment (TEA).

The coal preparation and loadout plant is an existing surface mining operation on fee land and fee coal and is located approximately five miles south of Price in Carbon County, Utah. Coal is hauled by truck from the Beaver Creek's Gordon Creek Nos. 2, 3 and 6 Mines and Huntington Creek No. 4 Mine and is processed at the plant. Coal from the Trail Mountain Mine is stockpiled and loaded onto trains at C.V. Spur.

Operations at C.V. Spur Preparation Plant are located on approximately 160 acres and consists of a truck dump, raw coal pile, preparation plant, two washed coal piles, a loadout conveyor, and a 10,000-ton coal storage silo. There is also a truck dump and raw coal pile for coal not going through the wash plant. Coal refuse is disposed of in a fill. The anticipated life of operations at C.V. Spur is approximately 17 years.

OSM is soliciting public comment on the proposal to ensure adequate Departmental analysis of environmental effects and to obtain public comment on the appropriateness of OSM's action. If information does not otherwise indicate, it is OSM's intention to recommend approval with stipulations of the mine and reclamation plan to the Utah Division of Oil, Gas, and Mining. The proposed stipulations are to provide more information on soils, bonding, and cultural resources as well as developing a reclamation plan for C.V. Spur's water supply well.

The public is invited both to review the plan at the locations identified below and to submit comments to OSM or DOGM on the type and significance of environmental effects of the proposal that should be further assessed prior to taking action.

ADDRESSES:

The plan is available for review in the regional office of OSM in Denver and is available in the office of DOGM in Salt Lake City, 1588 West North Temple, Salt Lake City, Utah 84116. Any comments on these documents should be submitted to the Regional Director, Region V Office of Surface Mining, Brooks Towers, 1020 Fifteenth Street, Denver, Colorado. For further information, contact John Nadolski or John Hardaway in the regional OSM office (303/837-3773).

Technical and Environmental Assessment of C.V. Spur

Proposed Action

The U.S. Office of Surface Mining Reclamation and Enforcement (OSM) is recommending approval of the modification of the Huntington Canyon #4 mining and reclamation plan in response to Special Stipulation #6 which requires specific approval of construction at the processing plant (C.V. Spur Coal Preparation and Loadout Facility). The Huntington Canyon #4 mining and reclamation plan was approved January 30, 1980. OSM's recommendation is in accordance with the Permanent Regulatory Program (UMC 740 and 741) of the Utah State Program implementing the Surface Mining Control and Reclamation Act (SMCRA) of 1977 and conditions of the lease. A technical and environmental analysis of the proposed expansion of the waste disposal site at C.V. Spur was conducted jointly by OSM and the Utah Division of Oil, Gas and Mining (DOG M). The analysis reviewed only those disciplines affected by the proposed modification of this mining and reclamation plan.

Purpose and Need

The Department of the Interior has received an application from Beaver Creek Coal Company to expand the waste disposal site to provide for processed coal wastes through the life of the operation, approximately 17 years. The applicant proposes to expand the waste disposal site onto the undisturbed 37 acres adjacent to the existing fill through 1995. From 1996-1997 coal wastes would be deposited in a separate 10-acre disposal site west of the existing refuse area. The proposed expansion would enable Beaver Creek Coal Company to continue cleaning 1 million tons of coal per year and handling and shipping 1.5 million tons of coal per year.

Background

The processing facility known as Castle Valley Spur (C.V. Spur) is operated by Beaver Creek Coal Company, a subsidiary of ARCO Coal Company. The C.V. Spur Coal Preparation and Loadout Facility is an existing surface mining operation on fee land and fee coal and is located approximately 5 miles south of Price and 1.5 miles south of Price River in Carbon County, Utah. Coal is hauled by truck from the Beaver Creek's Gordon Creek Nos. 2, 3, and 6 Mines and Huntington Creek No. 4 Mine and is processed at the plant. Coal from the Trail Mountain Mine is stockpiled and loaded onto trains at C.V. Spur.

The C.V. Spur Preparation Plant construction phase began operations in 1977 and is located on approximately 160 acres of which the existing facilities have disturbed 113 acres and 47 acres are proposed to be used for expanded waste disposal sites. The existing facilities consist of a truck dump, raw coal pile, preparation plant, two washed coal piles, a loadout conveyor, and a 10,000-ton coal storage silo. The facilities for coal not going through the wash plant include a trunk dump and raw coal pile. Coal refuse is deposited in a waste disposal fill.

Alternatives

Alternative 1 (Preferred Alternative)

This action is approval of the modification of the Huntington Canyon #4 mining and reclamation plan with the stipulations necessary to meet the requirements of the Surface Mining Control and Reclamation Act (SMCRA) of 1977, the approved Utah State Program (UMC 740 and 741), other Federal laws and conditions of the lease. The proposed stipulations require changes in the reclamation plan, as follows:

1. Revegetation

The applicant shall within 6 months of acceptance of approval: (1) sample the remaining undisturbed topsoil on a 100-foot center grid for chemical and physical properties. Those soils or subsoils that are determined suitable for plant growth material (using the criteria discussed in the application) shall be removed, stored and used as topsoil as described in the application; (2) identify other suitable materials to be used as a substitute for topsoil using the criteria discussed in the application; (3) submit for approval by the Regulatory Authority the results of sampling the chemical and physical properties for the undisturbed topsoil and other identified suitable materials for topsoil substitutes; (4) submit for approval by the Regulatory Authority an adequate plan to utilize areas representative of on-site reclamation conditions on the area for revegetation experimental plots. These plots shall be used to investigate potentially suitable plant growth materials for use as a substitute material for topsoil. Techniques approved by the Regulatory Authority to measure the potential for successful revegetation on these substitute materials will be incorporated into the reclamation operations by the applicant. The plan shall address at a minimum the following factors:

1. seed trials
2. topsoil control
3. irrigation
4. measurements of rooting depth

2. Cultural Resources

A. Within 30 days of acceptance of approval of the mine plan, the applicant shall insure that their cultural resource consultant contact OSM to discuss deficiencies and corrections found in the report on cultural resources and within 60 days of this meeting the applicant shall provide an addendum to the current report that corrects the following report deficiencies:

1. Provide proof of a National Register check.
2. Provide an explicit statement of survey methods that include survey strategy, ground cover, visibility, presence of unknown sites, and so on.
3. If any areas were not surveyed, a detailed explanation should be included.
4. Provide a detailed discussion of the criteria used to define a site.
5. Assess likelihood of locating buried sites.

6. If any National Register sites are identified, identify and described the type and degree of impact expected from the proposed action on those sites eligible for or listed on the National Register.

B. If, during the course of operations, previously unidentified cultural resources are discovered, the applicant shall insure that the site is not disturbed and shall notify the OSM. The operator shall insure that the resource(s) is properly evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.6). Should a resource be determined eligible for listing in consultation with the OSM and the SHPO, the operator shall confer with and obtain the approval of the OSM and the SHPO concerning the development and implementation of mitigation measures as appropriate. If previously unplanned surface disturbing activities are necessary, the applicant shall submit a justification and maps showing the proposed disturbance to the OSM for their approval prior to the commencement of these activities. If sites are identified which are eligible for listing in the National Register, the applicant shall provide a plan for dealing with potential indirect impacts caused by their activities.

3. Hydrology

A. The applicant shall, within 30 days of acceptance of approval, include boron in the monitoring parameters for baseline data. If boron exceeds 750 ug/l, it should be included in the subsequent analyses. The applicant shall clearly identify the wells that will actually be monitored.

B. The applicant shall, within 30 days of acceptance of approval, submit a plan for the reclamation of the pipeline and river side well facilities to the regulatory authority for evaluation.

Approximately 113 acres have previously been impacted by the processing and loadout facilities and would continue to be impacted throughout the life of the operation (17 years). The mining and reclamation plan would result in the disturbance of an additional 47 acres within the permit and the prolonged use of this area for refuse disposal. The topography at the waste disposal site would be permanently altered. The entire waste bank would eventually be covered with noncombustible material, topsoiled and reseeded. Although the refuse disposal material has not presently been found to contain toxic or acid-producing material, the presence of boron has not been satisfactorily determined, and the occurrence of this element would adversely influence reclamation of the refuse areas.

This desert shrub community receives an average of only 6 to 10 inches of precipitation per year. Climatological conditions could adversely affect revegetation and reclamation of the site. A sufficient amount of suitable topsoil to reclaim the entire 160 acres may not be available; however, a combination of an efficient topsoil removal program on the remaining undisturbed 47 acres and the use of other suitable topsoil substitutes could provide the necessary soil material for reclamation. Soil erosion from wind and water would be increased during the life of the operation. Sedimentation ponds and timely seeding of exposed areas and stockpiles would control the

amount of sedimentation entering the natural system. Prolonged stockpiling of the topsoil for 17 years could adversely affect the productivity. The final reclaimed area will gradually establish new soil types with different characteristics than existing soils.

Runoff and ground-water flow would continue to be collected on the site. Cumulative hydrologic impacts could influence water usage of downstream owners; however, impacts are expected to be minimal because of the ephemeral nature of the streams, and the small amount of ground water which naturally flows to adjacent areas. Beaver Creek Coal Company also has ownership of sufficient water rights on Scoffield Reservoir to satisfy operating needs of the plant. The river side well and associated pipeline would provide a long-term physical disturbance unless reclaimed.

Cultural resource sites could be indirectly impacted by changes in the surrounding environment and previously unidentified sites could be discovered.

For further discussion of the impacts of approval see Section J of each resource discussed in the Technical and Environmental Assessment (TEA). Additional details on the regional environment are available in the Regional Analysis of the Development of Coal Resources in Central Utah FEIS 1979 (Vol. I, Chapter II, pp. 1-10).

Alternative 2 (Disapproval)

Disapproval of the mining and reclamation plan could be chosen if the proposed action would cause significant adverse impacts (i.e., irreparable harm to the environment). If this alternative was chosen, the company would not be able to clean a total of approximately 17 million tons of coal or handle and ship 25.5 million tons of fee and Federal coal until an alternative site was found. Gordon Creek No. 2, 3, and 6 Mines and Huntington Creek No. 4 Mine would not have an economical processing loadout site. Coal from these mines would need to be hauled longer distances by truck or rail and the uneconomical preparation and costs caused by construction of new facilities could preclude mining at some sites.

This alternative could require Beaver Creek Coal Company to seek another processing site where the area has not been previously impacted. If this alternative were adopted impacts would continue on the 113 acres where surface disturbance has occurred. Surface and ground-water drainages would remain altered. The topography and soil characteristics would be different from the types occurring before disturbance. Reclamation using the limited amount of available topsoil would be difficult. Potential cultural resources sites would not be impacted directly or indirectly. Approximately 17 years of providing facilities for cleaning and processing coal would be lost. The applicant would not be able to maintain the existing work force.

Alternative 3 (No Action)

OSM must recommend an action on a mining and reclamation plan because the Federal mineral leasing laws and the existing lease agreement require the Secretary of the Interior to respond to an application to mine and conduct operations on a Federal lease. Beaver Creek Coal Company has met all the requirements of the lease to the best of our knowledge.

This action would preclude the continued operation of the C.V. Spur Coal Processing and Loadout Facility. The physical environmental impacts would be the same as discussed under the Disapproval alternative.

Other Alternatives

Other alternatives were considered, including alternative equipment for soil handling and revegetation, and requiring a full identification of all potential cultural resource sites.

These alternatives are discussed in the Sections entitled "Alternatives to the Proposed Action" of the Technical and Environmental Assessment (TEA). The analysis in the TEA shows that these alternatives are not reasonable at this time.

Other Agencies Consulted

OSM and the State of Utah, Division of Oil, Gas and Mining cooperated in preparing the technical and environmental assessment on this proposed expansion of the waste disposal site. Comments from the U.S. Geological Survey and the Bureau of Land Management were incorporated into the TEA.

Revegetation

A. Description of Existing Environment

A vegetation study contracted by Beaver Creek Coal Company identified two plant communities within the proposed permit area. The locations of these communities are provided on a map in Exhibit 5, Mining and Reclamation Plan for the C.V. Spur.

The total permit area for the C.V. Spur is 160 acres. Approximately 70.5 percent (113 acres) of the permit area is proposed for industrial use (see Table 1). The remaining 29.5 percent is occupied by the shadscale community (23.8 acres) and the weed community (23.4 acres).

The shadscale community makes up 14.9 percent of the C.V. Spur property (Table 1). This community is dominated by low, widely-spaced shrubs. Relief is relatively low, with a slight slope to the northeast. The elevation of the property is approximately 5,500 feet. The major soil types include the Killpack loam, Persayo loam, Chipeta silty clay, and Billings silty clay. The vegetation is represented by 23 species of plants, nine shrubs, ten forbs and four grasses. Shrubs are the dominant life form contributing 71.5 percent of the total estimated vegetation cover (Table 2). The total estimated vegetation cover in the five transects (Appendix) ranged from 12.5 percent to 23.7 percent. The average cover was 18.8 percent. Litter, rock and moss cover were nearly nonexistent.

The dominant shrubs that characterize the vegetation cover are shadscale (Atriplex confertifolia) with a cover of 5.2% and rubber rabbitbrush (Chrysothamnus nauseosus) with a cover of 4.8%. The most common grass, galleta (Hilaria jamesii), has a cover of 1.9%. Dominant forbs include marsh alder (Iva axillaris) and globemallow (Sphaeralcea grossulariaefolia) with cover values of 0.7% and 0.3%, respectively (Table 2).

The estimated Annual Net Production (ANP) of clipped plots within the shadscale community ranges from 6.4 g/m² to 731.2 g/m² with a mean of 167.9 g/m² (Table 9, Mining and Reclamation Plan, pp. 2-35). Shrubs are the major producers of biomass with 130.9 g/m² or 77.8% of the total.

The weed community makes up 14.6% of the C.V. Spur property (Table 1). The community is dominated by a small number of annual species, such as Russian thistle (Salsola kali), halogeton (Halogeton glomeratus), and sunflower (Helianthus annuus). Halogeton is a weed that occurs on barren eroded soil of overgrazed ranges, road shoulders, or any disturbed site. It is highly toxic to sheep. This particular area has been greatly disturbed in the past due to cultivation attempts and grazing practices. Historically, 40 acres of this property were in cultivation during the 1930's, but were abandoned because it was not economical (R.D. Campbell, MRP's, pp. 2-85).

TABLE 1

AREAL EXTENT OF VEGETATION ON THE
CASTLE VALLEY SPUR, CARBON COUNTY, UTAH

Vegetation	Acres	Percentage
Shadscale	23.8	14.9
Weed Community	23.4	14.6
Cropland	<u>0.0</u>	<u>0.0</u>
TOTAL	47.2	29.5

Note: The remaining 112.8 acres is occupied by the processing facilities, roads, waste disposal areas, coal piles, and and office.

TABLE 2

SUMMARY OF COVER AND FREQUENCY DATA IN
THE SHADSCALE COMMUNITY

	% FREQUENCY	% COVER
<u>Grasses</u>		
Hilaria jamesii	23.6	1.9
Oryzopsis hymenoides	8.8	0.4
Sitanion hystrix	8.8	0.4
Sporobolus airoides	5.2	0.4
Total % Grasses		3.1
<u>Shrubs</u>		
Atriplex cuneata	4.8	1.5
Atriplex confertifolia	19.2	5.2
Atriplex corrugata	2.4	0.3
Atriplex graciliflor	0.4	0.2
Chrosothamnus nauseosus	16.8	4.8
Eurotia lanata	1.2	0.2
Gutierrezia sarothrae	3.6	0.3
Sarcobatus vermiculatus	2.0	0.5
Eriogonum umbellatum	0.8	0.1
Leptodactylon pungens	5.6	0.4
Unknown shrub 3	0.4	0.1
Total % Shrubs		13.4
<u>Forbs</u>		
Chenopodium sp	2.8	0.4
Descurrainia pinnata	1.2	0.1
Eriogonum inflata	0.4	0.1
Iva axillaris	16.4	0.7
Oenothera caespitosa	0.8	0.1
Penstemon sp	0.8	0.1
Phlox austromontana	2.0	0.1
Sphaeralcea grossulariaefolis	5.6	0.3
Unknown Compositae	10.8	0.3
Unknown forb 1	0.8	0.1
Unknown forb 2	0.4	0.2
Unknown forb 3	1.6	0.1
Total % Forbs		2.3
Total % Vegetation		18.8
<u>Topsoil Protection</u>		

B. Description of Applicant's Proposal

779.19 Baseline

Beaver Creek Coal Company conducted a quantitative and qualitative vegetation survey in June, 1980. The purpose of the vegetation survey was to determine the pattern and distribution of the plant communities.

A line transect composed of fifty, one square meter quadrats spaced at one-meter intervals was used to sample the shadscale community. The location and orientation of the line transects were randomly determined. Within each quadrat, the percentage of ground covered by a vertical projection of the foliage of each species was estimated by visual inspection.

Biomass measurements for the shadscale community were obtained from plants within 25 randomly located circular quadrats (0.25 square meter).

The weed community was sampled qualitatively, assigning rank values of one to five to each species, depending on their abundance in the area (i.e., one being uncommon and five being very abundant). Biomass data were not obtained on this community.

816.116 Reference Areas

The applicant proposed that one reference area to used for the shadscale community. The weed community will not be re-established for post-mining land use; therefore, a reference area is not required.

The shadscale community reference area was selected in consultation with OSM, based upon assimilated vegetative cover prior to disturbance, slope, aspect, and soil type (MRP, pp. 2-36). The proposed reference area is approximately 2.1 acres in size.

780.18 Revegetation Plan

Present calculations indicate that the C.V. Spur facility will have enough refuse disposal acreage to last 17 years at the projected production rate. Reclamation of the refuse disposal areas will be an ongoing process. As disposal areas are completed, they will be covered with approximately 18 inches of subsoil, six inches of topsoil, and revegetated.

Upon completion of operations at C.V. Spur, the following approximate schedule will be followed for reclamation.

<u>Procedure</u>	<u>Time Frame</u>	<u>Acc. Time</u>
Remove Structures	44 weeks	44 weeks
Reclaim Areas	18 weeks	62 weeks
Topsoil and Soil Placement	4 weeks	66 weeks
Reseeding	2 weeks	68 weeks
Mulching	2 weeks	70 weeks

After the seedbed has been prepared, it will be planted with appropriate seeding mixture. Grasses and legumes will be seeded primarily by drill seeding due to the flatness of the terrain of C.V. Spur. However, broadcasting of seed may be utilized in small areas with hydroseeding to be used on slopes steeper than 3:1. The shrubs may be planted in conjunction with the seeding operations, or at a later time, depending on weather conditions and related factors.

All diversion and collection ditches are of temporary nature. During use, the ditches will be temporarily vegetated using a temporary seed mix shown in Table 3. The slopes of the diversion and collection ditches will be either hydroseeded or broadcast seeded as appropriate.

At the end of their useful life, the diversion and collection ditches will be refilled and surface returned to the approximate original contour. Topsoil from the stockpile will be spread over the area and the area reseeded. The permanent vegetation will be consistent with the final land use as described in the mine plan. Settling ponds or impoundments will be revegetated in a manner similar to that described above for diversion and collection ditches.

The access road and various haul roads will be reclaimed along their shoulders, using the seed mixture listed in Table 1. After their useful life, the road will be removed and the area reclaimed. The road will be filled and graded to the approximate original contour. Topsoil will be spread over the area to at least six inches in depth. Finally, the area will be revegetated with the appropriate permanent reclamation seed mixture (see Table 4).

The railroad siding will be revegetated using methods similar to those for roads. It will be reclaimed consistent with the post-mining land use.

Revegetated areas will be monitored closely to determine if maintenance is necessary for areas of soil erosion, weed control, pest control, reseeding small areas and maintenance fertilizer if required for a period of ten years. Revegetation activities will be conducted parallel to the contour of the land in an attempt to increase water infiltration and reduce soil erosion in these areas. Mulch will be used where needed after planting to control erosion until vegetation is established.

Table 3

TEMPORARY RECLAMATION SEED MIXTURE

<u>SPECIES</u>		<u>LBS. PURE LIVE SEED PER ACRE</u>
Siberian Wheatgrass	(<u>Agropyron sibericum</u>)	6
Indian Rice Grass	(<u>Oryzopsis hymenoides</u>)	3
Sweetclover	(<u>Melilotus officinalis</u>)	2

Table 4

PERMANENT RECLAMATION SEED MIXTURE

<u>SPECIES</u>		<u>LBS. PURE LIVE SEED PER ACRE</u>
Siberian Wheatgrass	(<u>Agropyron sibericum</u>)	6
Indian Rice Grass	(<u>Oryzopsis hymenoides</u>)	3
Sweetclover	(<u>Melilotus officinalis</u>)	2
Shadscale Salt Bush	(<u>Atriplex confertifolia</u>)	1
Rubber Rabbit Brush	(<u>Chrysothamnus nauseosus</u>)	1

In drought years, irrigation will be considered in an attempt to eliminate revegetation failure due to lack of available moisture for germination of seedlings.

Bare patches of failed planting will be prepared and replanted. Where there is evidence of poor soil conditions, the area will be retreated or the topsoil removed as conditions dictate. Attempts will be made to control noxious weeds during reclamation by mowing or other appropriate methods.

Success of revegetation will be determined by comparison of vegetation growth at C.V. Spur to growth observed at the revegetation reference area discussed previously in this document.

816.111 General

According to the applicant, reclamation activities will establish a permanent vegetative cover of the same seasonal variety native to the area and capable of self-regeneration and plant succession, equal in extent and cover to the natural vegetation in the area. In addition, the vegetative cover will be capable of controlling wind and water erosion (MRP, pp. 4-1).

816.112 Introduced Species

The revegetation objective is to achieve a self-sustaining vegetative cover of hardy grasses and shrubs that will become a productive and ecologically stable biotic community. The revegetated areas will be replanted to create desirable wildlife habitat for various wildlife species. Current plans are to use predominately native species for all permanent revegetation.

Areas which will be disturbed later in the life of the coal processing facilities at C.V. Spur will be reseeded with a temporary mixture containing native species or a mixture of native and introduced species. Mixtures containing introduced species may be more efficient in establishing ground cover for preventing erosion and protecting topsoil since some may grow faster and produce more quickly. In some cases a temporary, fast-growing cover crop, such as perennial and annual ryegrass, may be used to prevent erosion where the area may be redisturbed in the near future.

A number of factors were considered in selecting plant species for the permanent reclamation seed mixtures. These include the native species listed in the baseline biological survey, species geographical range, soils, climate, slope and aspect, root competition, cover, seasonal variation, and the ability to support a variety of wildlife species.

816.113 Seeding

The applicant has not committed to planting during the first normal period having favorable planting conditions.

816.114 Mulching

To protect the reclaimed surface against drying, desiccation, and frost heaving, planted areas will be mulched with native hay following drill seeding and broadcast seeding. If necessary, crimping or tacking will be used to stabilize the hay mulch. Wood fiber mulch will be used when hydroseeding slopes greater than 3:1 (MRP, pp. 4-10).

816.115 Livestock Grazing

The postmining land use has been identified as wildlife use only. Grazing by domestic livestock will not be permitted.

816.117 Woody Plants

The applicant has included shadescale saltbush (Atriplex confertifolia) and rubber rabbitbrush (Chrysothamnus nauseosus) as the two woody plant species to be established in a permanent reclamation.

C. Evaluation of Compliance

779.19 Baseline Data

The applicant has not provided sufficient information (i.e., number of samples) to evaluate sample adequacy. The information concerning the shadescale community appears to be a reasonable representation of a typical shadescale community. However, it would not be feasible to require the applicant to resample the shadescale community due to the acreage available at this time (10 acres). Therefore, it is our recommendation that these data be accepted as adequate, and the applicant found to be in compliance with this section.

816.116 Reference Areas

The applicant has not provided sufficient data, such as cover and production measurements on the reference area to properly evaluate the similarity of vegetation within the proposed reference area to that of the area to be disturbed. However, due to the limited acreage available for use as a reference area, the proposed reference area is judged to be adequate as a standard for revegetation.

780.18 Revegetation Plan

The applicant has not adequately addressed supplemental irrigation and specific measures proposed to be used to determine the success of revegetation.

C.V. Spur site is located in a very low precipitation zone (6-10 inches) and the success for establishing vegetation without supplemental irrigation is questionable. Mines in the four-corners area (San Juan, and Navajo) having similar amounts of precipitation, normally use irrigation. The applicant has stated that irrigation will be used when needed, but has not clarified what conditions determine when irrigation is needed. It is expected that irrigation should be instituted when the precipitation has been or is projected to be 10% or more below average.

Also the applicant should provide description of the measures proposed to be used to determine success of revegetation. This should include the methodology for collecting samples for cover and production as well as statistical analysis for sample adequacy and comparing the revegetated areas with the reference area.

816.111 General

The applicant proposes to use five plant species in the permanent reclamation seed mixture. Provided all of these species become established, the applicant will establish a diverse vegetative cover of the same seasonal variety native to the area. The applicant will comply with this section.

816.112 Introduced Species

The applicant has proposed to use Siberian wheatgrass (Agropyron sibericum), and sweetclover (Melilotus officinalis) which are both introduced species. These plant species are necessary to achieve a quick and stable cover to control erosion and are compatible with the other plant and animal species in the area. The applicant is in compliance with this section.

816.113 Seeding

The applicant should provide a detailed schedule for seeding and planting for both the temporary and permanent seed mixtures.

816.114 Mulching

The applicant will comply with this section.

816.115 Grazing

This section does not apply.

816.117 Woody Plants

The applicant has committed to seeding woody species but has not provided an inventory of half-shrubs and shrubs. Since the majority of the shadescale community has already been destroyed, it is not necessary to inventory the remaining portion of the community. However, the applicant should be aware of the remaining requirements in UMC 816.117 (c)(2) & (3).

786.19(b) Permit Approval or Denial

The applicant has not affirmatively demonstrated that reclamation operations can be feasibly accomplished under the mining and reclamation operation plan contained in the application. Therefore, the applicant should submit for approval by the Regulatory Authority an adequate plan to utilize areas representative of on-site reclamation conditions on the area for revegetation experimental plots. These plots should be used to investigate potentially suitable plant growth materials for use as a substitute material for topsoil. Techniques approved by the Regulatory Authority to measure the potential for successful revegetation on these substitute materials will be incorporated into the reclamation operations by the applicant. The plan should address the following factors at a minimum:

1. Seed trials
2. Topsoil control
3. Irrigation
4. Measurements of rooting depth.

D. Revisions to Applicant's Proposal

November 1980, the applicant submitted additional baseline data pertaining to sample adequacy and species diversity.

E. Reevaluation of Compliance

The applicant has provided adequate information to evaluate sample adequacy and the similarity of the reference area to the affected area. The information appears to indicate that the shadescale community was adequately sampled and the reference area is similar to the affected area. The applicant is in compliance with sections 779.19 Baseline Data and 816.116 Reference Areas.

F. Proposed Special Stipulation and Justification

Stipulation:

The applicant shall submit for approval by the Regulatory Authority, an adequate plan to utilize areas representative of on-site reclamation conditions for revegetation experimental plots. These plots shall be used to investigate potentially suitable plant growth materials for use as a substitute material for topsoil. Techniques approved by the Regulatory Authority to measure the potential for successful revegetation on these substitute materials will be incorporated into the reclamation operations by the applicant. The plan shall be submitted within six months and address at a minimum the following factors:

1. seed trials
2. topsoil control
3. irrigation
4. measurements of rooting depth

Justification:

The applicant has not demonstrated that reclamation can be feasibly accomplished under the climatological conditions and reclamation techniques described in the application.

G. Summary of Compliance

If the proposed stipulation is implemented, this section will be in compliance.

H. Proposed OSM Action

Approve proposed action with stipulation.

I. Alternatives to Proposed Action

1. Stop expansion of the refuse areas.
2. Approve proposed action with no stipulations.

J. Residual Environmental Impacts

Approximately 113 acres will be impacted by the proposed action. That is, the the productivity potential will be initially eliminated. Upon revegetation, impacts in productivity will be reduced along with corresponding impacts on soils.

The shadescale community, the only existing undisturbed native community will be disrupted as well as the soils and wildlife ecosystems. However, this community will be replaced by a new community that will be equal or better in cover, production and plant diversity. The new community will not have any negative impacts on the land use.

The impacts to the native vegetation will occur throughout the life of the facility and until revegetation is established.

Topsoil Protection

A. Description of the Existing Environment

Soils within the C.V. Spur coal preparation plant area exhibit a lack of stability, organic matter and horizon development due to climatic conditions. Precipitation ranges from six to ten inches at an elevation of 5,500 feet. The precipitation is distributed fairly evenly throughout the year. Snow falls occasionally during the winter, but usually melts within a few days. Temperatures are moderate, rarely exceeding 90°F or falling below 15°F.

The combination of climatic factors within the survey area has resulted in soils that lack evidence of strong development. The arid climate has precluded large amounts of water moving through the parent material; thus removal and deposition of materials within the soil profile have been minimal. Vegetative production is relatively low; therefore, organic content of the soils is low to moderately low. Erosion has kept pace with soil development, causing the soils to be shallow.

B. Description of Applicant's Proposal

The area was surveyed (Order 1 intensity) according to procedures outlined in the National Cooperative Soil Survey Handbook (1975). Mapping was performed at a scale of approximately 6,000 or one inch equals 500 feet (MRP, Volume 1, Section 2.11, pp. 2-57).

The soil survey map identifies seven mapping units which represent soil series, soil associations, soil complexes, and land types. In all, six soil series were identified within the survey area. Mapping units were consistent with SCS methodology. However, it appears, from the chemical analysis, that several soils series are classified incorrectly. This occurs, primarily, at the series level but some family level misclassifications also occur. This was documented by Beaver Creek Coal Company for each appropriate description in the MRP.

Soils were sampled by horizon and analyzed using standard agricultural techniques as specified in Table 13 in Section 2.11 of the Mining and Reclamation Plan (MRP). The parameters tested were paste pH, electrical conductivity, moisture saturation percentage, SAR, organic matter, plant

available calcium, magnesium, sodium, phosphorus and potassium, particle size distribution, nitrate nitrogen, ammonia nitrogen, lime and boron. The techniques used were those of USDA Handbook 60, (1954), and American Society of Agronomy Monograph #9 (Black, 1965).

Beaver Creek Coal Company does not plan to strip the A horizon (topsoil) separately from the underlying subsoils and substratum. Stripping will mix all horizons of the soil and this will be stockpiled separately from other material. By using this procedure, the applicant, during the reclamation process, will be using a substitute material for topsoil (suitable plant growth medium). This is due to the OSM and Utah definitions of topsoil. Topsoil materials suitable for seedbed will be replaced on the rough graded, finished surface of subsoil. Prior to replacement of seedbed material, subsoil will be lightly scarified to create a suitable bond to the overlying seedbed material. All reclaimed areas will have a minimum of six inches of seedbed quality material.

At refuse disposal sites subsoil material will be spread to an average depth of 18 inches over the scarified surface of the completed refuse disposal pile. An average of six inches of topsoil will be placed on top of the scarified subsoil surface.

Coal processing plant sites were stripped of topsoil only and contain the subsoil base to be used for revegetation. This material will be lightly scarified before applying seedbed quality material to a minimum depth of six inches. The seedbed for the refuse disposal sites and coal processing facility sites will then be prepared for seeding as described in the MRP, Section 4.1-B.5.

C. Evaluation of Compliance

Adequate Soils to be Segregated

The applicant has documented on Table 16 (MRP, pp. 2-80) that sufficient seedbed quality materials are available for reclaiming those areas proposed to be disturbed. These areas, approximately 20.6 acres, can be covered with six inches of seedbed quality material with a surplus of approximately 3.7 acre-feet.

The remaining area (140 acres), disturbed prior to topsoil salvage operations should also be reclaimed with seedbed quality material. Table 13 (MRP, pp. 2-74) indicates a potential to utilize subsoils and disturbed land material for suitable seedbed quality material. The applicant should conduct test plot studies using subsoils and disturbed land material with amendments, irrigation and selective vegetative species.

Removal of Suitable Material Prior to Disturbance

The applicant has proposed to strip topsoil (seedbed quality materials) in advance of any future disturbance. However, approximately 70 percent of the total area has already been disturbed and only 3,500 bank cubic yards (BCY) of seedbed quality materials has been salvaged. Therefore, every effort should be made by the applicant to salvage all potentially good seedbed quality material for reclamation of the entire area (160 acres).

Removal of Adequate Depth of Suitable Material

The applicant has provided soil chemical and physical analyses on Table 13 (MRP, pp. 2-74) and a soil suitability analysis on Table 14 (MRP, pp. 2-76). These analyses appear to be based upon single test holes and may not represent

the entire area. The applicant should take additional samples and compare the depths of suitable seedbed quality materials with those found on Table 14. Also, the applicant should consider blending less desirable subsoils with suitable seedbed quality materials to optimize the volume of seedbed quality material for reclamation.

Evaluation and Protection of B and C Horizons

The applicant will not segregate the B and C horizons, i.e., all three soil horizons will be stripped together. In light of the information supplied in the application and the topsoil characteristics at the site, this is a reasonable operating plan.

Evaluation of Topsoil Substitutes

The applicant has not identified sufficient materials to reclaim all disturbed areas. The applicant should locate additional substitute materials for topsoil (seedbed quality material).

Limit Storage

Topsoil (seedbed quality material) will be stockpiled and vegetated to minimize the potential for wind and water erosion. The applicant is in compliance with this section.

Overburden Scarification

The applicant states that prior to redistribution of topsoil (seedbed quality material) the overburden will be ripped. The applicant is in compliance with this section.

Soil Testing

As discussed above, additional testing is necessary to identify suitable seedbed quality material and/or soil amendments.

D. Revisions to Applicant's Proposal

None

E. Reanalysis of Compliance

Not applicable.

F. Proposed Stipulations and Justification

The applicant should sample the remaining undisturbed topsoil on a 100-foot center grid for chemical and physical properties. Those soils or subsoils that are determined suitable for plant growth material, should be removed and stored as described in the application.

In addition, the applicant should identify other suitable materials to be used as a substitute for topsoil. A description of the physical and chemical properties should be submitted within six months for approval by the Regulatory Authority. These substitute material should be used in revegetation experimental plots to demonstrate the potential success of revegetation (see stipulation in revegetation section).

Justification:

It is also evident that there is an insufficient amount of suitable topsoil (seedbed quality material) to reclaim the entire 160 acres with at least six inches of topsoil as described in the Mining and Reclamation Plan (MRP). Therefore, an efficient topsoil removal program is required to obtain the maximum amount of suitable topsoil and suitable substitutes for reclamation.

Summary of Compliance

The applicant's proposals will comply provided the applicant complies with special stipulation in Section F.

H. Proposed OSM Action

Approve the topsoil protection plan with the special stipulation discussed above.

I. Alternatives to the Proposed Action

The applicant is using known and accepted state-of-the-art practices for stripping, stockpiling and redistribution of topsoil (plant growth medium). The applicant could segregate and stockpile separately the A horizon and subsoils. But, according to the data presented in the Mine and Reclamation Plan it is questionable that substantial benefits would be gained when weighed against additional disturbances created (i.e., stockpiles) and additional handling of the soil.

Disapproval of the mining and reclamation plan, as submitted, is also an alternative to the proposed action. However, the plan is in compliance, for handling of topsoil, with the OSM. The applicant is utilizing methods that will have the minimal environmental affects on the topsoil. From the standpoint of soils, disapproval of the plan does not seem to be a viable option.

J. Environmental Impacts of the Proposed OSM Action and Of Alternatives to the Proposed Action

Approximately 113 acres would be impacted by the proposed action. That is, the productivity potential will be initially eliminated and upon revegetation will be reduced along with corresponding impacts on revegetation.

The six soil series identified in the soil survey, along with their individual physical, chemical and biological characteristics will be completely disrupted. Along with these soils their related plant/animal ecosystems will also be destroyed. However, these native systems will be replaced by new soil mediums that should be, more uniform in character in extent.

Stockpiling of the soils may reduce or change the biological community of the native soils. This will not restrict the use of the soils as plant growth medium, but may influence the time required for the biological community to reach premining numbers and thus will affect the overall soil forming process.

Soil erosion from wind and water will be increased during the life of the mine. However, sedimentation ponds, and timely seeding of exposed areas and stockpiles will control the amount of sedimentation entering the natural system.

The impacts to the native soil resource will occur throughout the life of the facility and until the soil-forming processes gradually establish new soil types, probably with different characteristics than those of the existing soils.

Cultural Resources

A. Description of Existing Environment

One cultural resource survey report has been prepared for the ARCO Coal Company C.V. Spur processing and transportation area in Carbon County, eastern Utah. Because approximately 2/3 of the 160-acre site is severely disturbed, only 50-60 surface acres were examined for cultural resources. This effort located no cultural resource sites or isolated finds. However, no National Register of Historic Places (NRHP) check was performed by the applicant.

B. Description of Applicant's Proposal

A cultural resource survey was conducted for the applicant by the Utah Archaeological Research Corporation on June 9, 1980. OSM's Apparent Completeness Review (ACR) of the applicant's report cited deficiencies in the cultural resource documentation. Most importantly, no National Register of Historic Places check can be documented. A requirement will be stipulated to protect not-presently identified sites from disturbance until final eligibility assessments are made (see Section F, Special Stipulations). Additionally, ARCO will be required by stipulation to eliminate the ACR noted report deficiencies. Additionally, ARCO will be required by stipulation to eliminate the ACR-noted report deficiencies. Indirect and direct impacts to the sites adjacent to the processing plant have not been addressed.

C. Evaluation of Compliance

Applicant's Compliance

The applicant has provided a cultural resource report. The report was subjected to an ACR and was found not in compliance. However, correction of the report deficiencies will be required by Stipulation.

To be in compliance, the applicant must submit an addendum to the current report that corrects the identified deficiencies.

OSM Compliance

Compliance with Section 106 of the National Historic Preservation Act of 1966 cannot be completed until the report deficiencies are corrected. Therefore, OSM is not in compliance with the National Historic Preservation Act nor the provisions of the Programmatic Memorandum of Agreement (PMOA). However, if all the stipulations in Section F are adhered to, OSM will be in compliance.

D. Revisions to Applicant's Proposal

None

E. Reevaluation of Compliance

None

F. Proposed Special Stipulations

1. Within 30 days of acceptance of departmental approval of the mine plan, the applicant shall insure that their cultural resource consultant contacted with OSM to discuss deficiencies in and corrections for the report on cultural resources and within 60 days of this meeting, will provide an addendum to the current report that corrects the following report deficiencies:

1. Provide proof of a National Register check.
2. Provide an explicit statement of survey methods that include survey strategy, ground cover, visibility, presence of unknown sites, and so on.
3. If any areas were not surveyed, a detailed explanation should be included.
4. Provide a detailed discussion of the criteria used to define a site.
5. Assess likelihood of locating buried sites.
6. If any National Register sites are identified, identify and describe the type and degree of impact expected from the proposed action on those sites eligible for or listed on the National Register.

Justification: 36 CFR 800 and the PMOA.

2. If, during the course of operations, previously unidentified cultural resources are discovered, the applicant shall insure that the site is not disturbed and shall notify the OSM. The operator shall insure that the resource(s) is properly evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.6). Should a resource be determined eligible for listing in consultation with the OSM, and the SHPO, the

operator shall confer with and obtain the approval of the OSM, and the SHPO concerning the development and implementation of mitigation measures as appropriate. If previously unplanned surface disturbing activities are necessary, the applicant shall submit a justification and maps showing the proposed disturbance to the OSM for their approval prior to the commencement of these activities. If sites are identified which are eligible for listing in the National Register, the applicant shall provide a plan for dealing with potential direct or indirect impacts caused by their activities.

Justification: In accordance with Part II, Section C and F of the PMOA.

Justification: Pursuant to 36 CFR 800 and the PMOA.

G. Summary of Compliance

The applicant will be in compliance with OSM regulations if all stipulations in Section F are adhered to.

H. Proposed Departmental Action

The Secretary could approve the mine plan with proposed special stipulations, which will provide protective measures for cultural resources.

I. Alternatives to Proposed Action

One alternative would be not to operate and thus no cultural resources (if they exist adjacent to the processing facility) would be directly impacted. A second alternative is to defer action until the applicant completes the stipulated requirements and submits an adequate report thus allowing OSM to be in compliance with the National Historic Preservation Act of 1966 and implementing regulations 36 CFR Part 800. A third alternative is to approve applicant activities and implement those requirements stipulated in Section F. This allows the applicant to proceed and allows OSM to comply with all applicable federal legislation and regulation. The third alternative is the preferred one.

J. Residual Impacts of Proposed Departmental Action

No known cultural resources will be directly impacted by the proposed departmental approval of the plan. At present, no National Register cultural resources have been identified or have been determined eligible or potentially eligible for nomination to the NRHP.

Unknown sites with potential information may also be destroyed by applicant activities or as a result of increase population in the vicinity. Adverse impacts to unknown cultural resources through vandalism and unauthorized collections can be anticipated in the region due to probable population increases.

Air Quality

A. Description of Existing Environment

C.V. Spur is an existing coal preparation plant which can clean, blend, size, store and loadout coal. The plant processes coal from various mines. There is no on-site air quality data available to characterize the existing air quality. However, considering the existing sources of particulates, the baseline should be relatively low.

The climate is typical of a semi-arid, high plains, mid-latitude region cut off from marine air masses. The climate at the site should be similar to Price, Utah. The average annual temperature is 50°F. The coldest month is January with a monthly mean of 23°F and the warmest month is July with a monthly mean of 74°F. The frost-free growing season averages about 150 days. The average annual precipitation is around nine inches a year. Based on data taken at Castle Dale, the winds in the Castle Valley are north through northwest most of the time with a shift to the south-southeast during spring. The mean annual wind speed is about 6 mph.

B. Description of Applicant's Proposal

Fugitive Dust Control Plan

The applicant plans to construct new loading and handling facilities. Reductions in dust emissions will be accomplished by the installation of additional dust control measures. The dust control measures either in use or proposed for the facility are summarized in Table 1.

Air Quality Monitoring Plan

The applicant proposes to collect TSP samples at two locations every 6th day for four months after completion of construction activities. One monitor is located upwind and one downwind.

C. Evaluation of Compliance

1. The climatological data is adequate.
2. Fugitive dust control measures are adequate. The emissions at the facility should be reduced by about 80 tons per year.
3. The short-term monitoring is adequate to determine if an air pollution problem exists. If a problem does exist, additional monitoring and controls may be necessary.

D. Revision to Applicant's Proposal

None

E. Reevaluation of Compliance

None

TABLE I

Air Pollution Controls
C. V. Spur

<u>Source</u>	<u>Control Method</u>	<u>Estimated Control Efficiency</u>
Truck Dump	Enclosed hopper with dust suppression water sprays on hopper discharge	75%
Crusher	Enclosed crusher, with dust suppression water sprays on crusher discharge	75%
Conveyors	Covered conveyors	90%
Preparation Building	Coal is wet from washing	100%
Pile Load-In	Concrete stacking tube	80%
Pile Wind Erosion	Water Sprays	80%
Pile Load-Out	Beneath pile reclaim via gravity fed vibrating feeder	85%
	Water sprays in reclaim tunnel	75%
Silo/Loadout	Enclosures 10,000 ton silo Loadout partially enclosed with telescoping loading chute	75%
Access/ Haul Roads	Water sprays and/or chemical stabilization	50-78% 80-90%
	Speed Control	25-80% (depending on speed)
Topsoil Stockpiles	Stabilization and revegetation	75-85%
Refuse Piles	Compaction and revegetation	75-85%

F. Proposed Special Stipulations

None

G. Summary of Compliance

The proposed action will comply.

H. Proposed Departmental Action

To approve the air resources section in terms of minimizing air pollution.

I. Alternatives

None

J. Environmental Impacts

The approval of the preparation/loadout facility will continue the emission of particulates from the site. However, the approval will result in the implementation of additional dust control measures which will result in a net reduction in emissions of about 80 tons per year. Computer modeling done by Utah Department of Health indicate that no State or Federal standards will be exceeded.

Coal Processing Waste Disposal

A. Description of Existing Environment

Coal processing waste at the C.V. Spur is truck hauled from the preparation plant to the designated disposal site within the permit area as shown in Exhibit 3, Refuse Disposal and Topsoil Stockpile Areas. The processed waste is the reject from the washing cycle used to clean and upgrade the coal produced for the C.V. Spur operation. The disposal operation has been in practice since 1977, and the construction and maintenance of the waste bank is under the supervision of a registered professional engineer.

B. Description of Applicant's Proposal

The applicant proposes to continue disposing the coal processing waste to the designated site within the permit area. The refuse area will expand over the life of operation an addition approximately 36.9 acres.

Refuse bank will be inspected by a qualified professional engineer at least four times a year; this procedure will continue until the waste bank is completed.

Site inspections will include observations of potential safety hazards, slope stability, removal of topsoil and organic material prior to deposits of processing waste, as well as construction and maintenance performance standards.

A subdrainage system is installed upslope from the disposal area to intercept the ground water flow in the vicinity of the site. Surface runoff collected from the refuse pile is directed to sediment ponds downstream. Slope protection is provided at the face of the refuse bank through the use of terracing. Upon completion, the waste bank will be graded, covered with two feet of soil and topsoil, and reseeded.

C. Evaluation of Compliance of Proposal Plan

816.81 General requirements

The applicant proposes to continue disposing all coal processing waste to an existing refuse area within the permit area. The refuse dump site is confined to the southeast corner of the C.V. Spur property and it is located on a relatively flat and stable ground.

The Design

Construction and maintenance of the waste bank is under the supervision of a registered professional engineer. The processing waste is considered to be of low-sulfur, non-acid, and non-toxic material as described in the analytical reports prepared by Commercial Testing and Engineering Company. The plan is in compliance with the general requirements.

816.82 Site Inspection

Applicant has stated that the refuse bank has been and will be inspected by a qualified professional engineer on a quarterly basis. The site inspection will continue until the waste bank is completed, graded, covered with topsoil, and reseeded. Site inspections will include observations of potential safety hazards, slope stability, removal of topsoil and organic material prior to deposition of refuse and also that construction and maintenance are being performed in accordance with the design. In the case of a potential hazard,

the regulatory authority will be immediately notified. Copies of the inspection finding will be maintained at the mine site. Proposed plan complies with 816.82.

816.83 Water Control Measures

A subdrainage system is installed upslope from the refuse disposal area. This system consists of a backfilled trench containing an 8-inch diameter perforated pipe surrounded by a clean gravel. Water from this trench will flow into a buried 10-inch pipe and discharge into a buried 25,000-gallon sump at the northeast corner of the property. The water from this sump is pumped and recirculated into the plant washing system.

The surface drainage from and around the refuse pile is directed to a collection pond downslope. The overflow (if any) from the pond is conveyed through a collection ditch to a filtering pond before being discharged into the same underground sump, and recirculated through the plant as wash water. Slope protection is provided at the face of the refuse bank by means of terracing to minimize surface erosion. Applicant's proposal complies with 816.83.

816.85 Design and Construction

Site preparation includes removal of vegetation and topsoil which will be placed in designated storage area. Refuse will not be dumped beyond the perimeter of the prepared site. Truck loads dumped will have at least 3 to 5 feet clearance from previous loads to allow sufficient spreading to be air-dried. Waste bank will be constructed of compacted refuse layers not to exceed 24-inches thick. No lift is to be placed on a layer unless the compaction effort is adequate to obtain a 90% of maximum dry density.

Long-term stability is analyzed by OSM, using the Slope II computer program and the Simplified Bishop Method. The OSM analysis is based on the most critical section of the waste bank and very conservative strength parameters are assumed for the processed waste and the foundation material. Provided the waste bank will be constructed to the performance standards as proposed, a minimum static factor of safety is calculated to be 1.98. Table 1 contains the strength parameter inputs and Figure 1 shows the graphical display of the computer solutions. Upon completion, the waste bank will be graded and contoured to establish surface drainage patterns. The site will be covered with at least eighteen inches of incombustible material in addition to six inches of topsoil and revegetated with specified seed mixture. Final configuration of the waste bank is shown in Exhibit 8, "Post-Mining Topography and Drainage." Applicant's proposal complies with 816.85.

816.86 Burning

The applicant has proposed the following plan in the event of a fire.

For small areas of heat or fire, it will be best to smother the fire by hauling incombustible material from the "soil storage pile" only and spreading and compacting it over the burning area to eliminate the air supply. For large areas of heat or fire (area greater than 100 ft. x 100 ft.), it will be necessary to begin removal of the burning material. The removed material shall be spread in thin layers onto a prepared area for extinguishing. Water will be employed only if the spreading of material is not sufficient to prevent further burning. Once a fire is extinguished, a layer of incombustible material at least eighteen inches shall be placed over the burned material and compacted before any further waste deposition takes place over it.

Only the plant supervisor and others designated by him will be allowed to participate in fire extinguishing. All authorized persons will be familiar with the above techniques. This part of the plan complies with 816.86.

816.87 Burned Waste Utilization

It is not anticipated that any burned coal waste or refuse is to be removed from any disposal area. This section is not applicable.

816.88 Return to Underground Workings

This section is not applicable.

Table 1

Strength Parameters of Waste and Foundation Materials

80/12/19. 11.11.36.
PROGRAM SLPOUT

1	2	3	4	5	6	7	8
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
HEAD21112-19-80	5	WORST CASE CONDITION BEAVER CREEK COAL CO				112	11 1
GRID 0							
0.01280. 50.0	5 149. 50.0	5	0.0	0.0	10 135. 40.	0.00.000	0.00 0.0
GEOM 2							
0.1270.1445.2300.	0.	0.	0.	0.	0.	0.	0.
100. 160. 100. 100.	0.	0.	0.	0.	0.	0.	0.
0.2300. 0. 0.	0.	0.	0.	0.	0.	0.	0.
100. 100. 0. 0.	0.	0.	0.	0.	0.	0.	0.
SOIL 2							
115.00	100.00	25.00	0.00	COAL WASTE WORST CASE			10
145.00	500.00	20.00	0.00	MANCOS SHALE WORST CASE			20
POR4 2 WORST CASE PORE PRESSURE							
0.1140.1445.2300.	0.	0.	0.	0.	0.	0.	0.
100. 120. 100. 100.	0.	0.	0.	0.	0.	0.	0.
0.1140.1445.2300.	0.	0.	0.	0.	0.	0.	0.
100. 120. 100. 100.	0.	0.	0.	0.	0.	0.	0.
CALC 0							
1	2	3	4	5	6	7	8
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

For definition of key words and data input information, refer to Slope II Computer Program User's Manual S-10 available in the Earth Sciences and Geotechnical Branch, OSM, Region V.

DATE: 12-19-00 RUN NUMBER: 5 PROJECT: WORST CASE CONDITION BEAVER CREEK COAL CO

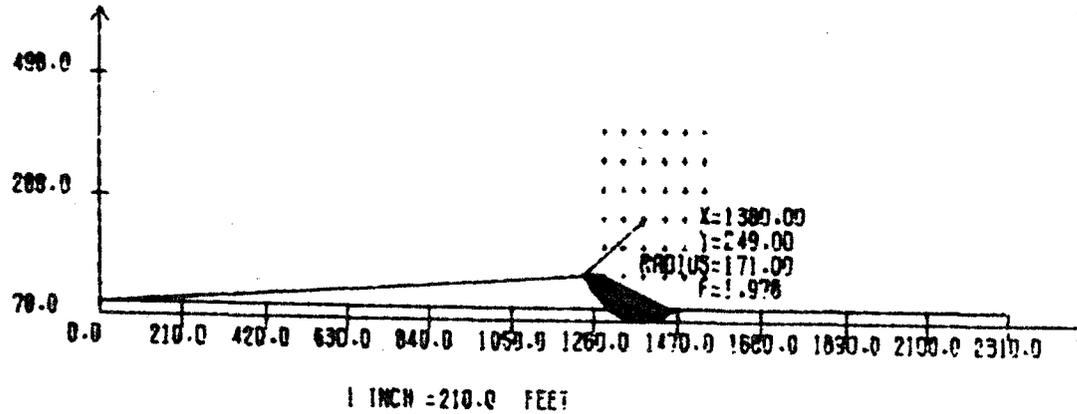
SIMPLIFIED BISHOP'S METHOD

Figure - 1
OSM Stability Analysis
Processing Waste Pile, C.V. Spur

① UNIT WEIGHT = 115.00 PCF
COHESION = 100.00 PSF
FRICTION ANGLE = 25.00 DEGREES

② UNIT WEIGHT = 145.00 PCF
COHESION = 500.00 PSF
FRICTION ANGLE = 20.00 DEGREES

12



816.89 Disposal of Non-Coal Wastes

Non-coal waste including garbage generated by the C.V. Spur operation are placed and stored in small pits located just east of the sediment pond near the pile. This is a temporary storage area, and no burning of garbage will be employed. Run-off from this area goes directly to the sediment pond. When the pit is full, the garbage will be loaded onto a truck and hauled to the Price City Dump for final disposal.

D. Revisions to Applicant's Proposal

None

E. Reevaluation of Compliance

None

F. Proposed Special Stipulations with Justification

None

G. Summary of Compliance

The coal processing waste disposal plan is in compliance with the performance standards specified in UMC 816.81 through 89.

H. Proposed Departmental Action

Approve the plan with regard to coal processing waste disposal.

I. Alternative to the Proposed Departmental Action

None

J. Environmental Impacts of the Proposed Departmental Action

The coal processing waste disposal at C.V. Spur is an existing operation. Departmental approval of this plan would allow the applicant to continue the disposal of processed waste to a designated area over the life of the operation. The site will cover an additional area of approximately 37 acres upon completion in 1995. The entire waste bank will be covered with non-combustible material, topsoiled, and reseeded. Applicant's reclamation activities to the completed waste bank will establish a permanent vegetative cover of the same seasonal variety native to the area and capable of self-regeneration. The topography at the waste disposal site will be permanently altered; however, the final configuration of the waste after reclamation is consistent with the general area. The processing waste has been proved to be a non-acid and non-toxic substance, damage to the hydrologic cycle is unlikely. No significant environmental impacts from the waste bank is anticipated.

Roads

A. Description of Existing Environment

The C.V. Spur Preparation Facility consists of two raw coal handling systems, a coal washing plant, a clean coal and refuse handling system, and a rail loop loading facility as shown in Exhibit 2. Raw coal is brought to the facilities from surrounding underground mines by trucks. Coal is hauled from the Gordon Creek Nos. 2, 3, and 6 Mines east of State Highway 139 to U.S. Highway 6 south to State Highway 10, then east of county roads to the southwest corner of C.V. Spur. Coal from the Huntington No. 4 Mine is hauled southeast on the Huntington Canyon Road to State Highway 10, then north on Highway 10 to the C.V. Spur turnoff.

Two truck dump facilities are used, one for coal to be washed and another one for coal that does not require washing. Unit trains of up to 100, 100-ton cars are brought into the property from the east side, around the track loop and into the base of the silo. Loading of the trains is controlled by two hydraulically-operated gates and chutes.

B. Description of Applicant's Proposal

All roads, conveyors, rail loop, mine sampling house, preparation plant and loading facilities are existing structures which have been and will be maintained to comply with MSHA regulations. Upon termination of the C.V. Spur operation, all facilities will be removed and the areas affected by the operation will be reclaimed in accordance with the proposed Reclamation Plan of this application.

C. Evaluation of Compliance of Proposed Plan

816.150 General

The haul road considered in this permit application is a pre-existing structure. It connects the county road near the southwest corner of the C.V. Spur property to the facilities and the destination is the truck dumps. The road design has been certified by professional engineers and is consistent with project usage. The plan complies with UMC 816.150.

816.151 Location

The 24-foot wide Main Access Road serves as the coal haul road and plant access road. The length is approximately 2600 feet from the intersection with the county road to the plant parking lot. No part of the road is located in the channel of an intermittent or perennial stream. There are no stream fords indicated in the haul road route. The refuse road is approximately 950 feet and it runs from the preparation plant to the refuse dump area in the southeast section of the C.V. Spur property. The length will decrease as the refuse area increases during the life of the operation. The location plan as shown in Exhibit 7 complies with 816.151.

816.152 Design and Construction

(a) Horizontal and vertical alignment

Horizontal alignment is designed with moderate curve. The road layout is consistent with existing topography. Vertical alignment as shown in the road profile drawing (Mine Plan Exhibit 9) indicates the overall grade is less than 2%. Both the horizontal and vertical alignment should not represent any problem. This part is in compliance.

(b) Road cuts and embankments

There are no road cuts at the C.V. Spur. Typical cross-sections of the Main Access Road and the Refuse Road as shown in Exhibit 9 indicate several minor fill embankments. These fill structures are constructed of compacted suitable earth material with embankment slope of 3h:1v which is more conservative than the OSM requirement.

816.153 Drainage

All stream flows at or around the C.V. Spur property are ephemeral and the flows are directed either to sediment ponds, catch basins, or natural drainage as shown in Exhibit 7 of the Mine Operation Plan. V-ditches are provided with the haul/access road and the refuse road for drainage control. The V-ditch is designed with in-slope of 3h:1v and various out-slopes depending on earth conditions encountered. Minimum depth of the drainage ditch is one foot. Under the 10-year, 24-hour estimated peak flow condition, the flow velocity is found to be less than one foot per second. Culverts installed at various locations throughout the C.V. Spur property are sized to safely pass the 10-year, 24-hour precipitation event. The design of drainage ditches and culverts is considered to be adequate.

816.154 Surfacing

Both the Main Access Road and the Refuse Road are surfaced with gravel which is relatively durable and non-toxic material. The plan complies with 816.154.

816.155 Maintenance

C.V. Spur has committed to maintain the haul road and access roads throughout the life of the operation. The roads will be watered as necessary to help alleviate the dust produced by traffic. Dust suppressant chemicals will be applied on an as-needed basis (MRP, pp. 3-13 and 19).

816.156 Restoration

Upon termination of the C.V. Spur operation, all the haul road, access road, and related cross-drainage structures including culverts and ditches will be removed and the area affected will be reclaimed. The roads will be filled and graded to the approximate original contour. Topsoil will be spread over the reclaimed area to at least six inches in depth and revegetated with designated seed mixture (MRP, pp. 4-12 and 13).

D. Revisions to Applicant's Proposal

None

E. Reevaluation of Compliance

None

F. Proposed Special Stipulations with Justification

None

G. Summary of Compliance

The roads/transportation portion of the plan is in compliance with UMC 816.

H. Proposed Departmental Action

Approve the plan with regard to roads/transportation portion.

I. Alternative to the Proposed Department Action

None

J. Environmental Impacts of the Proposed Department Action

The C.V. Spur is an existing coal handling and loading operation. Environmental impacts from the haul roads would primarily be related to noise and dust as a result of hauling coal from several nearby underground mines to the rail loading facilities. Departmental approval of this part of the permit application would not result in any additional construction of haul/access roads. Instead, the approval will permit the applicant to continue the use of the existing structures. Upon termination of the loading operation, the applicant has committed to reclaim all roads and areas affected by the operation as described in the proposed reclamation plan. Due to the fact that the entire disturbed area is relatively small, environmental impact from the roads should be negligible.

Hydrology

A. Description of Existing Environment

Castle Valley Spur (C.V. Spur) is located on the north slope of a low ridge between the Price River and Miller Creek between the elevations of 5,770 and 5,480 feet. C.V. Spur has been in operation since 1977, the duration of the facility is not stated; however, available space will limit operations to 17 years at present production rates. Facility operations are expected to be confined to the 160 acre proposed permit area for the life of the facility. C.V. Spur is currently zoned for industrial use; prior to December 17, 1973 it was zoned for agricultural use. Agricultural activities were abandoned prior to surface mining activities; also, land usage for cattle grazing was quite limited.

All natural surface water channels within the proposed permit area are ephemeral. The permit area consists of 160 acres, which has approximately a two-percent slope to the northeast. Natural runoff flows north one and one half miles through natural channels, where it enters the Price River. An estimated 47 acres of the 160 acre permit area are undisturbed; therefore, the majority of the land (113 acres) has been disturbed. Runoff from the disturbed areas goes into sediment ponds (six total) which are equipped with overflows. Water from these overflows is directed to a final filtering pond where it is cleaned by gravel dikes and then recirculated back through to the preparation plant wash cycle (p. 4-15 of C.V. Spur Mining and Reclamation Plan). Drainage from the refuse pile will also be diverted into these ponds. Surface water collected from the C.V. Spur affected area would normally flow unimpeded over agricultural lands to the Price River.

Based upon data collected at the Price weather station, which is the closest weather station to the site, an estimated six to ten inches of precipitation falls on the C.V. Spur site annually. The NOAA Atlas-2 indicates the following values for the 24 hour duration storm events at this geographic location:

- 2 yr. - 24 hrs., 1.0 in.
- 10 yr. - 24 hrs., 1.7 in.
- 25 yr. - 24 hrs., 2.1 in.
- 100 yr. - 24 hrs., 2.6 in.

B. Description of Applicant's Proposal

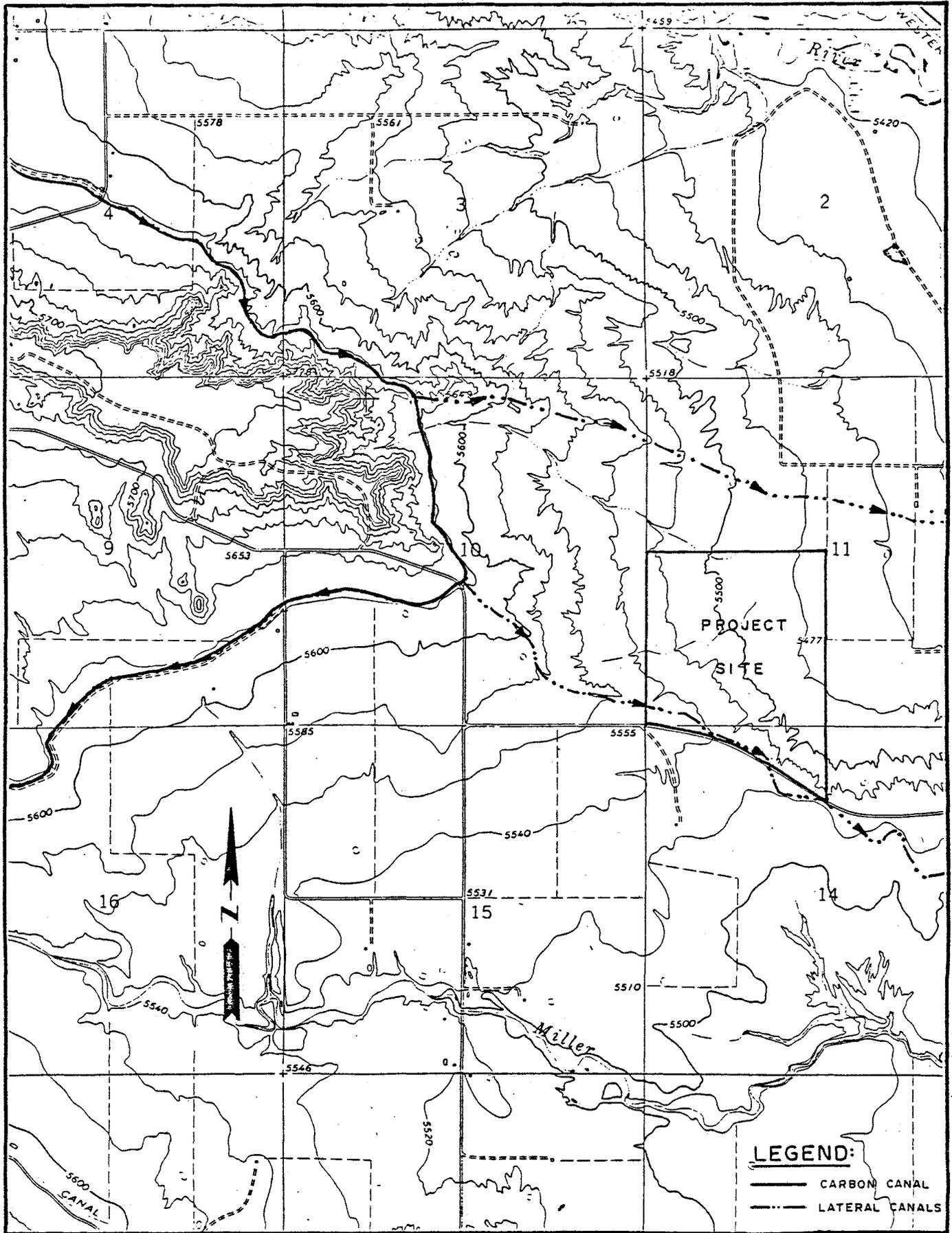
Surface Water

Protection of the hydrologic balance at C.V. Spur is accomplished by runoff control which prevents mixing of disturbed and undisturbed drainages. Undisturbed or natural drainage is diverted into natural channels whereby it flows into the Price River. Disturbed area drainage and ground water is directed to and then stored in an underground water tank, for future recirculation through the wash plant.

Beaver Creek Company's hydrologic study for C.V. Spur proposes that for the entire watershed (see Figure 1), the undisturbed areas (326 acres) should be assigned a curve number of 91 and disturbed areas (129 acres) should be assigned a curve number of 89. The study utilizes the Soil Conservation Service (SCS) method to determine the runoff volume for three categorized areas of the watershed. Subarea one, the largest area of the the three (296 acres), is estimated to yield a volume of 22.40 acre feet with a peak flow of about 35 cubic feet per second resulting from the 10 year, 24 hour storm event. Subarea two includes the entire disturbed area (129 acres) which yields 8.40 acre feet of runoff. Subarea three consists of only 30 acres of undisturbed land.

Beaver Creek Coal Company has submitted design specifications for the construction of six sedimentation ponds on this site. These ponds are constructed and have 9.58 acre feet of storage capacity available for surface

Figure 1. Project Watershed Area



runoff. This volume includes a total of 1.08 acre feet of sediment storage volume incorporated into the design specifications of the six ponds. The disturbed area runoff (8.40 acre feet) resulting from the 10-year, 24-hour storm event should be totally contained on the C.V. Spur site and there should be no discharge from the permit area. Water will be pumped from sediment ponds to a filter-pond for cleaning and recirculation via a portable two horse power gas powered pump rated at 192 gallons per minute.

Overland flow on the permit area will be controlled and directed by the use of diversion ditches and conveyance ditches. All ditches will be earth-lined and provided with erosion controls (riprap and/or straw dikes). Diversions and ditches are designed to safely pass the peak runoff from a 10-year, 24-hour precipitation event (C.V. Spur Mining and Reclamation Plan, p. 4-54).

There are no permanent impoundments proposed for the C.V. Spur site. Since all of the ponds are constructed below the ground surface level, most stability precautions are not a necessity; however, these structures will be regularly inspected. Ponds will be cleaned as necessary (before reaching 60% of design volume) and the sediment will be disposed of in the refuse dump. All structures are designed to overflow at volumes in excess of the 25-year, 24-hour precipitation event (estimated to be 960 gallons per minute for ponds #1, 2, and 3; 1,723 gallons per minute for pond #4; 1,745 gpm for pond #5; and 4,443 gpm for pond #6). In addition, all discharge structures will be built to incorporate erosion preventive energy dissipators into their final design.

During reclamation, all sedimentation ponds will be removed, and the natural drainage around and through the permit area will be restored.

Beaver Creek Coal Company has an unusual water quality problem, which the C.V. Spur hydrologic study describes as follows:

The water in the upper reaches of the Price River is of high quality; however, as the river traverses the central and lower portion of the Price River Basin, the quality of the water in the river steadily degrades due to the geologic nature of the area and to the irrigation return flow which enters the river (p. 14).

A 1969 and 1970 investigation of surface water quality in the Price River Basin was conducted in cooperation between the U.S. Geological Survey and the Utah Division of Water Rights; the results of their investigation support the Beaver Creek Coal Company's assertion that water quality in the Price River decreases with passage through the central and lower portions of the Price River Basin.

Surface water monitoring stations have been established on the C.V. Spur site. These stations will facilitate the collection of baseline water quality data. Samples will be collected monthly (if possible due to the ephemeral nature of surface flows on this site) for one year.

C. Evaluation of Compliance of Proposed Plan

816.42 The map labeled "Mine Operations", Exhibit 7 indicates that all surface drainage from disturbed areas will be directed into sedimentation ponds. Effluent limitations should be achieved, and no off site hydrologic

impact should result from surface runoff that is within the limits of the design storm. Drainage control for surface water at this site is a closed, total containment system.

816.43 Overland diversions are adequately sized to pass the required design storm of a 10-year, 24-hour precipitation event. There will be no discharge to underground mines, associated with this operation.

816.44 - Not applicable to this operation.

816.45 - Sediment control structures are of adequate design and will function accordingly.

816.46 - All applicable aspects of sediment pond design have been addressed within the mine plan, and are considered by OSM to be of conservative design.

816.47 - Discharge structures are considered by OSM to be of good engineering design and are also considered to be conservative due to the correspondent conservativeness inherent in using the SCS method for quantification estimates of storm runoff.

816.48 - There are presently no acid or toxic forming coal related waste materials at C.V. Spur, although boron from the refuse has been identified as toxic to vegetation. Further investigations are necessary in this regard. Since runoff from the site (after mining) may co-mingle with irrigation water, boron above the level of 750 ug/l (micro grams per liter) may damage the crops (Quality Criteria for Water, EPA, 1976).

816.49 - There will be no permanent impoundments associated with this operation.

816.52(b) - Baseline data will be collected at the site monthly, for one year. There will be no discharge from this site, so surface water monitoring of the Price River should not be necessary.

816.54 - Beaver Creek Coal Company does not anticipate that its activities at the C.V. Spur site will impact the water supply of other users. However, Beaver Creek Coal Company presently has ownership of 227.1 acre feet per year and intends to purchase 15 acre feet per year until a total holding of 362.1 acre feet of Scofield Reservoir water is available for water rights replacement. The anticipated annual water consumption of C.V. Spur facilities is 150 acre-feet.

816.55 - Not applicable to this operation.

816.56 - Upon termination of C.V. Spur operations, all surface facilities will be removed and the property graded and revegetated (4.3 - A.1 of Mining and Reclamation Plan for C.V. Spur).

816.57 - Not applicable to this operation, as there are no viable streams in the permit area.

Ground Water

A. 779.15 - Description of the Existing Environment

Castle Valley was formed from erosion of sedimentary beds and is composed of the Mancos formation of the Upper Cretaceous age. The Mancos formation is composed of about 5,000 feet of a dark shale with several sandstone members. The processing plant is situated on a low slope within the middle Bluegate Shale member of the Mancos Formation and 500 feet above the Ferron Sandstone member. Local oil and gas well logs show that water was not encountered below the alluvium until reaching the Ferron Sandstone. Due to the small amount of available water, the Ferron Sandstone is not considered to be an important aquifer at the C.V. Spur location. A water table exists in scattered locations of the alluvium above the Bluegate Shale, is of poor quality and small volume.

Information descriptive of the ground water at C.V. Spur was extracted from publications of the U.S. Geological Survey (1979) on the Wasatch Plateau and Book Cliffs area, and also from oil and gas well drilling logs obtained from Utah's Division of Oil, Gas, and Mining.

Regional ground water is not used for irrigation purposes because of its poor quality. The nearest springs to the C.V. Spur facilities are in a different drainage and are not associated with C.V. Spur.

Ground water has surfaced at various locations on the site forming soft boggy areas and accumulations of salt. The salt accumulations are a residue left behind from evapotranspiration of ground water. Two ground water drains have been installed at C.V. Spur to drain such bog areas. One of these areas has been completely drained, the other flows continually throughout the year. Flow from this drain varies with the time of the year, and originates from below the alluvium in the Bluegate Shale. Since the water table gradient slopes down from the irrigated field north of C.V. Spur down toward the french drain (along the northern perimeter), this causes irrigation water to also flow along the gradient into this french drain system. This water is then directed into a sump and used for washing coal.

A swampy area east of the railroad tracks and near well No. 9 (see Figure 2), is thought to be the ground water discharge location of the C.V. Spur permit area. Ground water migrates down toward the Price River and if it does not evaporate first, it discharges into the river.

Seepage from the canal along the top of the ridge is thought to be the source of recharge for a swampy area between wells No. CV4W and No. 6, and also of the ground water monitored at wells Nos. 8 and 9. A pump test of well No. 9 indicated a hydraulic conductivity of 0.007 ft/min. and a specific yield of 0.27. Although these values are high for the clay soils found at C.V. Spur, areal geology indicates that local pockets of granular material may be present in the clay alluvium, thus yielding the high values observed. Similar tests done on wells No. 9D and No. 11D, had no measurable water loss during the monitoring period.

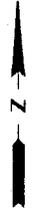
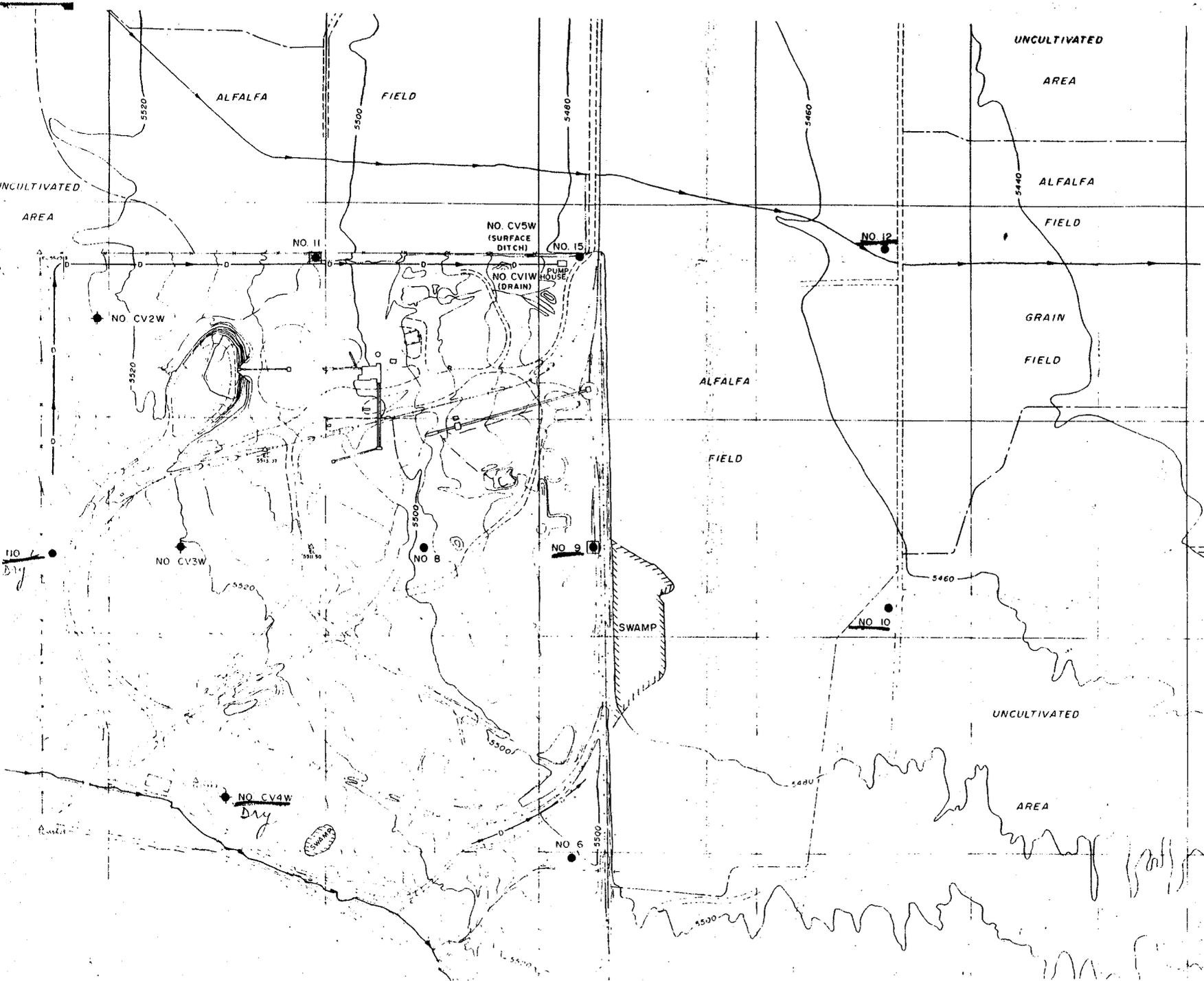


Figure 2. Ground Water Monitoring Locations

LEGEND:

- ◆ EXISTING WELL
- NEW MONITORING WELL
- (with dot) NEW DUAL MONITORING WELL
- (with arrows) EXISTING UNDERGROUND CANAL
- (dashed) BOUNDARY OF CULTIVATED AREA
- ▨ SWAMP GROUND WATER DISCHARGE AREA

There are 13 observation wells (9 on the site and 4 off the site) in the general area of C.V. Spur. Beaver Creek Coal Company contends that data from these wells was not sufficient to develop a piezometric surface map, due to the discontinuous and perched nature of the water table. However, a reasonable interpretation of ground water process was developed and is presented in pages 9-11 of the C.V. Spur hydrologic study. There is relatively little ground water movement toward adjacent off site areas.

780.21 B. Description of Applicant's Proposal

A subdrainage system is employed upslope from the refuse disposal area. This system consists of a backfilled trench containing an 8-inch diameter perforated pipe surrounded by a clean 2-inch drain rock filter and covered with an impervious plastic. The intercepted ground water from this trench (if any) will flow into a buried 10-inch solid pipe and discharge into the buried 25,000 gallon sump at the northeast corner of the property (pg. 4-48 C.V. Spur Mining and Reclamation Plan).

Another subdrainage system is installed along the north and west peripheries of C.V. Spur property. This is also a "French Drain" system made of perforated pipe and drain rock (see pg. 4-16). This subdrainage network intercepts and redirects ground water arising as seepage from Carbon Canal. This water is highly alkaline and cannot be used for irrigation purposes. Carbon Canal in contrast, carries comparatively good quality water.

During reclamation, all "french drain" conduits will be severed, and rendered non-conducting by filling these in with impervious material at a point located 100 feet west of the sump. This will facilitate ground water to flow freely around the refuse pile and the reclaimed areas, and to find its way into the original ground water network leading to the Price River. The intent here is to enable downstream recharge to the ground water regime and to prevent the saturation of the refuse pile and reclaimed areas.

Beaver Creek Coal Company presently owns 227.1 acre-feet per year of Scofield Reservoir water, an additional 135 acre-feet per year is available on a purchase option. Beaver Creek Coal Company intends to purchase 15 shares (one acre-feet per share per year) until ownership of 361 shares is attained. This water can be acquired from any of three sources, the Price River, Carbon Canal, and regional ground water. The primary source of water for operation of the wash plant (over 200 gallons per minute when in full operation), comes from a riverside well located about 7,500 feet north of C.V. Spur. All plant water runs through a common totalizing flow meter where the water consumption is continually recorded.

Figures 9 through 13 of the C.V. Spur Mining and Reclamation Plan, show the analytical results of water samples taken from various locations on and near the C.V. Spur Coal Preparation and Loadout facility. These results provide the basis of Beaver Creek Coal Company's statement that waters in the area are high in salt content and are generally of poor quality. The pH values are consistently on the alkaline side, ranging between 7.6 and 8.0 units. This water has not proven to be suitable for irrigation use.

Ground water samples will be collected from all observation wells on a monthly basis during the first year of operation. These samples will be analyzed for dissolved solids, total suspended solids, total iron, total manganese, lead, pH, and any other parameters requested by the regulatory authority. Analytical results will be used to determine the seasonal variation in ground water quality and quantity. Subsequent to this first year monitoring program, only wells 4, 7, 9, 10, and 12 will be monitored on a quarterly basis, to assess the impacts to water quality and quantity associated with the C.V. Spur operation. Any additional parameters to be monitored, can be determined by the regulatory authority.

Evaluation of Compliance

816.48 - There are presently no acid or toxic forming materials of high concentration identified in the coal refuse materials. However, a concentration of boron high enough to be toxic to vegetation, was identified within the C.V. Spur mine plan. Also, special handling procedures for disposal of toxic or acid-forming wastes may need to be initiated should such chemicals become prevalent in the coal refuse material. This condition would first be identified through water quality data, and Beaver Creek Coal Company should notify the regulatory authority of any related concerns, as required in the water quality monitoring program.

816.51 - Returning the capacity for groundwater recharge to C.V. Spur should be accomplished during final reclamation by filling in the sump at the northeast corner of the property, and also by removal of the french drain system near the sump. These procedures should allow groundwater to reach the river via original ground system. A discussion of the river side well can be found under 816.52(a).

As coal processing waste disposal areas and fills are exempt from 816.51, and since there are no significant aquifers at the C.V. Spur area, further investigation into the groundwater recharge of this operation is not warranted. Complies with regulation.

816.52(a) - Well numbers labeled on page 2-91, Figure 5, do not match the latest submission prepared by Rollins, Brown, and Gunnell, Inc., Figures 5 and 6. There is some resulting doubt as to what the C.V. Spur monitoring program will consist of and how the monitoring wells were selected.

A river side well is located 7500 feet from the wash plant. Company plans for reclaiming these areas should be included and also information relating to Section 816.53, if it will apply to the C.V. Spur operation. The river side well and associated pipeline must be included within the C.V. Spur permit area. However, requirements for signs and markers for this pipeline are waived by OSM. Signs and markers are not necessary because the pipe is buried and the surface area involved is narrow and presently not visually disturbed.

816.54 - Water rights and replacement are adequately addressed within the C.V. Spur Mining and Reclamation Plan; complies with regulation.

816.55 - There will be no discharge into underground mines associated with the C.V. Spur operation; consequently, this regulation does not presently apply to C.V. Spur.

816.13-816.15 - Collectively, Figure 14 and Section 4.1-B.8 of the C.V. Spur Mining and Reclamation Plan adequately address these requirements. The ground water monitoring wells comply with regulation; however, there is no reclamation plan for the river side well. This will be required through a stipulation.

D. Revisions to Applicant's Proposal

None

E. Re-Evaluation of Compliance

None

F. Proposed Special Stipulations with Justification

- 1) Boron should be included in the monitoring parameters for baseline data, and if it exceeds 750 ug/l, it should be included in the subsequent analyses. This stipulation is necessary to comply with 816.48. Beaver Creek Coal Company must clarify what wells will actually be monitored and their relative number/location information to comply with the requirements of 816.52(a).
- 2) A plan for the reclamation of the pipeline and river side well facilities must be submitted to the regulatory authority for evaluation. This stipulation is necessary to comply with 816.15.

G. Summary of Compliance

The Mine and Reclamation Plan complies with UMC 816.42, 43, 44, 45, 46, 47, 48, 49, 52, 54, 55, 56, 57 13, 14, and 15 if the proposed stipulations are implemented.

H. Proposed Departmental Action

Approval with stipulations as discussed in Section F above.

I. Alternatives to the Proposed Action

Possible alternatives to the proposed action would include disapproval, no action, or deferral.

Alternative 1 (Disapproval)

Disapproval of the mining and reclamation plan could be the elected alternative if the proposed plan would cause significant adverse impact to the environment. No such adversities were identified as a likely consequence, from the operation of the facility or from the construction of a new truck dump and stacking facilities.

Probable positive aspects which would accompany the selection of this alternative option are:

1. Reclamation of this area would begin sooner.
2. Land would be returned sooner to the post-mining land use, resulting in less net erosion.

Possible negative aspects which would accompany the selection of this alternative option are:

1. Such an imposition could force the company to seek an alternative location which would have more substantial impacts associated with its development, be these impacts directly or indirectly related to mining process.
2. The Company would have to either modify the MRP to attain approval, continue to operate as outlined under the presently approved original plan, or the Company could abandon the facility altogether.

Alternative 2 (No Action)

The no-action alternative is not viable. Alternative 3 is more practical to use since a no-action alternative could only result in a temporary deferral of action. The Secretary of the Interior is required by section 740.4 of the permanent regulatory program to respond to all applications to conduct coal mining and reclamation operations on federal lands, by either approval or disapproval of the plan. Since the company has complied with all requested, this alternative has not been chosen.

Alternative 3 (Deferral)

This would be a reasonable alternative if for some reason further investigation, research, data collection, or other similar action was necessary before a sound conclusion could be made regarding the approval or disapproval of the MRP submittal. Also, if for some reason a more in-depth analysis or if the availability for specific analytical procedures such as a detailed computer run or the need for a key-person to evaluate an issue were a factor and more time was needed to perform such an effort, then this alternative would be practical. The above conditions are not evident in regard to this MRP; consequently, Alternative 4 is not applicable to this situation.

J. Environmental Impacts of the Proposed Departmental Action

The primary hydrologic impacts will involve an unquantifiable amount of water quality and quantity degradation and diminution respectively. This hydrologic impact, however, is predicted to be of low enough consequence as to not

provoke further environmental restrictions. This impact will be a result of increased disturbed acreage for life of the operation, along with the prolonged use of areas within the permit area for refuse disposal. Although the refuse disposal material has presently not been found to contain toxic or acid producing materials, the question of boron is still being studied. The long-term impact of such disposal areas on water quality is estimated to be minimal.

785.19(c) Alluvial Valley Floors

Beaver Creek Coal Company did not specifically address the alluvial valley floor (AVF) regulations within their MRP. Much of the information required in the AVF regulations was found in various other sections of the MRP. Among such information is water quality posture of the groundwater regime, areal topography and geology, premining and postmining land use, and soils information.

Soils and water quality data demonstrate the presence of high salt concentrations on the C.V. Spur site. Due to these high salt concentrations, previous attempts to establish cultivated crops at this site were abandoned. Exhibit 6 of the MRP is an aerial photograph copy, which shows the visual prevalence of salt deposits present on the ground surface at this site. Section 2.15 of the MRP references the contained letter from the U.S. Soil Conservation Service which made a negative determination of the existence of prime farm land at this site. Soils here are classified as clays rather than alluvial types. Depth to the parent material (Mancos shale) is six to twenty-four inches. Although areas adjacent to C.V. spur are presently being farmed, they are all irrigated by surface diversion of the Price River via the Carbon Canal and its sub-branches. Soils on these farmed areas may have improved because of good quality irrigation water causing salts to leech out of the soil. Ground water does not have an important role in the irrigation of the surrounding agriculture and therefore the predominant form of irrigation is not subirrigation but rather surface diversion for flood irrigation. These conditions along with the fact that Beaver Creek Coal Company has to pump water some 7,500 feet through a pipeline to the C.V. Spur site, have lead OSM to conclude that an AVF does not exist at C.V Spur.

No acid- or toxic-forming materials have been identified to date in the wastes associated with the processing plant. Therefore, surface and ground water existing in the area after mining should not affect the agricultural activities adjacent to or downstream from the processing plant.

Bonding

A. Description of Existing Environment:

The permit area consists of one quarter section approximately 160 acres of land that is presently being surface mined. There will be no underground mining activities.

B. Description of Applicant's Proposal:

The company proposes to submit a performance bond to the regulatory authority in accordance with the requirements of UMC 806.12(e) to guarantee that lands affected by the mining operations will be reclaimed according to the requirements of the Act and of the State Regulations so that the reclaimed land will be capable of supporting the post-mining land uses. The bond will be posted as a surety bond. Some of the potential uses include rangeland, wildlife habitat, recreation lands, residential, and light industrial use. Reclamation activities will establish a permanent vegetative cover of the same seasonal variety native to the area and capable of self regeneration and plant succession, equal in extent and cover to natural vegetation in the area. The vegetative cover will be capable of controlling wind and water erosion. The applicant's limit of liability for reclamation is 10 years in accordance to UMC 805.13.

C. Evaluation of Compliance of Proposal:

Since the reclamation work can take up to approximately one and one-half years to accomplish after completion of mining operations, the permittee should state whether he wants to file the performance bond for the term of the permit or file an incremental bond for each step of the reclamation. If operator elects to "increment" the amount of the performance bond during the term of the permit, he shall indentify the initial and successive incremental areas for bonding on the permit application map and satisfy all other requirements of UMC 780.14 and shall specify amount to be filed for each incremental area. For the sake of calculations, the OSM has assumed that the performance bond was filed for the term of the permit. The applicant shall submit the bond in the amount of \$833,633 or the applicant may submit the estimated bond amount for each cost item submitted in units, unit cost, quantities, and how accomplished in order for the Regulatory Authority to determine if the amounts listed are accurate for the reclamation costs.

Reference 1980 "Dodge Manual for Building and Construction" Pricing and Scheduling by McGraw-Hill.

The costs as submitted are adequate for grading, ripping and revegetation activities. However, the cost of removing structures is low utilizing the national average cost for demolition as specified in the above reference. Converting the cost information in Dodges' manual to units that can be applied to the cost information furnished, the following new costs were obtained for removing the structures.

Structure Removal (Demolition):

6 Laborers, 2 Equipment operations can remove 2500 cu. ft. of building per day at a cost of \$0.37 for labor and \$0.22 for material for one cubic foot, $0.37 + 0.22 + 10\% \text{ Profit} + 15\% \text{ overhaul} = \$0.75/\text{cu. ft.}$, \$0.75 divided by 8 men = \$0.094/man/2500 cubic feet.

$0.094 \times 2500 = \$235$ per man day plus 25% for loading and hauling = $1.25 \times \$235 = \$294/\text{man day.}$

Railroad Truck Removal:

One equipment operator and 4 laborers can remove 85 feet of track per day. \$6.85 labor plus \$1.52 equipment = \$8.37 per lineal foot + 25% haul plus 26.5% overhead and profit = $\$8.37 \times 1.515 = \12.68 per lineal foot $\times 85 = \$1,078$ per day/man.

Using the man days of work required to accomplish the work as furnished by the mine operator which are established from previous type of work, the following costs for removing structures were calculated:

1. Remove structures:

- a. silo
10 men - 30 days + hauling & equipment $300 \times \$294 = \$88,200$
- b. stacking tubes (4)
10 men - 20 days + hauling & equipment $200 \times \$294 = \$58,800$
- c. thickner
10 men - 10 days + hauling & equipment $100 \times \$294 = \$29,400$
- d. plant
10 men - 60 days + hauling & equipment $600 \times \$294 = \$176,400$
- e. conveyors (7)
6 men - 20 days + hauling & equipment $120 \times \$294 = \$35,280$
- f. reclaimed tunnels (2)
6 men - 20 days + equipment = (original) \$30,000
- e. truck dumps (2)
6 men - 15 days + equipment $90 \times \$294 = \$26,460$
- h. railroad
5 men - 15 days + equipment $75 \times \$216 = \$16,200$
- i. sample building
5 men 5 days + equipment $25 \times \$294 = \$7,350$
- j. pump house
3 men - 5 days + equipment $15 \times \$294 = \$4,410$
- k. river pump system $9 \times \$294 = \$2,646$
3 men - 3 days + equipment

- l. water tank
3 men - 3 days + equipment 9 x \$294 = \$2,646
- m. substation
3 men - 5 days + equipment 9 x \$294 = \$2,646
- n. subdrains
3 men - 5 days + equipment 15 x \$294 = \$4,410

	TOTAL \$484,848
Total for Grading & Ripping (original)	160,000
Total for Revegetation Activities (orig.)	113,000
	Subtotal <u>\$757,848</u>
	+10% contingency <u>75,785</u>
	Bond Estimate Total <u><u>\$833,633</u></u>

D. Revisiosn to Applicant's Proposal:

None

E. Reanalysis of Compliance:

None

F. Stipulations

The applicant shall submit a performance bond in the amount of \$833,633 payable to the State of Utah and the U.S. Government. The applicant has the option of submitting a bond of a lesser amount if the applicant can demonstrate using calculations in the form of units, unit costs, quantities, and methods that the lesser amount is adequate.

G. Summary of Compliance:

Will comply if proposed stipulations are implemented in accordance to UMC 805.

H. Proposed Department Action:

To approve with stipulations.

I. Alternatives to the Proposed Action:

None

J. Impacts of Proposed Departmental Action:

If sufficient bond is posted by the company, the impact would be that the land would be reclaimed as proposed in the mining and reclamation plan. The

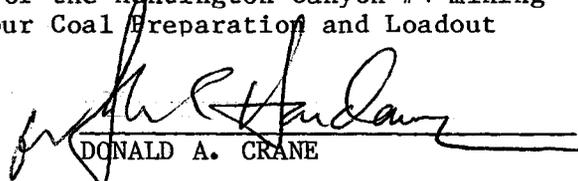
process of reclaiming the land would normally be completed by the operator; however, under conditions of bond forfeiture, the regulatory authority would be responsible for the reclamation.

Finding of No Significant Impact

The technical and environmental assessment preceding the Finding of No Significant Impact identifies certain environmental impacts that would occur from the expansion of the waste disposal site of C.V. Spur Coal Preparation and Loadout Facility onto 47 acres of undisturbed fee land within the permit area. The proposed expansion would continue the temporary effect on the hydrologic balance and soil conditions and could result in reduced vegetation if revegetation were not successful.

Other impacts identified by OSM and the State of Utah would be appropriately mitigated to reduce harm to the environment by the environmental protection measures specified in the mining plan.

Based on the evaluation of impacts in the technical and environmental assessment prepared by OSM and the State of Utah, Division of Oil, Gas and Mining, I find that no significant impacts to the human environment would result from the proposed expansion. Therefore, an EIS is not required, and I am recommending the proposed modification of the Huntington Canyon #4 mining and reclamation plan pertaining to C.V. Spur Coal Preparation and Loadout Facility be approved.


DONALD A. CRANE

30 Mar 81
Date