

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

May 15, 2006

TO: Internal File

THRU: Wayne Hedberg, Permit Supervisor, Task Manager

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

RE: Degasification Wells G-11 and G-12, Canyon Fuel Company, LLC, Dugout Canyon Mine, C/007/039, Task ID #2455

SUMMARY:

The Permittee submitted the original application to permit degasification wells G-11 and G-12 to the Division on December 27, 2005. The Division has assigned Task ID #2455 to this review for purposes of tracking. This technical memo will address the adequacy of the application as it relates to the R645 Engineering requirements.

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, Chapter 1, page 1-2. This information was revised in January of 2000. The information has not changed.

The corporate officers have not changed.

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All surface ownership in Section 20 relative to the two proposed well locations is held by the heirs of the Milton and Ardith Thayn Trust (See Plate 1-1 of the approved Dugout Mine MRP).

A review of Plate 1-2, COAL OWNERSHIP, as contained in the approved mining and reclamation plan for the Dugout Canyon Mine, indicates that the coal ownership in Section 20 where the two degasification wells are being proposed is by the State of Utah, School and Institutional Trust Lands Administration (State lease ML-48435-OBA).

The wells are located within the currently approved mine permit area.

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 Gilson 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.

All are contained in Chapter 1, page 1-19, Section 112.700 MSHA Numbers of the approved mining and reclamation plan.

Chapter 1, page 1-5, 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 MRP.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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 September 10, 2003. The new information has been submitted for incorporation into the Dugout Canyon Mine mining and reclamation plan. The required

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information is contained in Chapter 1, pages 1-21, 1-22, and 1-23A-R of the MRP. The information was previously updated in January of 2003.

The newly submitted information contains the violation information for all of the ARCH Coal, Incorporated operations. All corporate violations that are pending exist at ARCH operations in the States of West Virginia or Virginia. There are no outstanding violations relative to ARCH's Canyon Fuel Company operations in the State of Utah.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

RIGHT OF ENTRY

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

Analysis:

Chapter 1, page 1-5, section **114, Right-of-Entry Information** of the December 29, 2005 submittal refers one to Chapter 1, page 1-5, section **114, Right-of-Entry** information in the approved MRP. **APPENDIX 1-1**, Coal Lease documents of Chapter 1, Volume 1 of the MRP contains the legal description of the State of Utah, School and Institutional Trust Lands Administration coal mining lease and agreement which includes all of Section 20, T13S, R13E, which is the section where the two degasification wells are being proposed. This lease grants Canyon Fuel Company the right to enter and conduct underground mining operations.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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-11 and G-12. FIGURE 1-1, METHANE DEGAS BORE HOLE

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LOCATIONS, (included with the submittal) depicts the two proposed well locations as they relate to the permit boundary for the Dugout Canyon Mine. FIGURE 1-1 is certified by a professional engineer registered in the State of Utah. 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 locations exist within the area that has been permitted for coal extraction.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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 methane degasification wells G-11 and G-12 has been received during the current permit term.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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 the two methane degasification wells (G-11 and G-12) 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 rule are not relative to this application.

FILING FEE

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

Analysis:

The proposal to drill the two methane de-gasification wells is not a new permit application, but is an amendment to the currently approved mining and reclamation plan for the Dugout Canyon Mine.

Findings:

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.

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Analysis:

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 submitted information meets the regulatory requirements for this section of the rules.

COMPLETENESS

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

Analysis:

The Permittee's initial application to permit two additional degasification wells for the Dugout Mine secondary mining system was received on December 29, 2005. The provided information is felt to be complete and adequate.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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. It is the Permittee's intent to have the wells permitted, and then drill them. As previously noted, the application to permit wells G-11 and G-12 is the fifth submittal relative to degasification wells.

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Therefore, it is the Permittee's opinion that the additional venting / diluting provided by the degasification wells more than justifies the expense of installation / reclamation. Coal productivity and safety have been enhanced by the implementation of the previously installed wells.

As depicted on FIGURE 5-16, TYPICAL WELL DESIGN (See Task ID #1642), the wells will be drilled to depths 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.

Chapter 6, Geology, page 6-2, section **625**, (Task ID #1642) states, "it is not anticipated that any additional geologic data will need to be collected at the well sites". Section **624.300** also states "no test boring(s) or drill cores are planned at the site". Therefore, none of the coal seam will be extracted for analysis. The wells will be permitted as a mining related activity under the R645 coal rules.

None of the methane wells will be plugged post drilling, as their purpose is to bleed off the combustible gases within the mine, improving safety conditions and mining productivity. The anticipated life/usage of the degasification hole(s) is unknown at this time.

Findings:

The amendment does not qualify as a minor coal exploration amendment, and therefore, it will be reviewed as an amendment to the approved 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 sites. This regulation is not applicable.

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Findings:

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

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR 784.17; R645-301-411.

Analysis:

There are no public parks in the area where the two wells are being proposed. A Class III intensive walkover survey was conducted of well sites G-9 through G-13 in June of 2005 by Senco-Phoenix. Per this survey, “no other cultural resources were located and the potential for undetected remains is remote. A finding of no effect is appropriate and archeological clearance without stipulations is recommended” by Senco-Phoenix to SHPO for the G-8 thru G-11 degas well sites. “Site 42CB1595 located adjacent to degas well site G-12 was recommended for archeological clearance without stipulations by Senco-Phoenix to SHPO” (See chapter 4, page 4-3, Section **411.140 Cultural and Historic Resources Information** of the application). There are no cemeteries, or units of the National System of Trails or the Wild and Scenic Rivers System located within the wells 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.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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 rule 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, (See Chapter 4, page 4-5, section **424, Fugitive Dust Control Plan**). "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".

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

COAL RECOVERY

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

Analysis:

As stated previously, the methane wells will be drilled to depths varying from 1250 to 2050 feet, depending on the amount of overburden at the well location. All boreholes 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. No test borings or drill cores are planned at the well sites.

On September 20, 2005, Division management informed the technical / permitting staff that a USDO I / BLM R2P2 approval is necessary to ensure that the Permittee will commit to

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meeting the requirements of Federal Regulations 43 CFR Chapter 11, Subpart 3484, (3). Although the Permittee had committed to this within the initial application, the Division instructed the Permittee to address this requirement by modifying the R2P2 that is reviewed by the BLM for SITLA.

The Permittee's response submitted on March 17, 2006 (Task ID #2455) addresses the deficiency aired within the Division document addressing the Task ID #2408 application. Chapter 5, page 5-7, section **522 Coal Recovery** states the following: "The operator has been contacted by the BLM, in reference to changes to the Operator's R2P2 associated with Federal Regulation 43 CFR Chapter 11, Subpart 3484", which are relative to Federal well plugging requirements prior to abandonment. Degasification well sites G-11 and G-12 will exist in coals owned and managed by SITLA, and therefore, are not on a Federal coal lease. The BLM has told the Permittee that changes to the SITLA R2P2 are therefore not necessary.

SITLA has determined that the approval of degasification wells within their coal leases require a review to determine if the wells will affect the Plan of Operation for the SITLA / Dugout lease. The USDOJ / BLM reviews the application for the degasification well submittals and makes recommendations to SITLA relative to the potential of the wells for affecting the SITLA Plan of Operation. Based upon the BLM recommendations, SITLA either revises the Plan of Operation, or leaves it in the original form. Either way, SITLA must approve the degasification wells that will intercept mine workings within their lease.

The USDOJ / BLM / PFO notified the State of Utah / SITLA on May 11, 2006 that the Federal agency concurred with the need for the additional degasification wells within the SITLA coal lease ML48435.

SITLA notified the State of Utah, Division of Oil, Gas and Mining on May 15, 2006 that the agency consents to the additional proposed wells G-11 and G-12. It must also be noted that this SITLA concurrence **includes all future degasification drill holes upon the SITLA Dugout Canyon coal tract, until otherwise revoked, until such time as the tract may revert to Federal ownership.**

The SITLA approval for proposed wells G-11 and G-12 contains three stipulations:

- 1) The Permittee must provide a surveyed location to the BLM for each degasification drill hole.
- 2) The plugging requirements for each degasification drill hole are no less stringent than BLM plugging requirements for such drill holes. The Permittee has committed to meeting the Federal well plugging requirements mandated in 43 CFR Ch. 11, Subpart 3484.1, (3), (See Attachment 5-2, Chapter 5, of the Task ID #2455 application).

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- 3) The Permittee must have the consent of the surface owner or the surface management agency to drill. The Permittee has provided this consent via the surface use agreement contained as ATTACHMENT 4-2, SURFACE LAND OWNER AGREEMENT, (See Dugout Canyon Mine, Methane Degasification Amendment, Wells G-1 through G-10).

Findings:

The submitted information meets the minimum regulatory requirements for this section of the R645 Coal Mining Rules.

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 Section 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 #1943) 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.

The Division initiated a mid-term review of the Dugout Canyon Mine MRP in October of 2005. The Division determined that the currently approved plan did not address all of the requirements of R645-301-525, Subsidence Control Plan. The Permittee must address specific areas of R645-301-525 as it relates to the surface affects associated with the secondary extraction in longwall panels. These areas are not relative to this application, as subsidence will not be affected by the development of the two proposed degasification wells.

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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. Although 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 will 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.

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. This approved plan has been determined as being deficient relative to the requirements of R645-301-525.420, 430, 440 and 450. The Permittee will address the deficiencies aired by the Division's mid-term permit review in early 2006. These deficiencies are not affected, nor do they affect the permitting of degasification wells G-11 and G-12.

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.

One of the deficiencies aired within the Division's midterm permit review (initiated in November of 2005) was relative to **525.300, Public Notice of Proposed Mining**. That deficiency stated that the Permittee should submit a revised Plate 5-7, which will depict the proposed mine sequence and planned subsidence boundary, as well as the in-place coal leases, and surface ownership delineations. The Division believes that this map is necessary to ensure that all surface owners receive the required six-month notice in advance of mining as required under R645-301-525.700. However, this deficiency is not relative to the permitting process for degasification wells G-11 and G-12.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

The privately owned access roads will remain in place after the venting phase of each of the wells is completed. Well G-11 will be constructed at the junction of two unimproved dirt surface roads. G-12 will be constructed at the junction of an unimproved dirt road with a switchback. The only disturbance will be that developed for the well site pads. The disturbed acreage, according to **TABLE 1-2**, page 1-6, Chapter 1 of the Task ID #2408 application, amounts to 1.6 acres for well site G-11, and 2 acres for well site G-12.

All roads are pre-existing, and they will remain after reclamation of the well sites.

Plans and Drawings

The application contains FIGURE(s) 1, CONTOUR MAP(s) for G-11 and G-12, FIGURE(s) 2, TYPICAL CROSS-SECTIONS FOR G-11 and G-12, and FIGURE(s) 3, APPROXIMATE DRILLING LAYOUT(s) for G-11 and G-12. The drawings depict the undisturbed surface contours of the area to be developed, the surface contours of the developed pad, cross-sections showing locations and amounts of cut and fill, layout(s) of the drilling apparatus, surface drainage, surface runoff treatments, etc. The drawings are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer.

Primary Road Certification

There are no primary roads associated with this application. No roads will be developed to access either of the proposed wells.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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.

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Analysis:

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, Refuse Piles** of the application).

Impounding Structures

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

Burning And Burned Waste Utilization

This section of the rules is not applicable to this submittal.

Return of Coal Processing Waste to Abandoned Underground Workings

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

Excess Spoil:

This section of the rules is not applicable to this submittal.

Findings:

The Permittee has addressed those sections that are relevant to the proposed drilling of two methane vent wells. The submitted information meets the regulatory requirements for this section of the rules.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

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 [levels must be more than 30% in order to operate the pump, (See page 5-8, Section **526.200**)], and will thus be self-sufficient.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

SIGNS AND MARKERS

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

Analysis:

Chapter 5, page 5-6, section **521.100, 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 that is developed. 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 be placed at well sites G-11 and G-12 (See page 5-6, Chapter 5, of the Task ID #2408 application). The locations of G-11 and G-12 are close enough to Pace Creek to require this.

Topsoil storage signs will be placed on all topsoil stockpiles.

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Hazard signs will be placed at the degasification well sites indicating the hazards associated with methane gas and necessary safety precautions, i.e., “No Smoking”, etc.

All signs and markers will be maintained until no longer needed, as determined by the Division based upon completion of all Phase III bond release requirements.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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 three maps/drawings for each of the two wells that are being proposed; these include:

- 1) A contour map, which depicts the undisturbed surface contour, the disturbed surface contours, and the relationship of the well pad. These are identified as G-11, FIGURE 1, and G-12, FIGURE 1 in the Task ID #2455 submittal received on March 17, 2006.
- 2) A typical cross section for each well pad, depicting the pre-disturbed and the operational surface configuration. These are identified as G-11, FIGURE 2, and G-12, FIGURE 2 in the Task ID #2455 submittal received on March 17, 2006.
- 3) A plan view of the “approximate” drilling layout for each of the proposed well sites 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(s), and the installation of berms and silt fences. Similarly, the drawings depicting the approximate drilling layout for wells G-11 and G-12 are identified as G-11, FIGURE 3 and G-12, FIGURE 3.

The Permittee has provided new means to designate each of the figures relative to degasification wells G-11 and G-12. This meets the requirement the Division was seeking.

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All three figures for each of the proposed wells are P.E. certified by Mr. Layne Jensen, Utah registered professional engineer. A certification date of March 15, 2006 is provided for these drawings.

Mine Workings Maps

The Task ID #2408 application did not contain a map of the underground Mine workings that showed the locations for either well G-11 or G-12. Thus, the following information was lacking:

- 1) The panel(s) which G-11 and G-12 are associated with relative to venting is /are not identified.
- 2) The location of each of the wells relative to the longwall face / panel is not identified. Are these wells to be drilled in the tension/compression zone, or closer to the middle of the subsidence trough? The Permittee must include a discussion of the degasification well location as it relates to projected well life.

The Task ID #2455 application received on March 17, 2006 contains a map of the Gilson seam workings at the Dugout Canyon Mine. The locations of the surface installations for degasification wells G-11 and G-12 are depicted on the surface topography adjacent to the Pace Creek drainage. As can be determined from the mine workings map, the locations of the G-11 and G-12 are determined primarily from ease of surface access (they will be located on or immediately adjacent to a road which is in place on surface owned by the heirs of the Thayn Trust). G-11 and G-12 vent methane gas from the gob area of longwall panel #5 (GIL-5 Panel). The surface locations of G-11 and G-12 are above the bleeder entries that will return the methane and coal dust contaminated air to the mine fans as the coal is extracted. In order to effectively vent methane from the gob area, the boreholes which are drilled for G-11 and G-12 will be angle drilled to intercept the roof strata about 315 feet north of the tailgate entry; the bottom of the hole will be stopped twenty-five feet above the roof horizon of the Gilson coal seam. The well bores will cross the tension / compression zone associated with the abutment formed by the chain pillars supporting the bleeder entries. It is not known if the life of the well bore, which will exist on a diagonal, will be enhanced or diminished by crossing the abutment in this manner.

Figure 1-1 shows the locations of the proposed well sites. As discussed on page 5-10 of the Task ID #2455 submittal proposed well sites are selected on the following criteria:

- 1) topography;
- 2) proximity to the mining area;
- 3) existing access versus new access;
- 4) slope of the proposed site;

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- 5) the potential for meeting reclamation requirements;
- 6) required drilling method.

Figure 1-1 is P.E. certified by Mr. Layne Jensen, Utah registered professional engineer (3/15/2006 certification date).

The map of the Dugout Canyon Mine Gilson seam workings is P.E. certified by Mr. Dave Spillman, Manager of Technical Services for the Permittee (3/13/2006 certification date).

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, and meets the requirements of the R645 Coal Mining Rules.

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**

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and Revegetated Fills), roughening, and reseeded the area. 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.

The Task ID #2408 submittal received on December 29, 2005 states in Chapter 5, page 5-13 that the “casings on degas well sites G-2 thru G-7 will be plugged at the bottom to hold concrete (the maximum depth possible). A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. “Degas drill holes G-9 through G-12 will be sealed in accordance with Federal regulations 43 CFR Chapter 11, Subpart 3484, (3) per a decision by the BLM and UDOGM” (See page 5-13, section **542.700** of the application). The casing will then be cut off, and final reclamation activities will then commence, returning the remaining disturbed area to approximate original contour (See Chapter 5, page 5-13, **542.700 Final Abandonment of Mine Openings and Disposal Areas**).

The Task ID #2455 application received on March 17, 2006 indicates that the Permittee plans to leave degasification wells G-2, G-5, and G-7 open, but capped in order to relieve gas pressures which may develop in gob areas GIL-1, GIL-2, and GIL-3. Without the ability to relieve these pressures to the surface via the degas bores, the pressures will relieve themselves by exhaling through the Mine seals, increasing methane concentrations underground, where they create a more hazardous situation. The Task ID #2455 application states on page 5-46 the surface disturbance associated with these sites will be reclaimed, although the well casing will only be capped. The Division agrees with leaving these bores functional in order to relieve positive gob pressure and the associated combustible gases to the atmosphere. However, the Division also requires that if any of these bores have a tendency to intake oxygen into the Mine, the casings must be permanently sealed.

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 same. The Task ID #2408 application contains a copy of the requirements of 43 CFR Chapter 11, Subpart 3484, (3) as part of Attachment 5-1.

The Permittee has committed to meeting these well plugging requirements. The Division agrees with the Permittee’s request to leave one degasification well casing open per panel in order to vent increased gob gas pressure to the surface in a safe fashion. The Division also feels that the Permittee must plug the well if said casing is taking in air to the sealed area.

Findings:

The submitted information meets the minimum regulatory requirements for this section of the R645 Coal Mining Rules.

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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 #1642) 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, Task ID #2408). “There are no industrial or municipal facilities located on or immediately adjacent to the well sites.”

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 meets the regulatory requirements for this section of the rules.

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 Task ID #2455 submittal contains a letter from Mr. David Thayn, representing the heirs of the Milton and Ardith Thayn Trust, who are the surface landowners, as ATTACHMENT 5-3. The letter requests that the Division allow the Permittee to reclaim the well sites for

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proposed wells G-11 and G-12 following the venting phase without requiring the Permittee to meet the requirements of AOC restoration.

The Task ID #2455, ATTACHMENT 5-3 requests that the G-11 and G-12 pads be reclaimed with the following criteria as requested by the surface landowners:

- 1) The mud pits are to be filled and the area leveled.
- 2) Topsoil will be replaced on all areas disturbed, with the exception of the pre-existing road areas.
- 3) The areas receiving topsoil will be seeded with native grasses.
- 4) Topsoil storage areas will be pocked, gouged, and then seeded.

Upon completion of the venting phase of the well(s), the disturbance(s) will be reclaimed by backfilling the mud pits and leveling the pad area. The area will not be returned to approximate original contour via the request of the surface landowner, (See Chapter 5, page 5-16, section **553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour** of the Task ID #2455 submittal). The pad area will not be roughened prior to seeding with native grasses.

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 regulatory requirements for this section of the rules.

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 requirements for **APPROXIMATE ORIGINAL CONTOUR RESTORATION** will not be applied in the reclamation of well pads G-11 and G-12, at the request of the surface landowners.

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Previously Mined Areas

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

Backfilling and Grading On Steep Slopes

Chapter 4, page 4-1, section **411.120 Land Capability** (Task ID #2455), indicates, “the well site areas are located on the flatter mesa tops and rolling terrain”. A review of G-11, FIGURE 1 and G-12, FIGURE 1, (Task ID #2455) which are contour maps for each of the respective well sites, reveals that, based on the determination of the vertical angle, that none of the well site’s surface increase in elevation at an angle steeper than 18 degrees. By definition, steep slopes are slopes that increase in height when the vertical angle is twenty degrees or more. Therefore, none of the well sites are being proposed in what would be considered a steep slope area.

Special Provisions for Steep Slope Mining

This requirement of the rules is not applicable to this submittal.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

MINE OPENINGS

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 vent 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.”

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FIGURE 5-26, Reclamation Schedule, (Chapter 5, page 5-42 of the Task ID #2408 submittal) depicts the reclamation activities that will be conducted during weeks one, two, and three. Footnotes attached to the schedule indicate that the schedule is only applicable if weather conditions are conducive. The Permittee's schedule also indicates that the schedule may be extended if necessary.

The Division has a concern with the terms stated relative to the point of initiation of reclamation activities. As noted elsewhere within this document, this is the fifth submittal made relative to the permitting of degasification wells for the Dugout Canyon Mine permit area. As of the date of this review, (March 23, 2006) eight degasification wells have been permitted thru the Division. Only two wells (G-3 and G-4) have been plugged and reclaimed. Well G-6 has been partially plugged. Wells G-11 and G-12 will increase that total to ten permitted wells.

Chapter 5, page 5-11, section **541.100 Commitment**, states the following; "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".

Degasification wells are considered by the Division to be part of the mine's bleeder system, which is in turn, part of the ventilation system under the jurisdiction of the U.S. Department of Labor, Mine Safety and Health Administration. 30 CFR Part 75.364 (2) states that at least every seven days, a certified person shall evaluate the effectiveness of bleeder systems required by 30 CFR 75.334. If a well is venting, the Permittee must determine the volume of gas venting and the concentration of the combustible gases every seven days. If the wellhead is closed, this requirement does not exist. If the well is pulling oxygen into the mine, a condition supporting spontaneous combustion within the mine workings may exist.

Permittee has committed to notifying the Division when it is determined that the well is no longer needed for methane venting.

The Permittee has discussed this issue with the Division and it has been determined that this request is not reasonable for the following reason; **the Permittee cannot predict when a well will reach the point when it is no longer needed for venting.** If a determination is made during the winter season where access is not possible, it will be months before the well can be plugged and the remainder of the reclamation accomplished.

The Division realizes that the scheduling of a drill rig to place the casing plug may be difficult, based upon rig availability, adverse weather conditions, or other circumstances beyond the Permittee's control.

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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, “Degas drill holes G-9 thru G-12 will be sealed in accordance with Federal Regulations 43 CFR Chapter 11, Subpart 3484, (3) per a decision by the BLM and UDOGM. The casings on degas well sites G-2 thru G-7 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.”

Chapter 2, page 2-12, section **242.100 Soil Redistribution Practices**, paragraph three states the following; “reclamation will be delayed at well sites G-2 and G-5, and G-7, (See Task ID #2455 application, received March 17, 2006) to allow additional time for venting of the gob behind the sealed panels”. In order for the Division to allow for the delay in the initiation of the reclamation activities at well sites G-2 and G-5, additional justification is needed as to why the Permittee feels it is necessary to allow “additional time for venting of the gob”. If more time is needed to allow these wells to vent, the Permittee must continue to monitor them in accordance with 30 CFR 75.364.

The Task ID #2455 application received on March 17, 2006 indicates that the Permittee feels that it is necessary to leave one degasification well bore open after that section of the Mine is sealed to be able to vent pressurized methane gas from the sealed area. If this well bore is not allowed to remain open, excessive combustible gas pressures may cause in the mine seals to exhale, allowing increased percentages of methane gas to further raise the combustible gas content of the ventilating currents in the mine. This increases the hazard potential for the underground workers. The Division agrees that one degasification well bore shall be left open, in order to reduce the levels of pressurized methane gas which may build within a gob area. The Division also feels that if a well bore begins to pull air into the casing and the sealed mine area, action should be taken to plug the well bore as quickly as conditions permit.

Methane degasification wells are unique in that they are drilled to a depth that is approximately twenty-five feet above the roofline of 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. Hopefully, the roof caves up to the bottom of the degasification well, completing the circuit, and allowing 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

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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.

The Task ID #2455 submittal received on March 17, 2006 contains a map of the Mine workings located in the Gilson seam. The map also depicts the locations of wells that have been permitted and those that have yet to be permitted. The GIL-5 panel, as depicted will have five surface locations (wells G-9, G-10, G-11, G-12, and G-13. Well locations G-9A, G-10, G-11, G-12, and G-13A and G-13B will intercept the strata above the GIL-5 panel. Hence, panel GIL-5 will have SIX well bores which have the potential to be used for venting of pressurized gas from the sealed gob area of GIL-5.

FIGURE 5-26, Reclamation Schedule for Wells G-6 through G-12 (page 5-42) allows a three-week time frame to plug these wells.

Findings:

The application meets the minimum regulatory requirements of this section of the R645 Coal Mining Rules.

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. Section **-542.600** states the following; “the roads which existed prior to the drilling program will be retained after reclamation (of the well sites, PHH). The well pads for G-11 and G-12 are proposed immediately adjacent to existing dirt roads along the Pace Creek drainage. The only reclamation that will occur will be of the area that was widened to provide an area large enough to allow drilling. A reference is made to **Chapter 2**, section **242** (Task ID #1943); same is in reference to soils redistribution, which is not addressed by this section.

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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 regulatory requirements for this section of the rules.

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

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**). Also refer to page 5-11, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills**. As indicated, “upon completion of the well site, **the areas not required for the exhaust blower** will be regraded to approximate original contour”. Because of the nature of the well site, settling is not anticipated. The Permittee’s submittal makes the commitment to regrade any settled areas.

Findings:

The submitted information meets the regulatory requirements for this section of the rules.

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 wells. As noted in Chapter 3, page 3-2, section 321.100 Plant Communities within the Proposed Permit Area, “approximately fifty percent of the well pads at sites G-11 and G-12 are existing roads which have no topsoil or vegetation. The remaining area at site G-11 has been disturbed, except for a small portion on the west side of the site. Well site G-12 has evidence of disturbance above the road cut however both soil and vegetation are intact”. 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 3-15, 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 submitted information meets the regulatory requirements for this section of the rules.

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

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The general location of the proposed wells is depicted on PLATE 1-4, which shows the permit boundary for the Dugout Canyon Mine. The Permittee has submitted a revised PLATE 1-4 (See Task ID #2419) which adds the locations of wells G-11 and G-12 in relationship to the Mine's permit boundary. The proposed disturbance for each of the wells is depicted in Chapter 5, on G-11, FIGURE 1 and G-12, FIGURE 1. The approximate drilling locations (i.e., equipment layout for drilling) can also be considered the affected area and same is also depicted on FIGURE(s)G-11, FIGURE 3 and G-12, FIGURE 3.

Bonded Area Map

The bonded area for each well is depicted by G-11, FIGURE(s) 1 and 3; and G-12, FIGURE(s) 1 and 3.

Final Surface Configuration Maps

The Permittee will not return the drill pad areas to approximate original contour. The pad areas are to be reclaimed in a fashion that will retain the flatness of the drill pad, but vegetation will be re-established. This is to be done at the request of the surface landowners, the heirs of the Milton and Ardith Thayn Trust. Thus, the final surface configuration should very closely resemble the cross sections depicted on G-11, FIGURE 2, and G-12, FIGURE 2, which depict the operational drill pad.

Certification Requirements

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

Findings:

The submitted information meets the regulatory requirements for this section of the R645 Coal Mining Rules.

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

General

The Permittee submitted revised reclamation cost information to include well sites G-11 and G-12. This information was reviewed under Task ID #2413 (received at UDOGM on January 12, 2006).

Determination of Bond Amount

- The Division approved the revised reclamation cost estimate for the Dugout Mine to include degasification wells G-11 and G-12 on February 9, 2006.
- The Division updated all unit costs to 2006 dollars.
- The Division updated the escalation factor based on a three-year average of Means construction cost index.

The Division determined the reclamation cost in 2007 dollars to be \$2,223,000. The current bond is for \$2,400,000. Therefore, the Division determined that there is adequate bond to allow the Division to reclaim the site in the event of bond forfeiture.

Findings:

The information in the amendment is adequate to meet the bonding requirements of the R645-Rules.

RECOMMENDATION:

The Task ID #2455, Degasification Wells G-11 and G-12 should be approved.