

0005



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

C|007|004
OUTGOING

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DIVISION OF OIL, GAS AND MINING
FACSIMILE COVER SHEET

DATE: April 4, 2003

FAX #: 303-844-1545

ATTN: James Fulton

COMPANY: Office of Surface Mining

DEPARTMENT: _____

NUMBER OF PAGES: (INCLUDING THIS ONE) _____

FROM: A. Nance

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We are sending from a Sharp facsimile machine. Our telecopier number is (801)359-3940.

MESSAGE: The Decision Document is being
sent in 5 sections.
section 1 = 6 pages
section 2 = 19 pages (TA BRO2A)
section 3 = 21 pages (TA BRO2B)
section 4 = 4 pages
section 5 = 15 pages

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Division Director

February 21, 2003

OK

James Fulton, Chief, DFD
Office of Surface Mining
1999 Broadway, Suite 3320
Denver, Colorado 80202-5733

Re: Phase II Bond Release (Sowbelly and Hardscrabble Canyons), Castle Gate Holding Company, Castle Gate Mine, C/007/004-BR02A and BR02B, Outgoing File

Dear Mr. Fulton:

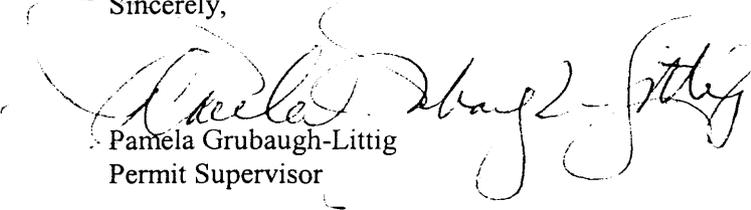
Enclosed is the Division's Decision Document for the Phase II bond release for Sowbelly and Hardscrabble Canyon in the Castle Gate Mine. Concurrence from the BLM has been requested and that letter will be forward to you when it's received.

This Phase II bond release application is for 37.1 acres in Hardscrabble Canyon and 21 acres in Sowbelly Canyon. The bonded area for the entire Castle Gate Mine complex is 63 acres. The current bond for the Castle Gate Mine is \$1,071,000. The permittee has requested \$390,846 be released for the Phase II bond release. The bond remaining will be \$680,154 (\$233,000 for revegetation at Sowbelly, \$235,000 for revegetation at Hardscrabble, \$83,100 for the substation at Hardscrabble, and \$129,054 for Adit #1).

Phase II bond release acknowledges revegetation establishment but leaves enough bond in the event the entire area would need to be revegetated. The Division received no public comments about the bond release. A bond release inspection was held August 22, 2002.

We request your review and concurrence of this application. Please call me if you have any questions.

Sincerely,


Pamela Grubaugh-Littig
Permit Supervisor

Enclosure:

cc: Johnny Pappas, Castle Gate
Price Field Office

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**UTAH DIVISION OF OIL, GAS AND MINING
STATE DECISION DOCUMENT**

**For
Phase II Bond Release**

**Castle Gate Holding Company
Sowbelly Gulch No. 5 Mine & Hardscrabble Canyon
Castle Gate Mine
C/007/004
Carbon County, Utah**

February 21, 2003

CONTENTS

- * Administrative Overview
- * Chronology
- * Findings
- * Recommendation for Phase II Bond Release
- * Technical Analysis
- * Affidavits of Publication
- * Phase II Bond Release Inspection Report
- * BLM Concurrence Letter (Pending)

ADMINISTRATIVE OVERVIEW

Castle Gate Holding Company
Sowbelly Gulch No. 5 Mine and Hardscrabble Canyon
Castle Gate Mine
C/007/004
Carbon County, Utah

February 21, 2003

ACTION

Phase II bond release is requested for Sowbelly Gulch No. 5 Mine and the Hardscrabble Canyons in the amount of \$390,846. This request does not include Adit #1 or the Hardscrabble substation. Retained revegetation bond totals \$680,154 and is broken down as follows: \$233,000 for Sowbelly; \$235,000 for Hardscrabble; \$83,100 for the Hardscrabble substation; and \$129,054 for Adit #1.

BACKGROUND

Castle Gate Mine

The Castle Gate Mine Complex is located approximately 10 miles north of Price, Utah, in the Wasatch Plateau coal fields in Carbon County. The disturbed areas are in Hardscrabble Canyon (39 acres), Sowbelly Gulch (21 acres), and Price Canyon [Adit No.1 (3 acres)]. The bonded or disturbed area for the entire Castle Gate Mine complex is 63 acres.

The initial permit was issued to the Price River Coal Company on December 24, 1984. Castle Gate Coal Company acquired the right to mine the western reserves and obtained a permit transfer on May 30, 1986. On May 25, 1991, the Division approved the permit transfer from Castle Gate Coal Company to Amax Coal Company. On July 2, 1996, the Castle Gate permit was transferred from Amax Coal Company to Amax Coal Holding Company, which became Amax Coal Company again on August 5, 1996. The permit was transferred to the current Permittee, Castle Gate Holding Company, on September 11, 1998.

In May 1995, the Division received an application from Cyprus Plateau Mining Corporation to permit the eastern coal reserves and a portion of the Castle Gate Mine as the new Willow Creek Mine. In April 1996, the Willow Creek Mine was permitted, and its permit area overlapped with that of the Castle Gate Mine. In June of 1997, the Castle Gate and Willow Creek Mines were split apart which left the Castle Gate Mine with the Sowbelly Gulch, Hardscrabble Canyon, and Adit No. 1 areas. The Schoolhouse Canyon refuse area, the Castle Gate preparation plant, Crandall Canyon, the Gravel Canyon topsoil storage area, and a refuse storage area (a site previously reclaimed by the Abandoned Mine Lands Reclamation program) were all transferred to the Willow Creek Mine. Currently, the Castle Gate preparation plant is being dismantled and reclaimed under the Willow Creek Mine permit.

Hardscrabble Canyons – Phase I

Intensive mining has occurred in Hardscrabble Canyon since the 1880's, when Teacum Pratt opened the first operation for house coal. Mining activities were consolidated in 1971, under the Braztah Corporation, which in turn became the Price River Coal Company on December 1, 1979.

The preparation plant in Hardscrabble Canyon was dismantled and removed when the coal preparation plant at Castle Gate began operating in January of 1979. Thereafter, coal transportation from Hardscrabble canyon was by underground conveyor directly to the Castle Gate preparation plant through Adit No. 1 in Price Canyon.

Waste from the defunct Hardscrabble preparation plant had been deposited at the north end of the canyon, at the intersection of two tributaries to the main ephemeral drainage, blocking their flow paths. The waste pile, dubbed Goose Island, was reclaimed in 1984. A portion of the canyon was reworked in 1999 (see Exhibit 3.3-23).

Reclamation work took place throughout Hardscrabble Canyon during the years 1993 through 1999 and 2002 (substation). The road through the disturbed area was altered but left in place for the postmining land use. In 1997, AMAX Coal Company, Castle Gate Holding Company's predecessor, received an Earth Day Award from the Board of Oil, Gas, and Mining for "outstanding final reclamation and site restoration". The company was commended for enhancing the postmining land use by restoring the canyon to a more natural configuration and paying particular attention to wildlife habitat while providing more stable water flow channels and better downstream water quality.

The disturbed area boundary at the Hardscrabble complex encompasses 39.0 acres, of which 36.76 acres are actually disturbed and 2.24 acres comprise a buffer zone along the perimeter that was not disturbed. The Hardscrabble Phase I bond release application was conditionally approved (with OSM concurrence) on January 25, 2001 for 29.9 acres. (This 29.9 acre figure included the 2.2 acres of buffer zone and the 27.7 acres of No. 3 and No. 4 mines reclaimed area.) Final approval of the Phase I bond release was effective February 14, 2001. There are also 8.79 acres in the reclaimed Goose Island refuse pile, which received Phase I bond release in 1985. In all, 38.7 acres have received Phase I bond release to date.

The area in Hardscrabble Canyon eligible for Phase II bond release includes all the area within the 39 acre disturbed area boundary except the road (1.21 acres) and the recently reclaimed substation [0.76 acres at last count (email from J. Pappas February 20, 2003)]. Therefore, 37.1 acres are eligible to receive Phase II bond release.

Sowbelly Gulch – Phase I Bond Release

The Sowbelly Disturbed area encompasses 21 acres. Reclamation grading started in the Sowbelly Gulch portion of the disturbed area in 1993 and continued through 1995. Phase I bond release of 18.2 acres at Sowbelly was approved on January 31, 1997 (excluding the substation). Work on the substation was completed in 2002.

CHRONOLOGY FOR PHASE II BOND RELEASE

Castle Gate Holding Company
Sowbelly Gulch No. 5 and Hardscrabble Canyon
Castle Gate Mine
C/007/004

February 21, 2003

- May 3, 2002 CGHC sends letters to local governments, and property owners of proposed bond release: Mr. Gary Harwood, American Electric Power Service Corporation the Bureau of Land Management, and the Carbon County Commission, the Carbon County Road Department and the Carbon County Planning and Zoning.
- May 8, 2002 CGHC submits Phase II bond release application for Hardscrabble and Sowbelly.
- July 16, 23, 30, and August 6, 2000 Phase II bond release published in the Sun Advocate. There are separate notices for Hardscrabble and for Sowbelly.
- August 13, 2002 Division sends letters of invitation to SITLA, BLM, and OSM of bond release inspection to be held August 22, 2002.
- August 22, 2002 Phase II bond release inspection. In attendance:
- Johnny Pappas, CGHC
 - Priscilla Burton, DOGM
 - Joe Helfrich, DOGM
 - Paul Baker, DOGM
 - Pamela Grubaugh-Littig, DOGM
 - Mike Sufлита, DOGM
 - Wayne Western, DOGM
 - Steve Falks, BLM
- September 6, 2002 End of public comment period. No comments received.

PHASE II BOND RELEASE FINDINGS

Castle Gate Holding Company
Sowbelly Gulch No. 5 and Hardscrabble Canyon
Castle Gate Mine
C/007/004
Carbon County, Utah

February 21, 2003

SUMMARY OF FINDINGS

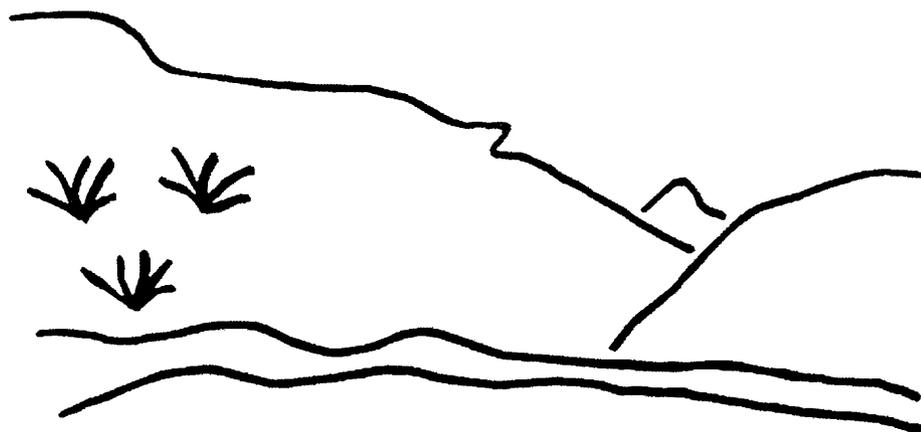
The Phase II bond release findings for Sowbelly and Hardscrabble Canyons are in the attached Technical Analysis dated January 21, 2003. The Phase II bond release was advertised for four consecutive weeks. No comments were received during the public comment period. A bond release inspection was conducted on August 22, 2002. No problems were identified. BLM concurrence is pending and letter will be forward to OSM.

PHASE II BOND RELEASE RECOMMENDATION

The Permittee has demonstrated the establishment of vegetation at both Sowbelly Gulch and Hardscrabble Canyons. It is recommended that \$136,946 be released for Sowbelly (18.2 acres) and \$253,900 be released for Hardscrabble Canyons (37.1 acres). The figure of 37.1 acres for Hardscrabble Canyon includes all acreage within the 39 acre disturbed area boundary, less the substation (approximately 0.76 acres) and the road (1.21 acres).

On approval of this request, retained revegetation bond will total \$680,154 and is broken down as follows: \$233,000 for Sowbelly; \$235,000 for Hardscrabble; \$83,100 for the Hardscrabble substation; and \$129,054 for Adit #1.

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Castle Gate Mine
Phase II Bond Release Sowbelly
C007/004-BR02A
Technical Analysis
January 21, 2003

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TECHNICAL ANALYSIS

TECHNICAL ANALYSIS

The Division ensures compliance the Surface Mining Control and Reclamation Act of 1977(SMCRA). When mines submit an application for bond release, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the Permittee must comply with the minimum regulatory requirements as established by SMCRA.

Readers of this document must be aware that the regulatory requirements are included by reference. A complete and current copy of these regulations and a copy of the Technical Analysis and Findings Review Guide can be found at <http://ogm.utah.gov/coal>

This Technical Analysis (TA) is written as part of the bond release review process. It documents the Findings that the Division has made to date regarding the application for bond release and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings. Only those sections that pertain to Phase II bond release have been analyzed. Specific findings are provided which indicate whether or not the application is in compliance with the Regulations.

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January 21, 2003

TECHNICAL ANALYSIS

INTRODUCTION

INTRODUCTION

Earthwork at the Sowbelly site was completed during the years 1993, 1994 and 1995. During 1995, 15.25 acres of the 21 total disturbed were gouged. Phase I bond release was approved for the site on January 30, 1997

On May 10, 2002, Castle Gate Holding Company applied for Phase II bond release for the Sowbelly Canyon area of the Castle Gate Mine, 18.2 acres of 21 acres disturbed. On September 9, 2002, the Division requested additional information before the technical review of the application could be completed. The supplemental information was received on November 15, 2002.

The Phase II bond release application contains vegetation and sediment yield information and a copy of the public notice. Phase II bond release may be approved after successful revegetation is completed and erosion is controlled to prevent suspended solids to streamflow and prohibit runoff outside of the permit area (R645-301-880.320). The Permittee has met the minimum requirements of this regulation for Phase II bond release.

The Bond Release Directive Tech-006 (dated September 5, 2000) and Utah Regulations R645-301-880.100 through 880.310 guided this review of the bond release application.

Phase II bond release is recommended for 18.2 acres in Sowbelly Canyon. Since bond release will be granted in the year 2003, but Map EX.3.2-13.DWG, Sowbelly Canyon As-Built Topography and Treatment Map, shows Phase II bond release in 2002, Plateau Mining Corp. has agreed to alter the final copies of maps to read 2003.

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January 21, 2003

INTRODUCTION

GENERAL CONTENTS

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Castle Gate Holding Company has held the permit on the Castle Gate Mine since September 11, 1998. The Mining and Reclamation Plan has a complete discussion of the company's structure in Chapter 2.

Findings

The information provided is adequate for the purposes of Phase II bond release.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The mine site is located in Sowbelly Canyon approximately 4 miles northwest of Helper, Utah. The site is located on the Standardville, Utah, U.S. Geological Survey 7.5 minute quadrangle map and is described as follows:

Township 13 South, Range 9 East, SLB&M, Utah

Section 4: NW1/4SW1/4, SW1/4 SW1/4

Section 9: NW1/4 NW1/4

Findings:

The information provided is adequate for the purpose of Phase II bond release.

PUBLIC NOTICE AND COMMENT

Regulatory References: R645-301-880.120.

GENERAL CONTENTS

Analysis:

Appendix 3 of the submittal includes a copy of the public notice. The advertisement contains all the information required by R645-301-880-120. An affidavit of publication has been provided and is dated August 6, 2002.

Appendix 4 of the application contains copies of notification letters sent to adjoining property owners: Mr. Gary Harwood, American Electric Power Service Corp., the Bureau of Land Management; and local governmental bodies: the County Commission, the Carbon County Road Department, Carbon County Planning and Zoning.

Findings:

The information provided meets the requirements of the Regulations.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

All activities have been accomplished in accordance with the requirements of the Surface Mining and Control Act of 1977 as evidenced by the Division's approval of the As-Built drawings submitted with the Phase I bond release application, which was approved January 30, 1997. The Phase II bond release application contains a notarized C1C2 form certifying the truthfulness of the information submitted.

Findings:

The information provided in the bond release application meets the minimum certification requirements for Phase II bond release.

RECLAMATION PLAN

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: R645-301-880.320

Analysis:

Phase II Bond Release may be granted after revegetation has been established in accordance with the approved reclamation plan so long as the lands to which the release is applicable are not contributing suspended solids to streamflow or runoff outside the permit area in excess of the requirements set by UCA 40-10-17(j) of the ACT and by R645-301-751. No permanent impoundments have been retained on this site.

The Division staff has reviewed the submittal for Phase II bond release with this guidance in mind.

Findings:

The information provided is adequate for the purposes of Phase II bond release.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The postmining land uses are wildlife habitat and grazing. The area contains critical elk winter range, so grasses, particularly tall grasses, are important for the postmining vegetation. Grasses are also important for grazing.

The Permittee has met the Phase II bond release requirement for land use. The site is being used as wildlife habitat, but it has not yet been grazed. Although the vegetation cover is dominated by grasses, there is a good mix of forbs and shrubs included. The utility of these species for the postmining land uses is discussed in further detail in other sections of this analysis.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The mining and reclamation plan says wildlife habitat enhancement will be created by the development of micro-topographic features, such as swales and rises created during regrading; using the species in the seed mixes; creating snags and roosts where materials are available; and by making wetland areas wherever topography and hydrology lend themselves to their creation.

In Sowbelly Gulch, it was not possible to create as many habitat features as originally envisioned. Materials for roosts and snags did not become available, and there were no continually-available water sources that could be used to create wetlands. Some large rocks were intentionally placed on the surface, and much of the site was gouged which helps to enhance vegetation.

In general, the species that have become established are more desirable for wildlife forage than the species in adjacent undisturbed areas. The dominant species in surrounding undisturbed areas are Salina wild rye and sagebrush, and while sagebrush is used extensively by big game, Salina wild rye is not palatable. By contrast, the dominant species in the reclaimed area are all rated as having fair or better palatability.

Adjacent undisturbed areas have, in addition to those areas dominated by sagebrush and Salina wild rye, patches of oak, maple and conifers that provide good cover for wildlife. The reclaimed area does not have this same small tree component, but this is not critical because the reclaimed area is relatively small and narrow with good cover nearby. The reclaimed area does have areas of taller shrubs and grasses, especially rabbitbrush and basin wild rye. The Division considers that the area has been enhanced as wildlife habitat.

Findings:

The Permittee has met the minimum requirements of this regulation for Phase II bond release.

RECLAMATION PLAN

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

The disturbed area at the Sowbelly complex is 21.0 acres and is divided as follows:

- 15.25 acres reclaimed 1993-1994 and 1995.
- 2.14 acres of highwall associated with 1995 reclamation.
- 0.81 acres of undisturbed ground within the disturbed area.
- 2.8 acres associated with the substation reclaimed in 2002.

The Sowbelly Canyon portion of the Castle Gate Mine was reclaimed and given Phase I bond release January 30, 1997. On May 10, 2002, the Division received an application for Phase II bond release for 18.2 acres. That is all of the disturbed area except the substation.

During the Phase I bond release inspection, the Division found that all backfilling and grading, topsoil placement and drainage construction were properly done. In evaluating the Phase II bond release application, the Division will determine if vegetation has been established in accordance with the approved mine plan. No specific engineering requirements will be looked at during Phase II bond release. Should the Division find that slides or drainage failures have occurred the Division will require the Permittee to take appropriate action.

Findings:

The Permittee has met the minimum requirements for this section of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Information concerning the redistribution of topsoil and subsoil was reviewed in the Division's Phase I Decision Document dated November 29, 1996. Areas of concern were noted at soil test pit locations SB-2, SB-3, SB-4, SB-5 SBG-1, SBG-2 (shown on Figure 1 of Appendix

RECLAMATION PLAN

3-2B of the MRP). According to the technical review, coal debris, coal refuse and sodic material exposed or excavated during reclamation was covered with between two to six feet of cover.

During an inspection of the site on August 22, 2002, the Division noted sparse cover in the vicinity of SB-3, although no rills or gullies were noted at the site. Gouges pocked into the soils were still very evident in the location of SB1 and 2.

Findings:

The information provided meets the requirements for bond release.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Groundwater Monitoring

Sowbelly Canyon has no groundwater monitoring points or wells.

Surface Water Monitoring

Sowbelly Canyon has two surface water monitoring points, one above the former disturbed area and one below that area. These points are monitored now and will continue to be monitored until final bond release. There are no wells in Sowbelly Canyon.

Sediment control measures

A field visit was made to Sowbelly Canyon on August 22, 2002. The revegetation has been proceeding well over the last 6 years. Vegetation has grown with considerable diversity. While the plant density varies somewhat over the entire project, all the plants are doing well. They do show some stress from the current dry year. The mounds and depressions are still at about 50 % their original height since the last two years have been drought years. In terms of sediment loss, the reclaimed area is at least as good, or better, than surrounding native areas. Although there is localized erosion and deposition (on the order of 20 feet), overall it's obvious no sediment has been lost from the site. No significant rills or gullies were found.

The reclamation methods have minimized disturbance to the hydrologic balance within the permit and adjacent areas and have prevented material damage outside the permit area. The

RECLAMATION PLAN

area can now support the approved postmining land use. The roughening and seeding method has proven successful at many Utah coal mine reclamation projects and is working well at these sites. Thus, this reclamation is using the best technology currently available to prevent additional contributions of suspended solids to streamflow. There is no evidence of pollution of surface and subsurface waters, and it appears very unlikely there will be future occurrence of such pollution.

Findings:

Sediment control provided by the roughened ground and established vegetation is sufficient for Phase II Bond Release.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: Standards For Success

Standards

According to the mining and reclamation plan, revegetation success will be judged by comparing vegetation life forms in the reclaimed and reference areas using the Motyka index. The Motyka index is a similarity index, and the calculated similarity between the reclaimed area and the reference area must be at least 70 percent or the percent similarity calculated between samples in the reference area, whichever is less. The reclaimed area is considered to have met the diversity standard if it meets this criterion.

Other performance standards in the rules include erosion control, seasonality, and utility for the postmining land use. The species must be native to the area and capable of regeneration and succession. Some of the revegetation success standards that would normally be applied, such as production, woody plant density, and cover, are not included as success standards because the site was previously disturbed. For this same reason, the reference area used is not an undisturbed area but is a site successfully reclaimed by the Utah Abandoned Mine Land Reclamation program.

Species Composition and Seasonality

The calculated similarity between the reclaimed and reference areas is 89.73 percent. This meets the success standard. In addition, the applicant presents information showing that the cover in the reclaimed area is not statistically different from the cover in the reference area and that diversity in the reclaimed area is greater than the diversity in the reference area.

The mining and reclamation plan contains baseline vegetation cover data from 1981 for two undisturbed reference areas in Sowbelly Gulch that are no longer part of the success standards. Although a comparison of cover values between the reclaimed area and these undisturbed areas is not required by the plan, the reclaimed area has more cover (47.33%) than the Sowbelly grass-sage reference area (38.9%) and very similar cover to the Sowbelly mixed brush reference area (47.7%). Therefore, even if this was a post-law site where topsoil had been salvaged and comparison to undisturbed areas was required, the reclaimed area would meet the bond release vegetation cover requirements.

The required minimum sample sizes were 12 and 14 for the reclaimed and reference areas, and the Permittee took 80 and 40 samples in these areas, respectively.

Species Composition

The section of this analysis titled "Protection of Fish, Wildlife and Related Environmental Values" discusses utility of the vegetation for the wildlife habitat postmining land use. The same principles of forage palatability discussed in that section apply to the grazing land use.

During the bond release inspection on August 22, 2002, no noxious weeds were found on the site. Some noxious weeds have been found in the reclaimed area in the past, but the Permittee has worked actively to eradicate them. The rules allow continued efforts to control these weeds through the entire period of extended responsibility for successful revegetation.

Although the vegetation study included with the application for bond release shows some species that are not native to the area, cover from these species was, for the most part, minor. Except for yellow sweet clover, total cover from these species was 2.32 percent and relative cover 4.90 percent. Cover from yellow sweet clover was 7.48 percent, higher than any other species, but under the environmental conditions found at this site, yellow sweet clover should not persist. There is evidence sweet clover is dying out: the vegetation measurements were taken in 2000, but during the bond release inspection two years later, we found little or no yellow sweet clover.

The only warm season species found in either the reclaimed area or the reference area was fourwing saltbush although some of the cool season species, such as Indian ricegrass and

RECLAMATION PLAN

Salina wild rye, display some warm season characteristics without actually having the C₄ metabolic pathway. There was substantially more fourwing saltbush in the reference area than the reclaimed area (6.25% compared to 0.44%), but the similarity in seasonality between the two areas was still high (89.85%) using the Motyka Index to calculate the comparison. Although the plan does not include a seasonality success standard, the Division considers this degree of similarity to be adequate.

Erosion Control

During the bond release inspection, we found no rills, gullies, or other signs of accelerated erosion. This is due to several factors including some of the reclamation practices the Permittee used. Most of the site was gouged or contour furrowed, and these roughening techniques have been very effective in preventing runoff, erosion, and sedimentation. In addition, three of the dominant species in the reclaimed area, western wheatgrass, thickspike wheatgrass, and blueleaf aster, are rhizomatous and very effective at controlling erosion.

Findings:

The Permittee has met the minimum revegetation requirements for Phase II bond release.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

The Division conducted an inspection of the site on August 22, 2002. During that inspection, the Division noted that the regrading and gouging performed in 1995 is controlling erosion. There were no rills or gullies noted on the site. The site was photographed and can be seen on the Division's FTP site under images for the mine, dated 08222002.

Appendix 2 of the Application for Phase II Bond Release provides a comparison of the sediment yield in tons/acre/year for the reclaimed slopes under existing conditions to the reclaimed slope assuming reference area cover. The comparison was run using the Revised Universal Soil Loss Equation by EarthFax Engineering, Inc.

The following assumptions are built into the model:

- The soil erodibility factor (K) for both the control and reclaimed land was based upon the average texture composite samples taken in 1996 from trenches prior to reclamation in 1996 (Appendix 3.2B).
- The very fine sand fraction is assumed to be 5%.

RECLAMATION PLAN

- The reclaimed soils were also assumed to medium or coarse granular structure and slow to moderate permeability based upon the sampling results in Appendix 3.2B.
- The soils were assumed to have 0% organic matter, since the measurement of 1.6%OM noted in Appendix 3.2B was probably related to coal content.
- Average slope was assumed to be 20% (5 h : 1 v) for both the control and reclaimed conditions, based on the topography of the entire area.

EarthFax found that sediment yield from the reclaimed site varied from 0.56 tons/ac/yr down to 0.23 tons/ac/yr depending upon the extent of gouging. EarthFax arrived at an average of 5.42 tons/yr sediment from the 18.2 acre reclaimed site as compared to a projected 9.65 tons/yr for the control which is described as the same site with no gouging and a vegetation cover equivalent to that of the reference area.

Whether this model demonstrates erosion control depends upon the acceptable soil loss tolerance value for the soils of the site. The Natural Resources Conservation Service (formerly the Soil Conservation Service) identified the soil loss tolerance value for the Pathead and Curecanti soils as 1 ton/acre/year in Table 12 of the 1988 Soil Survey of Carbon Area. The consultant's prediction of 0.56 tons/acre/year in ungouged areas falls below this soil loss tolerance value.

Findings:

The Permittee has adequately applied best management practices to control erosion and prevent sediments from leaving the site.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Bonded area map

The Division developed Technical Directive 006 to assist in phase bond release. The items that pertain to the bonded area include the following:

- Maps
 - The Permittee should supply the Division with a map at a scale of at least 1"=500' of the bonded area
 - The map should delineate all disturbed areas

RECLAMATION PLAN

- The reclamation dates and acreages of all reclaimed areas should be shown
- The operation or reclamation status of each area, such as active, temporary cessation, or phase bond release should be shown.

On Map EX3.2-13.DWG, Sowbelly Canyon As-Built Topography and Treatment Map, the Permittee shows the following:

- The Permittee gave the Division a map of the Sowbelly area at a scale of 1" = 100', which exceeds the requirement of 1"=500'.
- The map shows all areas within the disturbed boundary that have been disturbed, were never disturbed.
- The map shows that 15.25 acres were granted Phase I bond release in 1996, and Phase II bond release for those areas was granted in 2002. Since Phase II bond release was obtained in January 2003, the Permittee has agreed to place this year's date on the final copies of the map.
- The map shows that all areas within the Sowbelly area are either undisturbed or are in reclamation.

The Permittee did not include a summary table in the text but did show the information on Map EX3.2-13.DWG, Sowbelly Canyon As-Built Topography and Treatment Map.

The Permittee stated in the public notice that bond release for 18.2 acres was being sought. The areas for which reclamation is being sought include 15.25 acres of vegetated land, 2.14 acres of cutslopes (not vegetated lands.) In addition to those lands the Permittee is asking for bond release of undisturbed areas within the permit boundary. The undisturbed area contains approximately 0.81 acres ($15.25 + 2.14 + 0.81 = 18.2$ acres). Another way of looking at the numbers is to say that the Permittee wants Phase II bond release on all areas at Sowbelly with the exception of the substation area. The Division will consider all land at the Sowbelly site with the exception of the substation area shown on Map EX3.2-13.DWG to be included in Phase II bond release.

Findings:

The information provided in the bond release application is considered adequate to meet the minimum maps, plans and cross-sections of the reclamation operations requirements of the regulations. The Division should approve Phase II release for 18.2 acres. Since bond release will be granted in the year 2003, but Map EX3.2-13.DWG, Sowbelly Canyon As-Built Topography and Treatment Map, shows Phase II bond release in 2002, the Permittee has agreed to alter the maps to read 2003.

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BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of bond amount

Determination of bond amount

Table 1. Summary of bond amounts for the Castle Gate Mine.

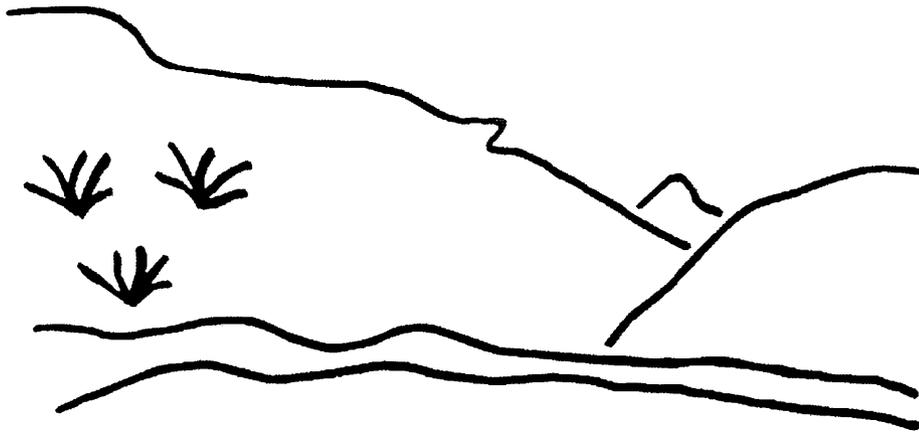
	Sowbelly	Hardscrabble	Adit No. 1	Total
Acres	21	39	3	63
Current Bond Amount	\$369,946	572,000	\$129,054	\$1,071,000
Amount Proposed for Release	(\$136,946)	(\$253,900)		(\$390,846)
Bond remaining for Phase I work		\$83,000		
Revegetation Cost	233,000	\$235,000		
Bond Amount remaining	\$233,000	\$318,000	\$129,054	\$680,154

The Division calculated the revegetation costs and reclamation costs at the Sowbelly complex to be \$233,000 in 2012 dollars. That amount insures that the Division could reseed the site in the event of bond forfeiture.

Findings:

The information provided in the bond release application meets the minimum bond and insurance sections the regulations.

State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Castle Gate Mine
Phase II Bond Release Hardscrabble
C007/004-BR02B
Technical Analysis
January 21, 2003

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TECHNICAL ANALYSIS

TECHNICAL ANALYSIS

The Division ensures compliance with the Surface Mining Control and Reclamation Act of 1977(SMCRA). When mines submit an application for bond release, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the permittee must comply with the minimum regulatory requirements as established by SMCRA.

Readers of this document must be aware that the regulatory requirements are included by reference. A complete and current copy of these regulations and a copy of the Technical Analysis and Findings Review Guide can be found at <http://ogm.utah.gov/coal>

This Technical Analysis (TA) is written as part of the bond release review process. It documents the Findings that the Division has made to date regarding the application for bond release and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings. Only those sections that pertain to Phase II bond release have been analyzed. Specific findings are provided which indicate whether or not the application is in compliance with the Regulations.

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January 21, 2003

TECHNICAL ANALYSIS

INTRODUCTION

INTRODUCTION

Earthwork at the Hardscrabble site was completed during the years 1984, 1985, and 1993 through 1999. Phase I bond release was approved for Goose Island (8.79 acres) in 1985. Phase I bond release was conditionally approved January 25, 2001 for Hardscrabble No. 3 and No. 4 Mine areas (29.9 acres) with final approval effective February 14, 2001. (The substation was reclaimed in 2002 and was not included in the Phase I bond release area.) The As-Built Reclamation Topography and Cross-section Location Map is Exhibit 3.3-19.

Castle Gate Holding Company applied for Phase II bond release for the Hardscrabble No. 3 and No.4 Mine areas of the Castle Gate Mine, less the 1.21 acre road and the 0.72 acre substation. There are 37.1 acres eligible for Phase II bond release. The submittal contains vegetation and sediment yield information. The Utah Regulations allow for Phase II bond release after successful revegetation is completed and erosion is controlled to prevent suspended solids to streamflow and prohibit runoff outside of the permit area (R645-301-880.320). The Permittee has met the minimum requirements of this regulation for Phase II bond release.

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INTRODUCTION

GENERAL CONTENTS

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Castle Gate Holding Company has held the permit on the Castle Gate Mine since September 11, 1998. The Mining and Reclamation Plan has a complete discussion of the company's structure in Chapter 2.

Findings

The information provided is adequate for the purposes of Phase II bond release.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The mine site is located in Hardscrabble Canyon approximately 4 miles northwest of Helper, Utah. The site is located on the Standardville, Utah, U.S. Geological Survey 7.5 minute quadrangle map and is described as follows:

Township 13 South, Range 9 East, SLB&M, Utah

Section 3: SE1/4 SW1/4

Section 10: NW1/4 NW1/4, NE1/4 NW1/4, SE1/4 NW1/4, NW1/4 NE1/4, SW1/4 NE1/4, SE1/4 NE1/4.

Findings:

The information provided is adequate for the purpose of Phase II bond release.

GENERAL CONTENTS

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

Appendix 3 of the submittal includes a copy of the public notice. The advertisement contains all the information required by R645-301-880-120. An affidavit of publication has also been provided and is dated August 2002.

Appendix 4 of the application contains copies of notification letters sent to adjoining property owners: Mr. Gary Harwood, American Electric Power Service Corp., the Bureau of Land Management; and local governmental bodies: the County Commission, the Carbon County Road Department, Carbon County Planning and Zoning.

Findings:

The information provided meets the requirements of the Regulations.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

All activities have been accomplished in accordance with the requirements of the Surface Mining and Control Act of 1977 as evidenced by the Division's approval of the As-Built drawings submitted with the Phase I bond release application, which was approved January 30, 1997. The Phase II bond release application contains a notarized C1C2 form certifying the truthfulness of the information submitted.

Findings:

The information provided in the bond release application meets the minimum certification requirements for Phase II bond release.

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RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Phase II Bond Release may be granted after revegetation has been established in accordance with the approved reclamation plan so long as the lands to which the release is applicable are not contributing suspended solids to streamflow or runoff outside the permit area in excess of the requirements set by UCA 40-10-17(j) of the ACT and by R645-301-751. No permanent impoundments have been retained on this site.

The Division staff has reviewed the submittal for Phase II bond release with this guidance in mind.

Findings:

The information provided is adequate for the purposes of Phase II bond release.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The postmining land uses are wildlife habitat and grazing. The area contains critical elk winter range, so grasses, particularly tall grasses, are important for the postmining vegetation. Grasses are also important for grazing.

The permittee has met the Phase II bond release requirement for land use. The site is being used as wildlife habitat, but it has not yet been grazed. During site inspections, numerous deer and elk have been seen in the area. Although the vegetation cover is dominated by grasses, there is a good mix of forbs and shrubs included. The utility of these species for the postmining land uses is discussed in further detail in other sections of this analysis.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The mining and reclamation plan says wildlife habitat enhancement will be created by development of micro-topographic features, such as swales and rises created during regrading; using the species in the seed mixes; creating snags and roosts where materials are available; and by making wetland areas wherever topography and hydrology lend themselves to their creation.

During the regrading process, numerous large rocks were uncovered, and many of these were used to make rock piles that are being used as habitat by birds and small mammals, particularly in No. 4 Mine canyon and the fan portal highwall areas. Materials for roosts and snags did not become available, but the operator was able to preserve several fully grown cottonwoods by realigning the channel from the position originally proposed. The canyon has a few seeps, but there is not enough water to create wetlands.

The site had been used for mining for many years, and some of the natural cliffs were buried under refuse or material that was sidecast to allow for building construction. During regrading, the operator was able to re-expose some of these cliffs. Other areas were graded to blend into and complement adjacent areas. These techniques have created a diverse landscape that is capable of supporting a varied assemblage of wildlife species.

In general, the plant species that have become established are more desirable for wildlife forage than the species in adjacent undisturbed areas. The dominant species in surrounding undisturbed areas are Salina wild rye and sagebrush, and while sagebrush is used extensively by big game, Salina wild rye is not palatable. By contrast, the dominant species in the reclaimed area are all rated as having fair or better palatability. One common species in the reclaimed area is basin wild rye, a tall grass that is very desirable for wintering elk.

Adjacent undisturbed areas have, in addition to those areas dominated by sagebrush and Salina wild rye, patches of oak, maple and conifers that provide good cover for wildlife. The reclaimed area has a line of mature cottonwoods along the channel and some small patches of oak that were saved from grading operations. Numerous shrubs and oaks have been along the

RECLAMATION PLAN

channel and elsewhere, and while these have not yet matured to where they are providing wildlife cover, the Division anticipates this will eventually happen. The Division considers that the area has been enhanced as wildlife habitat.

Findings:

The Permittee has met the minimum requirements of this regulation for Phase II bond release.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

The Hardscrabble Canyon portion of the Castle Gate Mine was reclaimed in 1984 and 1985 and 1993 through 1999. The substation was reclaimed in 2002. The road through the disturbed area was altered but left in place for the postmining land use. given for the Goose Island refuse pile area in 1985. Conditional approval of Phase I bond release for 29.9 acres with final approval effective February 14, 2001.

On May 10, 2002, the Division received an application for Phase II bond release for 36.5 acres. The 36.5 acres was arrived at by summation of the Goose Island disturbance (8.8 acres), plus the No. 3 mine reclamation (7.3 acres), plus the No. 4 mine reclamation area including the road (20.4 acres).

The disturbed area boundary at the Hardscrabble complex encompasses 39.0 acres, of which 36.76 acres are actually disturbed and 2.24 acres comprise a buffer zone along the perimeter that was not disturbed. The Hardscrabble area eligible for Phase II bond release includes all the acreage within the 39 acre disturbed area boundary except the road (1.21 acres) and the recently reclaimed substation [0.76 acres at most recent count (email from J. Pappas2/20/2003)]. Therefore, 37.1 acres is eligible to receive Phase II bond release.

During the Phase I bond release inspection, the Division found that all backfilling and grading, topsoil placement and drainage construction were properly done. During the Phase II bond release inspection the Division determined that vegetation has been established in accordance with the approved mine plan.

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No specific engineering requirements will be looked at during Phase II bond release. Should the Division find that slides or drainage failures have occurred the Division will require the Permittee to take appropriate action.

Findings:

The Permittee has met the minimum requirements for this section of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Information concerning the redistribution of topsoil and subsoil was reviewed in the Division's Phase I Bond Release Decision Document dated November 29, 2000. According to the technical review, final soil placement depth averaged 24 inches. Coal debris, coal refuse and any acid- and/or toxic-forming material exposed or excavated during reclamation was covered with four feet of overburden material and substitute soils.

Findings:

The information provided meets the requirements for bond release.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Retention

The road to be retained for the post mining land use is 1.21 acres.

Findings:

The information provided is adequate for the purposes of the Regulations.

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HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Groundwater Monitoring

Hardscrabble Canyon has no groundwater monitoring points or wells.

Surface Water Monitoring

Hardscrabble Canyon has two surface water monitoring points, one above the former disturbed area and one below that area. These points are monitored now and will continue to be monitored until final bond release. There are no wells in Hardscrabble Canyon.

Sediment control measures

A field visit was made to Hardscrabble Canyon on August 22, 2002. The reclamation there was implemented in phases over the last 6 years. It's apparent the more recent areas have not developed as much vegetation as the older areas. However, all areas are doing well. The plant diversity is good and the mounds and depressions continue to retain moisture and prevent runoff. In terms of sediment loss, the reclaimed area is at least as good, or better, than surrounding native areas. Although there is localized erosion and deposition (on the order of 20 feet), overall it's obvious no sediment has been lost from the site. No significant rills or gullies were found.

The reclamation methods have minimized disturbance to the hydrologic balance within the permit and adjacent areas and have prevented material damage outside the permit area. The area can now support the approved postmining land use. The roughening and seeding method has proven successful at many Utah coal mine reclamation projects and is working well at these sites. Thus, this reclamation is using the best technology currently available to prevent additional contributions of suspended solids to streamflow. There is no evidence of pollution of surface and subsurface waters, and it appears very unlikely there will be future occurrence of such pollution.

Findings:

Plant growth and the roughened ground are sufficient for Phase II Bond Release.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: Standards For Success

Standards

According to the mining and reclamation plan, revegetation success will be judged by comparing vegetation life forms in the reclaimed and reference areas using the Motyka index. The Motyka index is a similarity index, and the calculated similarity between the reclaimed area and the reference area must be at least 70 percent or the percent similarity calculated between samples in the reference area, whichever is less.

Other performance standards in the rules include erosion control, diversity, and utility for the postmining land use. The species must be native to the area and capable of regeneration and succession. Some of the revegetation success standards that would normally be applied, such as production, woody plant density, and cover, are not included as success standards because the site was previously disturbed. For this same reason, the reference area used is not an undisturbed area but is a site that was successfully reclaimed by the Utah Abandoned Mine Land Reclamation program.

Cover, Similarity, and Diversity

The calculated similarity between the reclaimed and reference areas is 70.21 percent. This meets the success standard. In addition, the applicant presents information showing that the cover in the reclaimed area is not statistically different from the cover in the reference area and that diversity in the reclaimed area is greater than the diversity in the reference area.

The mining and reclamation plan contains baseline vegetation cover data from 1981 for two undisturbed reference areas in Sowbelly Gulch that are no longer part of the success standards. Although a comparison of cover values between the reclaimed area and these undisturbed areas is not required by the plan, the reclaimed area has more cover (44.82%) than the Sowbelly grass-sage reference area (38.9%) and greater than 90 percent of the cover in the Sowbelly mixed brush reference area (47.7%). Therefore, even if this was a post-law site where topsoil had been salvaged and comparison to undisturbed areas was required, the reclaimed area would meet the bond release vegetation cover requirements.

Minimum sample sizes were 15 for the reclaimed area and 13 for the reference area, and the Permittee took 80 and 40 samples for these areas respectively.

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Species Composition

The section of this analysis titled "Protection of Fish, Wildlife and Related Environmental Values" discusses utility of the vegetation for the wildlife habitat postmining land use. The same principles of forage palatability discussed in that section apply to the grazing land use.

During the bond release inspection on August 22, 2002, one musk thistle plant, a noxious weed, was found on the site, and it was dug up. Some noxious weeds have been found in the reclaimed area in the past, but the Permittee has worked actively to eradicate them. The rules allow continued efforts to control these weeds through the entire period of extended responsibility for successful revegetation.

Although the vegetation study included with the application for bond release shows some species that are not native to the area, cover from these species was minor. Total cover from these species was 5.19 percent and relative cover 11.58 percent. The dominant vegetation is of species native to the area.

Erosion Control

During the bond release inspection, we found two small rills but no other signs of accelerated erosion. This is due to several factors including some of the reclamation practices the Permittee used. Most of the site was gouged, and this roughening technique has been very effective in preventing runoff, erosion, and sedimentation. In addition, the two dominant grasses (thickspike wheatgrass, *Elymus lanceolatus*, and western wheatgrass, *Elymus smithii*) and one dominant forb (pacific aster, *Aster chilensis*) are rhizomatous and very effective at controlling erosion (Table 2, Appendix 1).

Findings:

The Permittee has met the minimum revegetation requirements for Phase II bond release.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

The Division conducted an inspection of the site on August 22, 2002. During that inspection, the Division noted that the regrading and gouging performed in 1999 at Goose Island is controlling erosion. The presence of rills and gullies are very few, located on a gouged slope

RECLAMATION PLAN

on the west side of the road between Mine No. 4 and Goose Island. The sediment from the rills is being washed into the roadside ditch, but is not leaving the site. The rills were photographed and can be seen in the images folder for the mine, dated 08222002.

Two problem areas were noted in the Technical Analysis of the Phase I bond release dated November 29, 2000. The first was the area near the old scalehouse used for equipment staging and screening soil for riprap. The area was noted as having poor vegetation re-establishment due to limited soil structure (compaction). On August 22, 2002, the Division noted that the area is still limited in vegetation cover, but gouges on the site are retaining all flow on the site and no erosion was noted. The area was photographed.

A second problem area noted during Phase I bond release is the area identified by soil sample HCRD-6. This area covers about 1000 square feet and is elevated on a bench above the canyon floor. The site is very steep with the soil at the angle of repose. There is some vegetation growing on the soils, but the site remains mostly uncovered by vegetation or litter. Despite the lack of cover, there are no rills or gullies on the area. All drainage appears to flow to the low point of the fill at the cliff's edge. Below the cliff, the sediments are captured in gouges.

Appendix 2 of the Application for Phase II Bond Release provides a comparison of the sediment yield in tons/acre/year for the reclaimed slopes under existing conditions to the reclaimed slope assuming reference area cover. The comparison was run using the Revised Universal Soil Loss Equation by EarthFax Engineering, Inc.

The assumptions built into the model are as follows:

- The soil erodibility factor (K) for the control (hypothetical undisturbed site) was based upon the association of 45% Pathead, 25 % Curecanti and 30% other soils described by the Soil Survey of the Carbon Area, 1988, UDSA, SCS (Appendix 3.3E) and was considered to be $K = 0.27$.
- The K factor for the reclaimed land was based upon the average texture of fifteen composite samples taken in 1996 from trenches prior to reclamation in 1996 (Appendix 3.3M) and was considered to be $K = 0.30$.
- The reclaimed soils were also assumed to have a moderate to rapid permeability, based upon the field notes in Appendix 3.3M.
- The very fine sand fraction is assumed to be 5%.
- The reclaimed soils were assumed to have 0% organic matter.
- Slope was assumed to be 30% (3.5 h : 1 v) for both the control and reclaimed conditions.

EarthFax found that sediment yield from the reclaimed site varied from 0.51 tons/ac/yr down to 0.16 tons/ac/yr depending upon the extent of gouging. EarthFax arrived at an average of 9.0 tons/yr sediment from the entire 36.5 acre site as compared to a projected 21.5 tons/yr for the

RECLAMATION PLAN

control which is described as the same site with no gouging and a vegetation cover equivalent to that of the reference area.

Whether this model demonstrates erosion control depends upon the acceptable soil loss tolerance value for the soils of the site. The Natural Resources Conservation Service (formerly the Soil Conservation Service) identified the soil loss tolerance value for the Pathead and Curecanti soils as 1 ton/acre/year in Table 12 of the 1988 Soil Survey of Carbon Area. The consultant's prediction of 0.16 to 0.51 tons/acre/year falls below this soil loss tolerance value.

Findings:

The Permittee has adequately applied best management practices to control erosion and prevent sediments from leaving the site.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Bonded Area Map

The Division developed a technical directive to assist in phase bond release. The items that pertain to the bonded area include the following:

- Maps
 - The Permittee should supply the Division with a map at a scale of 1"=150' of the bonded area, see Exhibit 3.3-23.
 - Exhibit 3.3-23 shows the delineation of all disturbed areas.
 - The reclamation dates and acreages of all reclaimed areas are shown. The Permittee assumed that bond release associated with this amendment would be completed in 2002. Due to delays bond release will not occur until 2003. Plateau Mining Corp. has agreed to make the correction on final copy of Exhibit 3.3-23.
 - The operation or reclamation status of each area is shown on Exhibit 3.3-23. Those areas include the No. 4 Mine Canyon, the No. 3 Mine Canyon, Goose Island and the substation.
- A Summary Table:
 - The total disturbed area acreage for each area is shown in the legend of Exhibit 3.3-23.

RECLAMATION PLAN

- The acreage, locations, dates for each phase of bond release is shown on the legend of Exhibit 3.3-23, although the Division may have to modify the dates.

Findings:

The information provided in the bond release application is considered adequate to meet the minimum maps, plans and cross-sections of the reclamation operations requirements of the regulations.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Determination of Bond Amount

Determination of bond amount

Table 1. Summary of bond amounts for the Castle Gate Mine.

	Sowbelly	Hardscrabble	Adit No. 1	Total
Acres	21	39	3	63
Current Bond Amount	\$369,946	572,000	\$129,054	\$1,071,000
Amount Proposed for Release	(\$136,946)	(\$253,900)		(\$390,846)
Bond remaining for Substation and road Reclamation	Included in Revegetation	\$83,100		
Revegetation Cost	233,000	\$235,000		
Bond Amount remaining	\$233,000	\$318,100	\$129,054	\$680,154

The Division calculated the revegetation costs for the Hardscrabble complex to be \$235,000 in 2012 dollars. That amount insures that the Division could reseed the site in the event of bond forfeiture.

RECLAMATION PLAN

Findings:

The information provided in the bond release application meets the minimum bond and insurance sections the regulations.

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AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

SS.

County of Carbon,)

I, Ken Larson, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and that the first publication was on the 16th day of July, 2002, and that the last publication of such notice was in the issue of such newspaper dated the 6th day of August, 2002.

Ken G. Larson

Ken G Larson - Publisher

Subscribed and sworn to before me this 6th day of August, 2002.

Linda Thayne

Notary Public My commission expires January 10, 2003 Residing at Price, Utah

Publication fee, \$ 533.12



LINDA THAYN
NOTARY PUBLIC - STATE OF UTAH
845 EAST MAIN
PRICE, UTAH 84501
COMM. EXP. 1-10-2003

PUBLIC NOTICE

**APPLICATION FOR PHASE II BOND RELEASE
HARDSCRABBLE CANYON NO. 3 AND NO. 4 MINES
CASTLE GATE HOLDING COMPANY
CASTLE GATE MINE
PERMIT C/007/004, APPROVED 12/24/94
CARBON COUNTY, UTAH**

Castle Gate Holding Company, 999 Corporate Blvd., Linthicum Heights, MD 21090, has completed Phase II of the approved reclamation plan for Hardscrabble Canyon No. 3 and No. 4 Mine areas of the Castle Gate Mine. This is based on meeting the vegetation and water quality requirements for Phase II reclamation in accordance with the approved reclamation plan.

The reclamation of Goose Island (8.8 acres) was completed in 1984. The reclamation of the Castle Gate No. 4 Mine area (7.3 acres) was completed in 1995. The reclamation of the Castle Gate No. 3 Mine Main Canyon (20.4 acres) was completed in 1999. Resulting in a total of 36.5 acres of reclaimed area.

In accordance with the provisions of R645-301-880, of the State of Utah R645-Coal Mining Rules, notice is hereby given to the general public that Castle Gate Holding Company is applying for partial release of the performance bond posted for this operation.

The surety bond posted for the Castle Gate Mine is \$1,071,000 of which \$572,000 is designated for the Hardscrabble Canyon reclamation. Castle Gate Holding Company is seeking release of \$253,900 from the Hardscrabble Canyon portion of the bond. All earthwork and revegetation has been completed on site, except for the removal of an electrical substation. Reclamation of this area will be completed when transmission of power from the substation is no longer necessary. A permanent access road has been constructed through the site as per the approved reclamation plan.

The Hardscrabble Canyon area is located on the Standardville, Utah, U.S. Geological Survey 7.5 minute quadrangle map. The mine sites are located in Hardscrabble Canyon, approximately 4 miles northwest of Helper, Utah. Reclamation work was performed on approximately 36.5 acres of disturbed and affected area located on the following described lands:

- Township 13 South, Range 9 East, SLB&M, Utah
- Section 3: SE1/4 SW1/4
- Section 10: NW1/4NW1/4, NE1/4NW1/4, SE1/4 NW1/4, NW1/4NE1/4, SW 1/4 NE1/4, SE1/4 NE1/4

The Utah Division of Oil, Gas and Mining will now evaluate the proposal to determine whether it meets all the criteria of the Permanent Program Performance Standards according to the requirements of the Utah Coal Mining Rules.

Written comments, objections and requests for public hearing or information conference on this proposal may be addressed to:

Utah Coal Program
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Closing date for submission of such comments, objections and requests for public hearing or information conference on this proposal must be submitted by September 5, 2002.

Published in the Sun Advocate July 16, 23, 30 and August 6, 2002.

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Carbon,)

I, Ken Larson, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State a true copy of which is hereto attached, was published in the full issue of such newspaper for 4 (Four) consecutive issues, and that the first publication was on the 16th day of July, 2002, and that the last publication of such notice was in the issue of such newspaper dated the 6th day of August, 2002.

Ken G. Larson

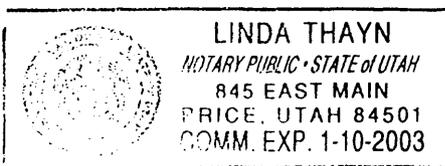
Ken G Larson - Publisher

Subscribed and sworn to before me this 6th day of August, 2002.

Linda Thayne

Notary Public My commission expires January 10, 2003 Residing at Price, Utah

Publication fee, \$ 501.76



PUBLIC NOTICE

**APPLICATION FOR PHASE II BOND RELEASE
SOWBELLY GULCH NO. 5 MINE
CASTLE GATE HOLDING COMPANY
CASTLE GATE MINE
PERMIT C/007/004, APPROVED 12/24/94
CARBON COUNTY, UTAH**

Castle Gate Holding Company, 999 Corporate Blvd., Linthicum Heights, MD 21090, has completed Phase II of the approved reclamation plan for Sowbelly Gulch No. 5 Mine area of the Castle Gate Mine. This is based on meeting the vegetation and water quality requirements for Phase II reclamation in accordance with the approved reclamation plan. The reclamation of 18.2 acres of Sowbelly Gulch was completed in 1995.

In accordance with the provisions of R645-301-880, of the State of Utah R645-Coal Mining Rules, notice is hereby given to the general public that Castle Gate Holding Company is applying for partial release of the performance bond posted for this operation.

The surety bond posted for the Castle Gate Mine is \$1,071,000 of which \$369,946 is designated for the Sowbelly Gulch reclamation. Castle Gate Holding Company is seeking release of \$136,946 from the Sowbelly Gulch portion of the bond. All earthwork and revegetation has been completed on site, except for the removal of an electrical substation and access road. Reclamation of these areas will be completed when transmission of power from the substation is no longer necessary.

The Sowbelly Gulch No. 5 Mine is located on the Standardville, Utah, U.S. Geological Survey 7.5 minute quadrangle map. The mine site is located in Sowbelly Gulch, approximately 4 miles west-northwest of Helper, Utah. Reclamation work was performed on approximately 18.2 acres of disturbed and affected area located on the following described lands:

Township 13 South, Range 9 East, SLB&M, Utah
Section 4: NW1/4 SW1/4, SW1/4SW1/4
Section 9: NW1/4NW1/4

The Utah Division of Oil, Gas and Mining will now evaluate the proposal to determine whether it meets all the criteria of the Permanent Program Performance Standards according to the requirements of the Utah Coal Mining Rules.

Written comments, objections and requests for public hearing or information conference on this proposal may be addressed to:

Utah Coal Program
Utah Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Closing date for submission of such comments, objections and requests for public hearing or information conference on this proposal must be submitted by September 5, 2002.

Published in the Sun Advocate July 16, 23, 30 and August 6, 2002.

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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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Michael O. Leavitt
Governor
Robert L. Morgan
Executive Director
Lowell P. Braxton
Division Director

September 13, 2002

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor *pgl*
Daron R. Haddock, Permit Supervisor

FROM: *pb* Priscilla Burton, Sr. Reclamation Specialist/Soils

RE: Phase II Bond Release Inspections Hardscrabble and Sowbelly Canyons, Castle Gate Holding Company, Castle Gate Mine, C/007/004

OK

Other Attendees:

DOG M Reclamation Specialists: Paul Baker, Wayne Western, Mike Suflita, and Joe Helfrich, and Permit Supervisor, Pam Grubaugh-Littig.
Plateau Mining Corp.: Johnny Pappas
BLM: Steve Falk

Date & Time:

August 22, 2002; 9:30am – 2:00 pm

PURPOSE:

To evaluate site conditions prior to completion of Phase II Bond Release as required by R645-301-880.210.

OBSERVATIONS:

Hardscrabble

Hardscrabble Canyon and the short side canyons were walked. The regrading and gouging performed in 1999 at Goose Island is controlling erosion. The presence of sheet erosion, rills and gullies are very few, located on a gouged slope on the west side of the road between Mine No. 4 and Goose Island. The sediment from the rills is being washed into the roadside ditch, but is not leaving the site. The rills were photographed and can be seen in the images folder for the mine, dated 08222002. This is localized erosion and deposition (on the order of 20 feet), has not resulted in sediment loss from the site.

TECHNICAL FIELD VISIT

September 13, 2002

Most of the site was gouged, and this roughening technique has been very effective in preventing runoff, erosion, and sedimentation. In addition, the two dominant grasses (thickspike wheatgrass, *Elymus lanceolatus*, and western wheatgrass, *Elymus smithii*) and one dominant forb (pacific aster, *Aster chilensis*) are rhizomatous and very effective at controlling erosion (Table 2, Appendix 1).

Two problem areas were noted in the Technical Analysis of the Phase I bond release dated November 29, 2000. The first was the area near the old scale house used for equipment staging and screening soil for riprap. The area was noted as having poor vegetation re-establishment due to limited soil structure (compaction). On August 22, 2002, the Division noted that the area is still limited in vegetation cover, but gouges on the site are retaining all flow on the site and no erosion was noted. The area was photographed.

A second problem area noted during Phase I bond release is the area identified by soil sample HCRD-6. This area covers about 1000 square feet and is elevated on a bench above the canyon floor. The site is very steep with the soil at the angle of repose. There is some vegetation growing on the soils, but the site remains mostly uncovered by vegetation or litter. Despite the lack of cover, there are no rills or gullies on the area. All drainage appears to flow to the low point of the fill at the cliff's edge. Below the cliff, the sediments are captured in gouges.

Even at these problem areas, there is no evidence of pollution of surface and subsurface waters, and it appears very unlikely there will be future occurrence of such pollution.

Sowbelly

The regrading and gouging performed in 1995 is controlling erosion. There were no rills or gullies noted on the site. The site was photographed and can be seen in the images folder for the mine, dated 08222002. Most of the site was gouged or contour furrowed, and these roughening techniques have been very effective in preventing runoff, erosion, and sedimentation. In addition, three of the dominant species in the reclaimed area, western wheatgrass, thickspike wheatgrass, and blueleaf aster (*Aster glaucodes*), are rhizomatous and very effective at controlling erosion.

The reclamation methods have minimized disturbance to the hydrologic balance within the permit and adjacent areas and have prevented material damage outside the permit area. The area can now support the approved post-mining land use.

RECOMMENDATIONS/CONCLUSIONS:

Based upon ground conditions, Phase II Bond release could be approved for both the Sowbelly and Hardscrabble Canyon sites.

National Award

Castle Gate Holding Company
Castle Gate Mine
P.O. Box 30
Helper, Utah 84526-0030
C/007/004



Company Contact:

Johnny Pappas
Castle Gate Holding Company
P. O. Box 30
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jpappas@rag-american.com

Site Contractor:

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Minchey Digging
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(435) 653-2330

Nominator:

Susan White
Division of Oil, Gas & Mining
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Salt Lake City, Utah 84114-5801
(801) 528-5258
susanwhite@utah.gov

**Hardscrabble Canyon
Castle Gate Mine
Excellence in Surface Coal Mining Reclamation Award
2003 Nomination**

Nomination

Castle Gate Holding Company has exceeded the regulatory requirements in its reclamation of Hardscrabble Canyon. Their extra efforts are deserving of recognition. The Permittee recognized the necessity of revising the reclamation and mining plan even though they had an approved reclamation plan which satisfied regulatory requirements. The Permittee took the initiative to sample the coal refuse and soil and reworked the engineering drawings to:

- Increase substitute topsoil cover from nine to twenty two inches.
- Preserve an historic rock wall created by Italian craftsmen at the turn of the century.
- Protect large cottonwoods and oaks in the drainage
- Recreate aesthetic details including cliffs, escarpments, and rockfalls that blend with the natural surroundings.
- Regrade Goose Island, an area that had already received Phase I bond release, and Dog Flat, an area that had been reclaimed ten years prior, to satisfy their own desire for a more perfect landscape.

Setting

The Castle Gate Mine Complex is located approximately 10 miles north of Price, Utah and 110 miles southeast of Salt Lake City in the Wasatch Plateau coal fields in Carbon County. In general, the area is mountainous and dissected by numerous steep canyons with ground surface elevation varying between 6,000 and 9,500 feet. Elevations in the disturbed area are approximately 6700 to 7000 feet.

The climate in the area is semi-arid, with annual precipitation averaging 14.8 inches. The majority of the precipitation occurs as snowfall. Rainfall is typically brief, high-intensity thunderstorms. Much of the precipitation is lost to runoff, evaporation, and sublimation, minimizing the amount of water available for plant growth. Summer high temperatures range from 60° to 85°F and winter lows typically vary from 10° to 20°F. The average frost-free period in this area ranges from approximately 60 to 120 days.

Intensive mining has occurred in Hardscrabble Canyon since the 1880's, when Teacum Pratt opened the first operation for stocker coal. Among these mining operations were several mines, a coal cleaning plant, bathhouses, offices, a warehouse, and truck loading facilities. There are approximately 39 acres of Title V permitted disturbance in the canyon. All disturbances were created pre-SMCRA but continuously used until 1989

when Price River Coal Company closed the mines. The disturbed areas associated with the Castle Gate Holding Company's permit are in Hardscrabble Canyon, Sowbelly Gulch, and at Adit No. 1 in Price Canyon.

Regrading

Because the site was disturbed before 1977, there was no consideration for how highwalls and cut slopes were to be reclaimed. It was impossible to completely backfill all highwalls and cut slopes, Castle Gate Holding Company and the contractor did remarkable work to make the remaining cuts and highwalls look natural and blend into the existing landscape. All available material on-site was used to backfill the highwall and cut slopes to a concave slope configuration. Coal debris, coal refuse and any acid- and/or toxic-forming material exposed or excavated during reclamation grading were removed and used as backfill against the highwall, cut slopes, and excavated trenches. This material was then covered with four feet of overburden and substitute soils. Some upper areas of the highwall and selected cut slopes remain and blend into the existing cliffs in the natural environment. Large rocks have been placed at the bottom of two of these areas, and they look like natural rock falls.

The approved backfilling and grading plan called for 20,000 yds³ of cut and fill material to generate the reclamation topography shown in the plan. However, by the end of the reclamation 93,700 yds³ of cut and fill material had been moved and placed, exceeding even the Permittee's expectation of 61,000 yds³.

During regrading, the Permittee found coal refuse in large quantities throughout the canyon. Apparently coal refuse was used as readily available fill material during pre-SMCRA mining. In fact, some of the natural cliffs were buried under refuse and sidecast spoil to create pads for buildings. During regrading, the Permittee directed the contractor, to re-expose these cliffs to match the natural exposed sandstone outcrops. Other areas were graded to blend into and complement adjacent rock outcrops. Numerous large rocks were uncovered during regrading, and many of these were used to make rock piles that have been adopted as habitat by birds and small mammals, particularly in No. 4 Mine canyon and the fan portal highwall areas. These techniques have created a diverse landscape that is capable of supporting a varied assemblage of wildlife species.

A coal preparation plant operated in Hardscrabble Canyon until 1979. Refuse from the operation was placed at the intersection of two tributaries blocking the flow path to the main ephemeral stream. This area, known as "Goose Island," was reclaimed in 1984. Although Phase I bond release was granted in 1985 the Permittee did additional regrading work in 1999 to improve the drainage. In the process of improving the drainage more soil material was spread on several problem areas.

Notably, a side canyon called "Dog Flat" had been filled up to about fifty feet deep with refuse. Dog Flat was a large flat area with a very steep drop to the main part of Hardscrabble Canyon. The area was originally reclaimed in 1987, which left the refuse in Dog Flat. But, later the Permittee decided reclamation would be much better if the

canyon was restored to a more natural configuration. About 15,000 cubic yards of refuse was removed from the canyon and graded into other parts of Hardscrabble Canyon. This exposed a natural rock outcrop that blends very well with the surrounding area. The drainage could function more naturally using bedrock grade controls to drop the channel 75 feet from Dog Flat down to the main drainage in Hardscrabble Canyon.

Utah regulations require the operator to establish a channel capable of conveying the runoff from a 100-year, 6-hour precipitation event. Instead, in the main drainage of Hardscrabble Canyon the Permittee built a channel capable of carrying the flow from a 100-year, 24-hour storm at an additional cost of about \$26,000 (1998 dollars). The Permittee feels the long-term benefits outweigh the additional costs. In addition, the channel was extended farther up the canyon than required in the original designs. This was done to better link two sections of the channel but resulted in having to move a few extra thousand cubic yards of coal waste. The operator was able to preserve several fully grown cottonwoods and oaks by realigning the channel from the position originally proposed.

The drainages in both the Hardscrabble and Dog Flat canyons use a buried channel design. This design starts with a well rip rapped over designed channel. The channel is then covered with growth material and seeded. This design closely matches ephemeral drainages in the undisturbed area.

A 75 foot section of Italian rock wall masonry was retained in the area of the upper bath house. The masonry is similar to other rock walls found in Carbon County that were constructed around the turn of the 20th century by Italian craftsmen. The rock wall is considered an enhancement to the postmining land use, since the people of Carbon County are very proud of their mining heritage and do not want all traces of coal mining remove from these sites. The remaining masonry will serve to remind those who pass through Hardscrabble Canyon of that heritage.

Soil

The site was disturbed before 1977, so no topsoil was salvaged or available for reclamation. Initial soil investigations identified enough substitute topsoil to cover the entire area with an average of nine inches of soil. However, the Permittee, the contractor (Minchey Digging), and the Division worked together to identify and test existing soils and overburden material to use as additional substitute topsoil with final soil placement depth averaging 22 inches. The natural rock content of these substitute soils was retained and incorporated into the reclaimed surface.

The contractor dug 11 pits to find the material, and the Permittee paid for soil tests to ensure the material was suitable. Analytical results of the coal samples showed the coal material to be single grained with a loamy sand to sandy loam texture. Because of the water limiting conditions of coal and coal-waste material, vegetation regeneration would have been severely restricted if the coal material had not been buried under four

feet of soil. The contractor located and placed approximately 48,000 cubic yards of soil material. This was 28,000 cubic yards more than discussed in the revised plan.

During reclamation, additional sources of substitute soils were located and approved for reclamation use. Some soil was found to have very high salt concentrations and was buried at least four feet deep. Within the area of the old scalehouse, high saline-sodic soils were encountered. Mitigating efforts were employed to utilize these soils during reclamation. The higher salt affected soils were buried under deeper fills and lesser salt affected soils. Mitigating efforts included incorporating hay into the upper layers of soil to help improve aeration and water holding capacity.

Revegetation and Erosion Control

Rather than wrapping the site with hundreds of feet of silt fence, Castle Gate Holding Company choose to use structure-free sediment control measures. This was done by gouging the entire area with numerous (about 2 - 3000 per acre) continuous basins about two feet wide, four feet long, and two feet deep. This extreme surface roughening technique is more effective at controlling sediment and promoting vegetation establishment than any other method in arid environments. The contractor was excellent at building these roughened mini-basins.

Several other erosion control measures were implemented to help reduce soil loss from the reclaimed slopes. These include the following:

- Ripping of the re-graded surface prior to placement of growth media or "topsoil"
- Incorporation of hay into the growth media
- Deep gouging of the growth media
- Seeding and establishing vegetation
- Addition of surface mulch (straw) following seeding
- Anchoring the mulch with wood fiber hydromulch and tackifier.

After the graded areas were gouged, the seed was applied by hand broadcasting methods. The site was then mulched with a combination of straw mulch and hydromulch to help reduce erosion. The disturbed area was planted with 5,000 tublings, 1,700 No.1 gallon and 120 No. 2 gallon containerized shrubs. The planted species were: serviceberry, chokecherry, current, Mountain mahogany, bitterbrush, Woods rose, cottonwood, snowberry, elderberry, and Rocky Mountain maple.

Within the disturbed area, there are some areas with native vegetation and a few areas along the ephemeral drainage with nearly full-grown cottonwoods. The Permittee and contractor altered the original grading plans in order to leave as many of these areas as possible.

Land Use and Vegetation Success

The pre- and postmining land uses are wildlife habitat and grazing. The main access road in Hardscrabble Canyon was regraded and then reestablished as a 10 to 12 foot wide dirt road for the postmining land use. A local rancher uses the road to trail his livestock to the top of the plateau where he leases grazing rights. The mining and reclamation plan contains information and letters documenting this ownership and use.

The Utah Division of Wildlife Resources classifies the area as critical elk winter range. Elk feed mainly on grasses so particularly tall grasses above the winter snow are important for the postmining vegetation. Grasses are also important for grazing. During site inspections, numerous deer and elk have been seen in the area. Although grasses dominate the vegetation cover, there is a good mix of forbs and shrubs. In general, the plant species that have become established are more desirable for wildlife forage than the species in adjacent undisturbed areas. The dominant species in surrounding undisturbed areas are Salina wild rye and sagebrush. Sagebrush is used extensively by wintering big game; Salina wild rye is tough and not very palatable. By contrast, the dominant species in the reclaimed area are all rated as having fair or better palatability. One common species in the reclaimed area is Great Basin wild rye, a tall grass that is very desirable for wintering elk. In addition, the two dominant grasses (thickspike wheatgrass, *Elymus lanceolatus*, and western wheatgrass, *Elymus smithii*) and one dominant forb (pacific aster, *Aster chilensis*) are rhizomatous and very effective at controlling erosion.

The reclaimed area has a line of mature cottonwoods along the channel and some small patches of oak that were saved from grading operations. Numerous shrubs and oaks have been planted along the channel and elsewhere, and while these have not yet matured to where they are providing wildlife cover, this will eventually happen.

The mining and reclamation plan contains baseline vegetation cover data from 1981 for two undisturbed areas in an adjacent canyon. A comparison of the (2001) cover values between the reclaimed area and these undisturbed areas show the reclaimed area has statistically more cover (44.82%) than the adjacent canyon grass-sage reference area (38.9%) and greater than 90 percent of the cover in the adjacent canyon's mixed brush reference area (47.7%). Cover from introduced species was minor; 5.19 percent and relative cover was 11.58 percent.

When noxious weeds were found the Permittee worked actively to eradicate them. The Utah Coal Rules allow continued efforts to control these weeds through the entire period of extended responsibility for successful revegetation.

Some minor rills are still evident but no signs of accelerated erosion are present. This is due to several factors including some of the reclamation practices the Permittee used.

Bond Release

The Goose Island refuse area of Hardscrabble Canyon was graded and seeded in 1984 (8.79 acres) and transplants were planted in 1985. Phase I bond release was given later in 1985. Limited regrading was done in this area in 1999. Phase I bond release was approved for Hardscrabble No. 3 and No. 4 Mine areas (27.7 acres) on February 14, 2001. The substation (0.26 acres) was reclaimed in 2002 and was not included in the Phase I bond release area.

All of Utah's coal mines require a 10 year period of liability. Phase II bond release is granted when vegetation is established and additional contributions of suspended solids are not leaving the site. Utah has accepted vegetation establishment to be met when the vegetative cover meets the final bond release standards for vegetative cover. The Division has approved the Phase II bond release application and has sent it to OSM for concurrence prior to releasing the bond.

Reclamation at Hardscrabble Canyon is not only a model for how pre-law sites in Utah should be reclaimed; the area is also a model for post-law mines sites. Castle Gate Holding Company spent more money than anticipated for this project to achieve long term restoration of the canyon watershed with its ephemeral stream channels. The costs will be repaid in lower long term maintenance and rapid revegetation of the site, leading to a prompt Phase II bond release. The postmining land uses of wildlife habitat and grazing have been achieved and enhanced, and the stream and runoff channels have been reconfigured and built to be stable, achieving better downstream water quality.

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Photo 1. Goose Island refuse area prior to reclamation.



Photo 2. Goose Island refuse area after reclamation.



Photo 3. Coal waste was 50 feet deep in the Dog Flat side canyon.



Photo 4. Coal refuse removed and ephemeral drainage restored in the Dog Flat Canyon.



Photo 5. This belt line is from the No. 4 Mine.



Photo 6. The No. 4 Mine canyon was reclaimed before the Permittee revised the reclamation plan; some areas in the canyon were reworked.



Photo 7. This photo was taken up canyon from the No. 3 Mine prior to reclamation.



Photo 8. This photo was taken up canyon from the No. 3 Mine after reclamation.



Photo 9. The facilities area photo was taken during demolition. The main channel was reestablished and the road realigned for the postmining land use.



Photo 10. The ephemeral channel was reestablished using the "buried channel" concept.



Photo 11. Italian rock wall masonry was retained in the area to remind us of the mining heritage.

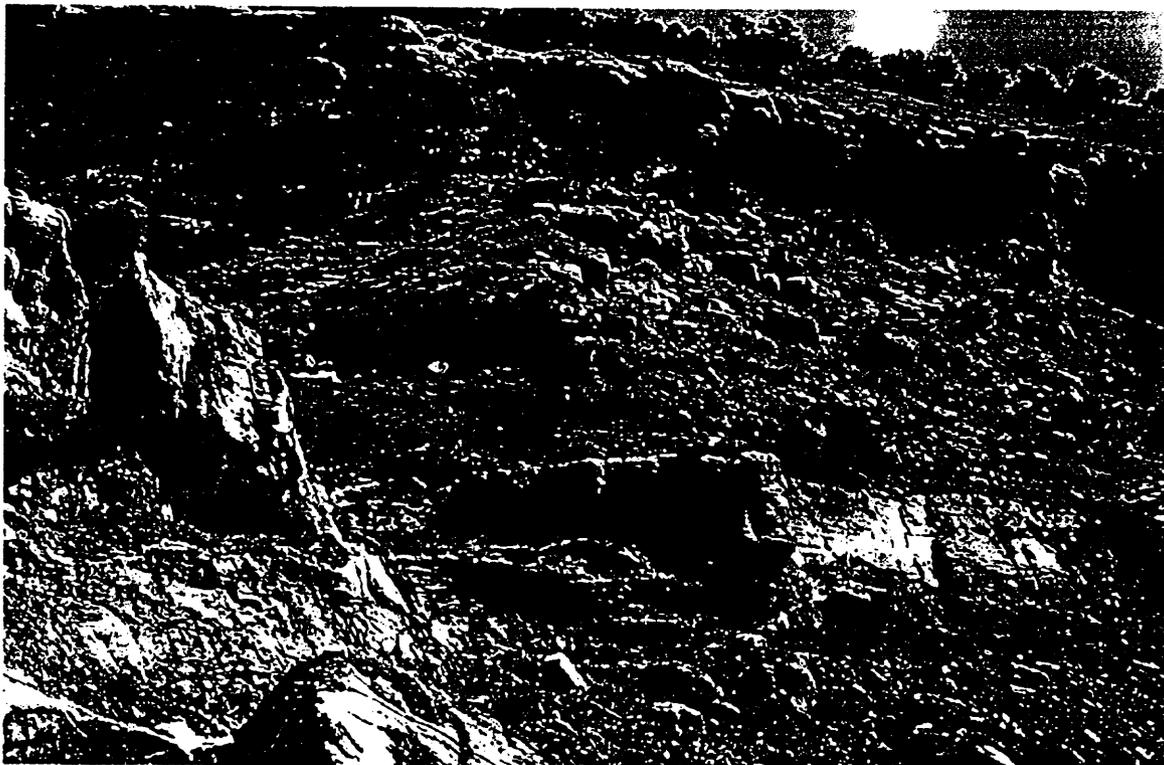


Photo 12. Retained cut slopes blend well into the natural rock cliffs in the area.



Photo 13. Hydromulching a retained cut slope in the No. 4 Mine area of Hardscrabble Canyon.



Photo 14. Large rocks were spread on the surface for visual effects and to provide flora and fauna with a microhabitat.



Photo 15. The Division of Wildlife Resources classifies the area as critical elk winter range.



Photo 16. Although grasses dominate the vegetation cover, there is a good mix of forbs and shrubs.

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Michael O. Leavitt
 Governor
 Robert L. Morgan
 Executive Director
 Lowell P. Braxton
 Division Director

**DIVISION OF OIL, GAS AND MINING
 FACSIMILE COVER SHEET**

DATE: April 4, 2003

FAX #: 303-844-1545

ATTN: James Fulton

COMPANY: Office of Surface Mining

DEPARTMENT: _____

NUMBER OF PAGES: (INCLUDING THIS ONE) _____

FROM: A. Nance

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State of Utah
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
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 Lowell P. Braxton
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**DIVISION OF OIL, GAS AND MINING
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