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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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December 8, 1988

Mr. Richard H. Allison Jr.
Project Supervisor
Castle Gate Coal Company
P. O. Box 449
Helper, Utah 84526

Rich
Dear Mr. Allison:

Re: Sowbelly Canyon Reclamation, Castle Gate Coal Company, Castle Gate Complex, ACT/007/004, Folder #2, Carbon County, Utah

Castle Gate Coal Company's proposal to complete final reclamation at Sowbelly Canyon in 1989, prompted a separate, detailed review of the reclamation plan for that area during the course of finalization of the Mid-Permit Term Review for the Castle Gate Complex. It was felt that completion of this part of the Mining and Reclamation Plan should be done on a separate schedule, due to the necessity of having a finalized, approved reclamation plan before next summer, so that the work can proceed on schedule.

The attached review delineates the maps and plans necessary to achieve a comprehensive reclamation plan for Sowbelly Canyon, and addresses your correspondence received October 19, 1988. Where maps have been referenced, an appropriate scale has been suggested by Division reviewers. If you would prefer, Division staff will be glad to meet with you and individually agree on the appropriate scale for each map and other details that may be required.

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Mr. Richard H. Allison
Castle Gate Coal Company
ACT/007/004

Please submit your complete response to those deficiencies by February 15, 1989. The Division will complete it's review of this submittal by March 30, 1989. Any remaining deficiencies can then be addressed before the height of the construction season.

Please contact me or Susan Linner if you would like to meet to further discuss this review document.

Sincerely,

Lowell

Lowell P. Braxton
Administrator
Mineral Resource Development
and Reclamation Program

cl
cc: B Team
BT45/128-129

RECLAMATION PLAN REVIEW

SOWBELLY CANYON
CASTLE GATE COAL COMPANY
CASTLE GATE COMPLEX
ACT/007/004

December 8, 1988

UMC 783.24-25 Maps: General Requirements, Cross Sections, Maps, and Plans - JRH

1. Numerous abandoned mine sites and facilities are within and adjacent to the permit area. The operator must clearly delineate and identify these facilities so that they may be determined to be outside of the operator's disturbed area. The operator shall also indicate the dates of disturbances and the date of their last use as part of mining operations. In some cases, facilities which were used by the previous permittee must still be included in the disturbed areas even though the current operator has had no activity in those areas. This determination will be made in accordance with the conditions of the permit transfer to Castle Gate Coal Company.
2. The operator has only delineated those areas of the previously disturbed areas which are the flat surface portions of the pads and roads. Cut slopes, highwalls and outcrops of these facilities have been excluded from the disturbed area boundary. The operator must incorporate into the disturbed area boundaries, all portions of those prior mining facilities which are used in conjunction with and associated with current mining activities. Those pads and roads currently in use by the operator could not exist without the cut slopes and embankments associated with them and must be incorporated into the permit area. In order to more completely resolve this matter, it is recommended that the operator and the Division inspect the site and delineate the disturbed area boundaries in accordance with these requirements. Upon delineation of the disturbed area boundaries in the field, the operator shall be required to submit revised drawings showing the correct surface disturbed areas in which the operator is liable.
3. The operator needs to provide identification as to the date and the use of those areas and facilities within the permit area which have been incorporated into the underground mining activities. This identification shall be in accordance with UMC 771.23. Those areas affected by previous mining operations and used in conjunction with current underground coal mining facilities are to be included in the disturbed areas.

4. The operator needs to provide the location of all buildings in and within 1,000 feet of the permit area with identification of the current use of the buildings.
5. The operator needs to provide the location of surface and subsurface man made features within, passing through, or passing over the permit area, including but not limited to, major power transmission lines, pipelines, gas lines, etc.
6. Maps and plans presented in the MRP showing the operations and the facilities must include the disturbed area boundaries for reference. The boundaries should also include those areas in which proposed facilities are scheduled for construction as well as borrow areas which may be required for reclamation. Primarily, this information needs to be provided on the operational plans to ensure that the operator is conducting mining activities within the approved permit areas of the plan. These boundaries should coincide with perimeter markers and other boundary requirements as provided in the approved mining and reclamation plans.
7. Maps used to show the final reclamation of the facilities are not clear. The drawings need to clearly show the disturbed area boundaries. Each map should also delineate and indicate the number of acres relevant to that specific area and specific reclamation treatment (seed mix, topsoil coverage, borrow area, etc.). Those facilities to be left as part of the post mining land use should also be clearly identified on the drawings.
8. Maps and plans regarding the backfilling and grading of the site do not clearly depict the reclamation contours, final slopes and the extent to which cuts and highwalls are to be backfilled.
9. Pads and roads shown on the reclamation plan appear to be essentially identical to their existing contours. A plan for backfilling, soil stabilization, compacting and grading with contour maps or cross sections that show the anticipated final surface configuration must be provided as part of the reclamation plan.

10. Cross sections of the facilities are not provided or referenced by the operator for the final surface plot plan of the areas to be reclaimed. No calculations could be found referencing the cross sections for earthwork calculations. These calculations are required for backfilling and grading design for reclamation and determination of the required bond amount.
11. Maps or cross sections should also indicate final reclamation slopes, particularly noting the maximum slopes to be left upon final reclamation. In those areas where final slopes exceed 2h:1v, the operator needs to justify the final configuration for the earthwork and provide sufficient design calculations to ensure long term stability of the slopes. The maps and cross sections should extend at least 100 feet beyond the disturbed area to indicate the aspect and the slope of the adjacent areas.
12. Reclamation drawings must be enlarged to sufficiently show detail of different reclamation treatments, including but not limited to slope and contour, disturbed area acreage, delineation of soils and vegetation treatments, identification of structures, mine openings, and other surface facilities, and appropriate cross sections in order to determine cut and fill requirements for reclamation. These drawings should be typically set at a scale of 1"=40', and a two foot contour interval used to locate and identify the facilities and determine the amount of earthwork required for reclamation.
13. An attempt was made on the drawings to identify the locations of the various seed mixes to be used in conjunction with the reclamation. No definition of their respective acreages were found on the drawing, nor was the total disturbed area acreage included on the map.
14. No grid, coordinates or references were found on some of the drawings to specify the location of the map with respect to the permit area or other topographic boundaries or features.

15. Contour intervals of 100 feet are not suitable for reclamation design as currently shown on those drawings presented by the operator for reclamation of the facilities. Cross sections are not found or referenced on the drawings which show the final configuration of the area as it is to be reclaimed. No detailed plans for the closure of the mine openings or sufficient cross sections could be found to ensure highwall reduction at the site.

UMC 783.25 Cross Sections, Maps, and Plans - MMD

Exhibit 3.2.3 contains the following deficiencies:

1. The disturbed area is incorrectly labeled as the permit area. The substation pad and access road below pond 005 must be included with the rest of the disturbed area and delineated as such on an appropriate map.
2. The map scale is not large enough to accurately determine diversion locations, drainage areas reporting to specific runoff control structures, runoff controls, and disturbed area slopes. A map of scale 1 inch = 40 feet or greater must be submitted which accurately depicts and labels these features.

Exhibit 7-3 is the only map which delineates watershed boundaries for Sowbelly Canyon. The map scale is not adequate to accurately determine physiographic parameters necessary to calculate design peak flows. Without these calculations the Division cannot approve any structural designs for the facility. A revised map of scale 1 inch = 100 feet must be submitted delineating watershed boundaries for undisturbed and disturbed areas and which clearly shows surface contour lines at an interval of 50 feet or less.

UMC 784.13(b) Revegetation Plan- LK

The schedule for reclamation (Chapter 9, page 72) is not acceptable in that it does not identify each major step in reclamation (i.e., removal and/or construction of sediment controls, backfilling and grading, topsoil replacement, seedbed preparation, seeding, mulching, planting, etc.) as required by UMC 784.13(b)(1) and (b)(5)(i), and the proposed timing is not during the normal period for favorable planting as required by UMC 817.113(a). Please provide appropriate starting and ending dates and time frames for each major step in reclamation (refer to the Division's Draft Revegetation Guidelines to aid in developing an acceptable schedule).

Page 58 (Chapter 9) indicates straw mulch will be applied at a rate of 1500 -2500 lbs. per acre. Please note, the minimum acceptable rate for mulch is 2000 lbs. per acre. Also, all mulch must be appropriately anchored. Please identify how mulch will be anchored on areas where crimping is not practical or possible. Also, it is recommended that the mulch source be identified early to allow sufficient time to have the materials tested for noxious weed seed. This has been a problem in the past few years with straw mulch.

It is assumed that Castle Gate will broadcast seed the entire site (see page 59, Chapter 9). If Castle Gate intends to use other seeding areas for all or part of the seeding work, the alternative method(s) and areas where they will be used needs to be identified.

Exhibit 3.2-3, the post mining reclamation map for Sowbelly Gulch, is in conflict with the proposed seeding plan and the vegetation communities to be re-established. Page 61 (Chapter 9) identifies that seed mix #4 will be used for the entire site and that planting list #2 will be used along any drainages. The map needs to be corrected. Also, in response to your October 18, 1988 letter, the above referenced seed mix has sufficient quick-growing species that the addition of an annual grass is not needed.

It is recommended that a seed-plant materials supplier be retained several months in advance to assure procurement of the required revegetation materials. Since we are still experiencing problems with seed suppliers not providing the species or quality of seed materials as listed on the seed labels, please make arrangements to have the State Agriculture Inspector collect a sample for analysis. This testing will be done at no cost to the mine. The Division can assist in arranging for this test if needed.

The current plan does not address protection of reclaimed areas from grazing (domestic) animals and wildlife. Due to the past experiences at the 'Goose Island' reclamation site, it is suggested that fencing or other appropriate protection be implemented to protect the area from grazing until vegetation is established.

Finally, it will be necessary to have the current range condition of the reference area for this site re-evaluated during the 1989 field season. This can be done by a qualified consultant or the U.S. Soil Conservation Service (preferably the SCS). If current range condition is not in fair or better condition, appropriate management practices will be required.

UMC 784.13 Reclamation Plan: General Requirements - MMD

UMC 784.16 Ponds, Impoundments, Banks, Dams, and
Embankments - MMD

The reclamation timetable, submitted in response to the Division's Mid-Term Permit Review dated February 19, 1988, must be sequentially organized relative to the start of reclamation construction. Channel reclamation should be included in addition to the activities contained in the submitted table.

Section 3.2-5(2) of the MRP states that the access road and substations will remain until final reclamation is undertaken. Section 3.2-5(1) estimates final reclamation will occur in the year 2008 for an area of only three acres with the access road remaining permanently. This discrepancy should be addressed and clarified as to what facilities are to remain permanently, the acreage of the area to be reclaimed, and when final reclamation is to occur.

UMC 784.13 Reclamation Plan: General Requirements - JRH

1. The operator's drawings should include sufficient details for; backfilling, compacting and grading, with contour maps that show the final anticipated surface of the proposed permit area.
2. A description including appropriate cross sections and maps of the measures to be used to seal or manage mine openings, and to plug, case or manage exploration holes or other boreholes, wells and other openings within the permit area in accordance with UMC 817.13-15 must be provided in the plan.
3. Those facilities such as sediment ponds, embankments, cut slopes, pads, highwalls, roads and other facilities used in conjunction with mining operations must all be proven to conform to the performance standards and be included in the disturbed area for the operations.

4. Backfilling and grading calculations in order to determine the amount of earthwork required during reclamation are required. Cross sections from the maps should show the existing contours and the proposed contours for final reclamation. These cross sections should be of sufficient number and scale so as to determine the amount of earthwork required on the site, maximum slopes to remain upon reclamation, any retention of highwalls from portals or other cut slopes, and suitability of the reclaimed slopes in achieving approximate original contour requirements.
5. The operator has not demonstrated the stability of slopes and embankments. This may be accomplished in some cases by the performance of the structure in the past with a commitment to maintain and monitor those embankments and slopes throughout the permit term. In some cases however, it may be necessary to provide geotechnical information in order to satisfy the requirements of this section. Upon detailed technical review of the mine plan, the Division shall determine which areas, if any, will require further geotechnical analysis to ensure stability.

UMC 784.14 Reclamation Plan: Protection of Hydrologic Balance
- MMD

The operator must include in the reclamation plan all best management practices to be utilized during the reclamation process, including alternate sediment control measures such as straw bales and sediment fences. The location of any permanent measure to be implemented must be included on an appropriate map.

The operator needs to submit a post-mining water quality monitoring plan to be followed after the operational monitoring plan has ceased. This plan should commit to sampling every year until termination of bonding and conducting analyses for constituents listed in the Division's Water Quality Monitoring Guidelines. A single stage sampler similar to the US U-59 sampler should be utilized for sample collection because of the drainage system's ephemeral nature in Sowbelly Canyon.

UMC 784.22 Diversions - MMD

Diversion design worksheets submitted in the plan are not legible. Designs must be submitted for each proposed or existing diversion which will remain during reclamation or permanently. Designs must include calculations and values for peak flows, channel depth, channel width, flow depth, flow width, side slope, minimum and maximum bed slope, and channel roughness. Permanent diversions must be designed to safely convey the runoff from a 100-year, 24-hour event.

Exhibit 3.2-3 shows the channel parallel to the road above channel section RC-2 as unreclaimed. This reach is in the disturbed area and must be included in the final channel reclamation design for the 100-year, 24-hour storm. The location of the access road and stream channel cross section at the top of this exhibit is not identified on the map. It is not clear what the orientation of this cross section is. The channel configuration depicted on the map conflicts with the configuration portrayed in the cross section.

UMC 800 Bond and Insurance Requirements - JRH

Bonding calculations do not include the following information:

1. A map as specified under UMC 784.23(b)(3) specifying each area of land for which bond will be posted under Subchapter J of the regulations.
2. Mass balance calculations showing backfilling and grading requirements for distribution and disposal of excess spoil and mine development waste, backfilling to meet AOC requirements, subsoil, topsoil and substitute topsoil distribution and quantities for each sub-area of the permit.
3. Calculations for determination of quantities, equipment selection and productivity used in determining the bond amount.
4. Determination of Phase I and Phase II reclamation activities including a map showing those facilities to be constructed and/or removed during each phase of reclamation.

5. Costs associated with reclamation were not included in the cost estimate, these costs include but are not limited to the construction of permanent reclaimed channels, sediment pond removal, soil sampling and analysis, revegetation sampling, and water monitoring costs.

UMC 817 Permanent Program Performance Standards - MMD

A cursory review of the design calculations for the existing sedimentation ponds and diversions revealed the following inadequacies:

1. No justification could be found for the determination of curve numbers used in design calculations. Table 7.4 of the MRP presents SCS curve number values. Soil and ground cover input values used for this methodology must be provided with references to the appropriate corresponding maps and survey information describing soil and vegetation types.
2. The operator uses a value of 0.35 acre feet per acre of disturbance in the pond volume calculations on pages 7-9, section 3.2 of the MRP. Example calculations in chapter seven determined a conflicting value of 0.035 acre feet per acre of disturbance. Neither value is justified by the example calculations presented in chapter seven. These calculations were performed using input values for Crandall Canyon assuming that this was representative of the entire permit area. This is not a valid assumption. Calculations for sediment yields must be conducted using site specific values for Sowbelly Canyon.
3. Submitted maps of ponds 003, 004, and 005 are not adequate. Cross sections of pond embankments included on these maps do not show spillway structural dimensions or configurations. Longitudinal cross sections and plan views of scale 1 inch = 10 feet or greater must be submitted for any proposed or existing sedimentation ponds to remain during reclamation. These drawings must show 1 or 2 foot contours of the pond structure and extend at least to the spillway outlet. Elevations of the following features should be included:

- i. Top of the embankment.
- ii. Crest of the emergency spillway.
- iii. Principle spillway inlet.
- iv. Riser to barrel connection.
- v. Principle spillway outlet invert.
- vi. Maximum water level.
- vii. Maximum sediment level.
- viii. 60 % sediment cleanout level.
- ix. Bottom of the pond.

Calculations must be submitted demonstrating that these spillways are adequate to convey the design storm as required by UMC 817.46.

- 4. Section 3.2-5(1) states that stream channels will be riprapped where necessary yet no calculations were found regarding channel stability. Calculations must be submitted demonstrating channel velocities and identifying reaches requiring riprap. The operator must submit riprap design calculations for each channel to be reclaimed including values for riprap and filter blanket gradations.
- 5. No exhibits were found which were adequate to determine channel slopes. Maps or longitudinal profiles of all diversions and stream channels must be submitted which are sufficient to verify channel slopes.

UMC 817.22(e) Topsoil: Removal - JSL

The Division has not received any potential substitute topsoil data. This information is required for reclaimability findings and to adequately evaluate an appropriate soil management plan for the reclamation of Sowbelly Canyon.

The location(s) and volume(s) of the potential substitute topsoil source(s) is not clearly defined. If potential substitute topsoil is to be derived from Crandall Canyon, the operator must clearly delineate the location and volume of material to be moved to Sowbelly for final reclamation.

UMC 817.24 Topsoil: Redistribution - JSL

The depth of scarification should be clarified. The depth of scarification must be determined by the depth of available soil, total length of effective root growth and any hard pan remediation.

The operator must commit to redistribute soil when the soil is dry to reduce the potential for redistribution compaction.

UMC 817.42 Hydrologic Balance: Water Quality Standards and Effluent Limitations - MMD

The operator's letter to the Division, received October 19, 1988, requests that the Division grant a small area exemption for the entire 16 acre disturbed area in Sowbelly Canyon. This request was based on the operator's assumption that without an exemption, the three existing ponds could not be removed until adequate vegetative cover had been established. Subsequent removal would then require re-entering the reclaimed area, subjecting the area to further disturbance. However, other options are available for sediment control during the revegetation process which will satisfy the requirements of subsection (a) without requiring a small area exemption.

The Division recommends that the two upstream sedimentation ponds be removed during regrading operations prior to reseeding. One pond structure located at the downstream perimeter of the disturbed area can be constructed to provide interim sediment control. The operator would then have the option of removing this pond after vegetative and effluent limitations have been met, or leaving the pond as part of the post-mining land use, if justified.

Subsection (a) (3) of this regulation states that exemptions may be granted for "small areas only". Therefore, the Division cannot grant an exemption for the entire disturbed area in Sowbelly Canyon as per the operator's request.

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Castlegate Coal Company
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UMC 817.133 Postmining Land Use - LK

Retention of the road through the reclaimed site must be justified, demonstrating the utility of this road in meeting the postmining land use of grazing and wildlife habitat. If sufficient justification is not made, the Division will require reclamation.

BT90/1-12