

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

August 22, 2005

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Peter H. Hess, Environmental Scientist III/Engineering, Team Lead

RE: Methane Degasification Wells G-8, G-9, and G-10, Canyon Fuel Company, LLC., Dugout Canyon Mine, C/007/0039, Task ID #2280

SUMMARY:

The permittee submitted a proposal to the Division on July 8 2005 to permit the potential drilling of three methane degasification boreholes at the Dugout Canyon Mine. The purpose of the holes is to enhance the coal extraction process from the longwall panels that are located in Section 26 of Township 13 South Range 12 East (G-8) and Sections 20 and 21 of Township 13 South Range 13 East (G-10 and G-9). The wells will provide additional venting/dilution capability for the Mine's ventilation system.

The permittee has previously applied for and received Division approval to drill seven methane degasification wells into the longwall panels that are being mined or have been mined in the Gilson coal seam. The need to develop methane wells G-8, G-9, and G-10 is based upon the necessity to have the wells drilled in advance of the start of secondary extraction mining activities in those respective longwall panels.

All surface lands are leased by the permittee from the Milton and Ardith Thayn Trust. Coal ownership in Section 24 (G-8) is under the U.S. Department of the Interior, Bureau of Land Management (Federal lease U-07064-027821). Coal ownership in Sections 21 (G-9) and 20 (G-10) is by the State of Utah, School and Institutional Trust Lands Administration.

The submittal designated as Task ID #2280 is an extension of Task ID #1642, (permitting application for degasification wells G-1, G-2, and G-3), and Task ID#1943 (Wells G-4, G-5 and G-6), and Task ID#2178 (Well G-7) in that the approved information submitted in #1642, #1943 and #2178 has been merely added to for the permitting of degasification wells G-8, G-9 and G-10.

TECHNICAL MEMO

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

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

Analysis:

The Identification of Interest information is in the Mining and Reclamation Plan, General Chapter 1, page 1-2. Revised information was approved in February of 2005. The information has not changed.

The corporate officers have not changed.

All surface ownership in Sections 20, 21, and 24 which is relative to these three wells is held by the heirs of the Milton and Ardith Thayn Trust (See Plate 1-1 of the approved Dugout Mine MRP, as well as the legal description contained in TABLE 1-1, Degas Well Locations, Pine Canyon, Utah Quadrangle, Salt Lake Meridian, page 1-1 of the Task ID #2280 application).

A review of Plate 1-2, as contained in the approved mining and reclamation plan for the Dugout Canyon Mine, indicates that the coal ownership in Section 24 where degasification well G-8 is being proposed is held by the United States of America (USA). Coal ownership in Sections 21 (G-9) and 20 (G-10) is by the State of Utah, School and Institutional Trust Lands Administration.

The wells are located within the currently approved Mine permit area. The owners of record for the surface lands where the well is being proposed are the heirs of the Milton and Ardith Thayn Trust.

The U.S. Department of Labor, Mine Safety and Health Administration has issued three identification numbers relative to the Dugout Canyon Mine; these are:

- 1) MSHA No. 42-01890 for the Rock Canyon seam on the west side of the Canyon,
- 2) MSHA No. 42-01888 for the Gilson seam on the west side of the Canyon, and
- 3) MSHA No. 1211-UT-09-01890-01 Dugout Canyon Mine Refuse Pile.

TECHNICAL MEMO

All are contained in **Chapter 1**, page **1-5**, Section **112.700 MSHA Numbers** of the approved mining and reclamation plan.

Chapter 1, page **1-4**, section **112.800 Interest in Contiguous Lands** of the methane well submittal indicates that Canyon Fuel Company, LLC has no interest in contiguous lands other than those currently owned as shown on Plate 1-1 of the approved M&RP.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

The permittee submitted new corporate violation information to address the requirements of this section on November 17, 2004. The new information was approved for incorporation into the Dugout Canyon Mine mining and reclamation plan on February 8, 2005. The required information is contained in General Chapter 1, pages 1-6, and TABLE 1-2, Three Year Violation History for all of the CFC Utah operations.

The newly submitted information indicates that neither Canyon Fuel Company, LLC nor any major stockholder of the Company having any interest, either legal or equitable, in Canyon Fuel Company, LLC have had a State or Federal mining permit suspended or revoked or a security deposited in lieu of a bond revoked. Neither Canyon Fuel Company, LLC, any of its mining operations, nor any person who owns or controls Canyon Fuel Company has any unabated cessation orders or unabated air or water quality violation notices.

Findings:

The submitted information meets the minimum regulatory requirements.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

TECHNICAL MEMO

Chapter 1, page 1-4, section **114, Right-of-Entry Information** of the July 8, 2005 submittal refers one to Chapter 1, page 1-5, section **114, Right-of-Entry** information in the approved MRP. Page 1-24 contains a legal description of Federal coal lease U-07064-027821 that comprises 2,416.16 acres (approved 1 January 1957). This lease grants Canyon Fuel Company the right to enter and conduct underground mining operations. Appendix 1-1 of the Dugout Canyon MRP contains this same information relative to the legal description of Federal coal lease U-07064-027821, which is considered to be a part of the Soldier Creek logical mining unit.

Similar information relative to the coal ownership in sections 20 (G-10) and 21 (G-9) was approved by the Division for insertion into the Dugout Canyon MRP (the SITLA coal ownership /lease) on June 24, 2005 (Task ID #2181).

Findings:

The minimum regulatory requirements of this section have been met.

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:

TABLE 1-1. Degas Well Locations, Pine Canyon, Utah Quadrangle, Salt Lake Meridian as depicted on Page 1-1 of the submittal provides the legal descriptions for methane degasification wells G-1, G-2, G-3, G-4, G-5, G-6, G-7, and the proposed wells G-8, G-9, and G-10. PLATE 1-4, included with the submittal depicts the proposed well location as they relate to the permit boundary for the Dugout Canyon Mine. Therefore, the need for the applicant to address that the permit area is within an area designated as unsuitable for mining is unnecessary. The well location exists within an area that has been permitted for coal extraction by the Federal government as well as the State of Utah.

Findings:

The minimum regulatory requirements have been addressed.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The current State of Utah mining permit issued by the Division of Oil, Gas and Mining was renewed on March 3, 2003. Same remains in affect until March 16, 2008. The proposal to drill wells G-8, G-9, and G-10 at the Dugout operation has been received during the current permit term.

Findings:

The minimum regulatory requirements have been met.

PUBLIC NOTICE AND COMMENT

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

Analysis:

The proposal to permit and drill wells G-8, G-9, and G-10 at the Dugout Mine will occur on private surface land managed by the heirs of the Milton and Ardith Thayn Trust. The permittee has previously provided a copy of the surface lease agreement (See **Appendix 4-2, SURFACE LANDOWNER AGREEMENT**, Task ID #1642) between the Thayn Trust and Canyon Fuel Company. There is no need for a public notice and comment period.

Findings:

The requirements of this regulation are not relative to this application.

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

The proposal to drill the three methane de-gasification wells is not a permit application, but is an amendment to the currently approved mining and reclamation plan.

Findings:

TECHNICAL MEMO

This requirement is not relative to this permit amendment.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

This proposal is an amendment or modification to the currently approved mining and reclamation plan, which is an integral part of the permit. The determination that the permit application consisted of the proper format and adequately addressed the requirements of the disciplines relative to completeness was made prior to the receipt of this application.

Findings:

A determination that the permit application was administratively complete was made prior to receipt of this amendment. This requirement is not relative.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

The submittal contains the following plan view and cross section drawings relative to methane degasification wells G-8, G-9, and G-10.

- 1) Attachment 5-1, Figure(s) 1, Contour Maps for Wells G-8, G-9, and G-10
- 2) Figure(s) 2, Typical Cross Sections for Wells G-8, G-9, and G-10
- 3) Figure(s) 3, Approximate Drilling Layouts for Wells G-8, G-9, and G-10.

All maps and plans that have been submitted with the application that are relative to well location, pad design, hydrology, or engineering design are certified by a Utah registered professional engineer.

Findings:

The minimum regulatory requirements have been addressed.

COMPLETENESS

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

Analysis:

The permittee's initial application to permit three degasification wells for the Dugout Mine long-walling system was received on June 7, 2004. The information provided as part of the Task ID #2280 submittal made on July 8, 2005 is the fourth submittal made by the permittee relative to degasification wells. Three submittals have been approved. The fourth submittal merely makes minor text additions to permit wells G-8, G-9, and G-10. Therefore, this fourth submittal is felt to be complete and adequate.

Findings:

The provided information meets the minimum regulatory requirements for completeness.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

The purpose of the proposed methane de-gasification wells is to enhance the venting/dilution capability of the Mine's ventilation system, such that dangerous levels of methane gas are not allowed to accumulate within the gob area (area where the coal seam has been extracted and the roof has been allowed to cave) and/or the bleeder entries (entries surrounding the gob area which are supported by pillars).

As depicted on FIGURE 5-16, TYPICAL WELL DESIGN (See Task ID #1642), the well will be drilled to depth such that the hole bottom will stop twenty-five feet above the roof elevation of the Gilson coal seam. Depending on the amount of overburden at the specific well site, the well depths could vary from 1250 to 2050 feet.

None of the coal seam will be extracted for analysis. Wells G-8, G-9, and G-10 are being permitted as mining related activity under the R645 coal rules.

TECHNICAL MEMO

The methane well will not be plugged post drilling, as its purpose is to bleed off the combustible gases within the mine, improving safety conditions and mining productivity. The anticipated life/usage of degasification wells G-8, G-9, and G-10 is unknown at this time.

Findings:

The amendment does not qualify as a minor coal exploration amendment. Same will be reviewed as an amendment to the mining and reclamation plan.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

The proposal to construct the methane degasification wells will occur in an area well outside of the disturbance created by the Mine's facilities. There are no known dwellings, public buildings, schools, churches, or community buildings within 1,000 feet of the pre-determined well locations. There is no indication that blasting will be done during the construction / reclamation process of the well site. This regulation is not applicable.

Findings:

There are no known structures in the area of the methane well development sites. This regulation is not applicable.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

Analysis:

There are no public parks in the area where the three wells are being proposed. An archaeological survey of the site for wells G-7 and G-8 was conducted by AERC in 1980, (See page 4-2, section **411.140**, paragraph one). The permittee has requested a clearance from the State Office of Historic Preservation (SHPO) via a letter from John Senulis of Senco-Phoenix for the G-7 and G-8 well sites. The G-8 application states that a copy of the Senulis letter is included in the confidential folder.

TECHNICAL MEMO

There are no cemeteries, or units of the National System of Trails or the Wild and Scenic Rivers System located within the well site boundaries, (See report included as Attachment 4-1, **Cultural Resource Survey and Inventory, Task ID #1642**).

The permittee has agreed to notify the Utah State Historic Preservation Office of previously unidentified cultural resources discovered during the course of operations of the wells (See page 4-3, section **411.140**, Cultural and Historic Resources Information, paragraph four, modified in July 2005)).

Findings:

The submitted information is adequate to meet the minimum regulatory requirements of this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

All access roads within the surface lease agreement area are owned by the surface landowners, the heirs of the Milton and Ardith Thayne Trust. There are no public roads involved in the submittal.

Findings:

This regulation is not applicable to this submittal.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

Analysis:

The permittee's submittal commits to watering of operational areas that are used by mobile equipment to control fugitive dust. See Chapter 4, page 4-5, section **424, Fugitive Dust Control Plan**, Task ID #2208. The application of water will be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition unless it is below freezing.

TECHNICAL MEMO

Findings:

The submitted information meets the minimum regulatory requirements of this section.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

As stated previously, the methane wells will be drilled to a depth varying from 1250 to 2050 feet, depending on the amount of overburden at the well location. The borehole will be stopped at a depth that correlates to twenty-five feet above the roofline elevation of the Gilson coal seam. No coal will be recovered from the seams that are being mined within the Dugout Mine permit area via the development of the three wells. No test borings or drill cores are planned at the well sites.

Findings:

This regulation is not applicable to this amendment.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

A discussion relative to **Structures and Renewable Resource Lands** is included as part of Chapter 5, page 5-27 of the Dugout Canyon Mine mining and reclamation plan. Same indicates that there are no major electrical transmission lines, pipelines, or agricultural drainage tile fields within the area to be extracted using long wall mining methods. All roads in sections 24, 21 and 20 are the private property of the heirs of the Milton and Ardith Thayn Trust. As previously mentioned, the permittee has been granted use of these roads via the surface lease agreement between Canyon Fuel Company and the heirs of the Milton and Ardith Thayn Trust.

Subsidence Control Plan

Chapter 5, page 5-7, section **525 Subsidence** (Task ID #2178) of the application indicates “no subsidence will occur at the well sites, as a result of drilling and development of the degasification well sites. Subsidence could occur at the well site because of underground mining...” The application references Section **525** of the approved mining and reclamation plan.

As the long wall panel is extracted from the Gilson seam, the roof will cave behind the shields as the face is mined and the shields are advanced. The broken material will swell to a certain extent as it breaks and falls. Some settling of material will propagate to the surface, and the elevation of all surface over the extracted panel should be diminished.

Subsidence Monitoring is discussed on pages 5-28 through 5-31 of the approved mining and reclamation plan. The commitment made by the permittee on page 5-30 is to install one monitoring point per panel. That monitoring point is generally located mid-length of the panel, where the center of the coal extraction face would be.

Performance Standards For Subsidence Control

The permittee has an approved subsidence control plan in place, as evidenced via review of the approved mining and reclamation plan. An annual subsidence report is submitted as part of the annual report for the mine.

Notification

Chapter 5, page 5-34, section **525.300 Public Notice of Proposed Mining**, indicates that “each owner of property or resident within the area above an underground mining block and adjacent area that may be affected by subsidence will be notified by mail at least six months prior to mining or within that period if approved by the Division”. That notification will include 1) the identification of specific areas in which mining will take place, 2) dates the specific areas will be undermined, and 3) the location or locations where the Dugout Canyon Mine subsidence control plan may be examined.

Findings:

The information provided meets the minimum regulatory requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

TECHNICAL MEMO

Analysis:

Road Classification System

The privately owned access roads will remain in place after the venting phase of wells G-8, G-9 and G-10 is completed. Well G-8 will be constructed such that its pad will be split by the center of the road as it currently exists. The fence that is always constructed about these sites will block access through this disturbed area. However, according to Ms. Vicky Miller, land owner approval has been given to bar access to the SW. There is no need for anyone to access the area SW of well pad G-8. Well pad G-9 will be located at a road terminus; 145 feet of this road will be relocated in order to establish a more gentle access gradient to the well pad. The pad that will be constructed for the drilling of well G-10 has a southern disturbed area boundary that parallels an existing road. One hundred and ten feet of road will be developed to access the "to be constructed" pad. This short length of access road will be included in the disturbed area perimeter/acreage of well site G-10, and will thus be reclaimed when the drill hole is reclaimed.

Page 5-2, section **512.200 Plans and Engineering Designs, Primary Roads**; makes the statement that well sites G-3 thru G-10 (i.e., G-8, G-9, and G-10) are on existing roads inferring that "no access roads will be constructed". As noted above, 145 feet of road will be relocated, and another 110 feet of road will be driven to access the well pad location for G-10. Both of the access roads developed will be reclaimed upon the completion of the methane venting process (See section **542.600 Roads**, page 5-13 of the application).

Findings:

The information provided meets the minimum regulatory requirements of this section.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

All noncoal waste generated by the well drilling activities will be disposed of in the same manner as waste generated at the main Mine facilities area.

There will be no noncoal waste disposal areas at any of the proposed well sites.

Coal Mine Waste

Chapter 5, page 5-3, section **513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil** addresses this requirement. None of these types of material will exist at the well sites.

Refuse Piles

No refuse piles will exist at the well sites, (Chapter 5, page 5-3, Section **513.400**, and page 5-4, **514.220 Refuse Piles**).

Impounding Structures

“No permanent impoundments will exist at the well sites, “ (See **Chapter 7**, page 7-9, section **733.200, Permanent and Temporary Impoundments** of the submittal).

Burning And Burned Waste Utilization

This section is not applicable to this submittal.

Return of Coal Processing Waste to Abandoned Underground Workings

No coal processing waste will be generated within the well sites, (Chapter 5, page 5-15, section **553.200 Spoil and Waste**).

Excess Spoil:

This section is not applicable to this submittal.

TECHNICAL MEMO

Findings:

The permittee has addressed those sections that are felt to be relevant to the proposed drilling of wells G-8, G-9, and G-10. The submitted information is adequate to meet the minimum regulatory requirements of this section.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The proposed methane vent wells are intended to enhance the Mine ventilation system, allowing additional venting and dilution capability for the combustible mine gases that are inherent in the coal seam, as well as the adjacent strata. Thus, they are a support facility.

Chapter 5, page 5-8, section **526.200 Utility Installation and Support Facilities** of the submittal addresses this requirement. According to that information, no utilities will be installed at the well sites. A portable methane-exhausting unit will be installed, and the operation of that machine will be initiated with portable propane bottles. Upon start up, the device will be switched over to operate from the methane concentrations venting from the well, and will thus be self-sufficient.

Findings:

The information provided meets the minimum regulatory requirements of this section.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Chapter 5, page 5-6, section **521.200, Signs and Markers** addresses this requirement of the R645 coal rules. The application commits the permittee to install a mine and permit identification sign at each well site. The identification sign will contain the following information: mine name, company name, company address, and telephone number, MSHA identification number, and the permanent program identification number.

The application commits the permittee to install disturbed area perimeter markers to identify all acreage to be affected before beginning mining activities.

Stream buffer zone signs will not be required at the proposed well sites. Topsoil storage signs will be placed on all topsoil stockpiles. All signs and markers will be maintained until no longer needed, (generally until all Phase III bond release requirements have been met).

Findings:

The information provided meets the minimum regulatory requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Mining Facilities Maps

The methane well submittal includes nine maps/drawings for well sites (three for G-8, etc.). These include:

- 1) A contour map, which depicts the undisturbed surface contour, and the relationship of the well pad, (Figure 1 for G-8, Figure 1 for G-9, Figure 1 for G-10).
- 2) A typical cross section for each well pad, depicting the pre-disturbed and final reclamation surface configuration, as well as the Operational surface configuration (Figure 2 for G-8, Figure 2 for G-9, Figure 2 for G-10).
- 3) A plan view of the “approximate” drilling layout for each proposed well site showing the drill hole location and the mud pit. The plan view shows the various methods to control and treat intercepted precipitation, including sloping the pad, and the installation of berms and silt fences (Figure 3 for G-8, Figure 3 for G-9, Figure 3 for G-10).

All nine figures for well sites are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

TECHNICAL MEMO

Mine Workings Maps

Not applicable to this amendment.

Monitoring and Sampling Location Maps

All maps relative to this requirement are incorporated into the approved mining and reclamation plan for the Dugout Canyon Mine.

Certification Requirements

As noted above, all plans, drawings, and maps that are relative to this submittal have been certified by a Utah registered professional engineer.

Findings:

The submitted information is adequate to meet the minimum regulatory requirements of this section.

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:

Upon completion of the drilling activities, all machinery will be removed and the mud pits backfilled and compacted. Each disturbed well site will be reclaimed by returning it to approximate original contour (See Chapter 5, page 5-11, section **537.200, Regrading of Settled and Revegetated Fills**). An exhaust blower will be set up to create a low pressure area across the well head, allowing the combustible mine gases to vent to the atmosphere. This will remain at the site for the length of the life of the well.

TECHNICAL MEMO

“Upon the permanent cessation of methane venting”, the blower and wellhead will be removed. “Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan”. “All openings will be sealed in accordance with Federal and State Regulations”. “The casings will be plugged at the bottom to hold concrete”. “A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface”. “At that time, the casing will be cut off at ground level, and the rest of the casing will be filled with lean concrete”. “The concrete will be allowed to harden before final reclamation is completed”, (See Chapter 5, page 5-13, **542.700 Final Abandonment of Mine Openings and Disposal Areas**). Final reclamation activities will then commence, returning the remaining disturbed area to approximate original contour, (See Chapter 5, section **542.300, Final Surface Configuration Maps and Cross Sections**, page 5-13 of the submittal). Revegetation activities will commence; the only remaining equipment will be the disturbed area perimeter fence, and the permittee identification sign, which will remain until authorization is granted by the Division to remove those items.

The Permittee has committed to sealing of the degasification wells in accordance with Federal and State regulations. The State of Utah has specific laws relating to the sealing of oil and gas wells; these are established at R649-3-24, Plugging and Abandonment of Wells. The Permittee has been notified and provided a copy of these procedures.

Findings:

The minimum regulatory requirements of R645 coal rules have been addressed.

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:

Chapter 5, page 5-15, section **553.100 Disturbed Area Backfilling and Grading, Post-Mining Land Use** indicates, “the disturbed area will be reclaimed in a manner that supports the approved post-mining land use. Refer to Sections 411 and 412 for additional detail.”

Chapter 4, page 4-1, section **411.100 Pre-mining Land Use** of the submittal (Task ID #2280) indicates, “the area is utilized for the landowners private use and as open range for livestock and wildlife.” The area is also zoned by Carbon County for “mining and grazing, (MG-1)”, (See section **411.130 Land Use Description**, Chapter 4, page 4-2 of the submittal,

TECHNICAL MEMO

Task ID #2280. “There are no industrial or municipal facilities located on or immediately adjacent to the well site.”

Chapter 4, page 4-4, section **412.100 Post Mining Land Use Plan** indicates that the permittee will conduct all activities in the area such that “all uses of the land prior to the wells construction/operation and the capacity of the land to support prior alternate uses will remain available throughout the life of the sites. Dugout Canyon intends (for) the post mining land use to be livestock and wildlife grazing. Final reclamation activities will be completed in a manner to provide the lands able to parallel the pre-mining land use.” Thus, the permittee intends to conduct all mining operations in a manner such that the post-mining land use and the pre-mining land use are identical.

Findings:

The submitted information is adequate to address the minimum regulatory requirements of this section.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

“The well sites will be returned to their approximate original contour after reclamation is completed” (See Chapter 5, page 5-15, section **553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour**). Page 5-10, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills** (Task ID #2280) states the following; “upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour”. If any settling should occur within the reshaped area, the permittee’s submittal makes the commitment to regrade the settled areas. After the venting phase of the degasification well has been completed, the remainder of the disturbance will be reclaimed, returning the acreage associated with venting phase to approximate original contour. This will be followed by roughening and reseedling of the area. The disturbed area perimeter fence and the associated permittee identification signs will remain in place until the Division has made a determination that all reclamation standards have been adequately addressed.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

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

See previous analysis under **APPROXIMATE ORIGINAL CONTOUR RESTORATION**.

Previously Mined Areas

The area has not been mined previously; the requirements of this section are not applicable to the methane wells submittal.

Backfilling and Grading On Steep Slopes

Chapter 4, page 4-1, section **411.120 Land Capability** (Task ID #2178), indicates, “the well site areas are located on the flatter mesa tops and rolling terrain”. A review of FIGURE 1 for G-8, Figure 1 for G-9, and Figure 1 for G-10, which are contour maps, reveals that, based on the determination of the slope gradient that none of the well sites surface increase in elevation at an angle steeper than 12 degrees. By definition, steep slopes are slopes that increase in height when the vertical angle is twenty degrees or more. Therefore, the well site being proposed is not in an area that would be considered a steep slope area.

Special Provisions for Steep Slope Mining

This requirement is not applicable to this submittal.

Findings:

The information submitted meets the minimum regulatory requirements of this section.

MINE OPENINGS

TECHNICAL MEMO

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

Reclamation of the methane wells is addressed in Chapter 5; section **540 RECLAMATION PLAN**, section **550, RECLAMATION DESIGN CRITERIA AND PLANS**, and section **560, PERFORMANCE STANDARDS**.

Section **541.100, Commitment** indicates, “Upon permanent cessation of methane venting, Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan.” Task ID# 2280 is the fourth submittal made by CFC relative to the permitting of degasification wells for the Dugout Canyon Mine. Three of these have been approved which include the verbiage “upon permanent cessation of methane venting”, which pertains to the kickoff time for the reclamation (i.e., plugging procedure) of the well(s). When the first three submittals were approved, the aforementioned verbiage was felt to be clear. Follow up discussions with the permittee determined that this language is unclear, and that a determination needs to be made as to when “permanent cessation has occurred” is needed.

The sealing of wells involves meeting the minimum regulatory requirements associated with R645-301-765. Page 7-13, **Chapter 7, HYDROLOGY**, section **748, Casing and Sealing Wells**, refers one to **Chapter 5, ENGINEERING**, section **542.700, Final Abandonment of Mine Openings and Disposal Areas**. Page 5-13 states, “All openings will be sealed in accordance with Federal and State Regulations. The casings will be plugged at the bottom to hold concrete. A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. At that time, the casing will be cut off at ground level and the rest of the casing will be filled with lean concrete. The concrete will be allowed to harden before the final reclamation is completed.”

Methane degasification wells are unique in that they are drilled to a depth that is approximately twenty-five feet above the coal seam that is being extracted. As the longwall face retreats and extracts the coal from the area beneath the borehole, the roof caves as the longwall shields are advanced in order to protect the machinery. Hopefully, the roof caves up to the bottom of the degasification well, completing the circuit, and allowing the atmosphere containing mine gases to be vented to the surface. An exhaust blower will sit on the surface creating a low pressure across the wellhead, venting the mine gases from the underground gob area.

It is generally accepted that more than 90% of the subsidence associated with coal extraction via longwall mining methods will occur within the first year after completion of the extraction process. The casing of the methane vent well may be subjected to crushing or shearing anywhere along its length, due to the shifting, bending and/or breaking of the strata

adjacent to the well. Thus, the venting of combustible gases from the gob areas of the mine may be short lived. The plugging of these casings may only be effective in preventing adverse environmental or health and safety effects to a certain extent. The prevention of cross contamination of aquifers may not be possible in consideration of the fact that the plugging of the hole may not be possible for its entire depth.

Findings:

The permittee has committed to plugging the degasification well casings to the extent possible to prevent adverse environmental damage or possible effects to health and safety. The minimum regulatory requirements of this section have been addressed.

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:

Reclamation

Chapter 5, page 5-13, section **542.600 Roads** of the methane well submittal addresses this requirement. No new road construction is required to access well site G-8, 9 or 10. There will be no reclamation of roads relative to the #2280 submittal.

Retention

As mentioned elsewhere in this technical memorandum, the roads in place at the present time are the property of the heirs of the Milton and Ardith Thayn Trust. They will stay in place after the venting phase of the wells has been completed. The surface use agreement in place between Canyon Fuel Company and the Trust allows the permittee the use of the roads for the length of the agreement.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

TECHNICAL MEMO

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

Upon completion of the venting phase of the well, the disturbance will be reclaimed by regrading it to approximate original contour, (See Chapter 5, page 5-14, section **553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour**). Page 5-10, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills**, states “upon completion of the well site, **the areas not required for the exhaust blower** will be regraded to approximate original contour”. If any settling should occur within the reshaped area, the permittee’s submittal makes the commitment to regrade the settled areas.

Findings:

The submitted information meets the minimum regulatory requirements.

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: General Requirements

The submittal makes the commitment to reclaim as much of the area being disturbed as possible upon completion of the drilling phase of the wells. A seed mix has been included as part of Chapter 3, page 3-14, **Table 3-2, Reclamation Seed Mix**. Roughening of the area will enhance moisture retention and promote new growth.

Revegetation: Timing

The submittal contains verbiage relative to “following the recommended guidelines for revegetation and planting during the first normal period for favorable planting conditions after replacement of the topsoil. In Utah, the planting period is usually Fall due to the precipitation events.”

Revegetation: Mulching and Other Soil Stabilizing Practices

Chapter 3, page 3-16, section **355 Revegetation: Mulching and Other Soil Stabilizing Practices** commits the permittee to the following, “mulch and/or soil stabilizing practices (roughening, etc.) will be used on all areas that have been regraded and covered by topsoil (Section **341.200**). Dugout Canyon Mine will exercise care to guard against erosion during and after application of topsoil”.

Findings:

The information submitted meets the minimum regulatory requirements.

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:

Affected Area Boundary Maps

The general location of the proposed wells is depicted on PLATE 1-4, which shows the permit boundary for the Dugout Canyon Mine. The proposed disturbance for well G-8 is depicted on FIGURE 1. Similarly, G-9 and G-10 are also depicted on plan view drawings identified as FIGURE 1 for each well. All figures are P.E. certified by a Utah registered professional engineer.

TECHNICAL MEMO

Bonded Area Map

The bonded area for wells G-8, G-9, and G-10 are depicted by FIGURE 1, (three figures are submitted; each wells plan view contour map is identified as FIGURE 1, (i.e., three FIGURE 1's).

Final Surface Configuration Maps

The permittee has committed to returning the drill pad area to approximate original contour. Thus, the final surface configuration should very closely resemble the contours depicted on FIGURE 1 for G-8, FIGURE 1 for G-9, and FIGURE 1 for G-10.

Certification Requirements

All maps and drawings requiring certification as listed under R645-301-512 are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

RECOMMENDATION:

The submittal meets the minimum regulatory requirements and it should be approved.