0009

May 13, 2003

Rick Olsen, General Manager
Canyon Fuel Company
P. O. Box 1029
Wellington, Utah 84542

Re: Degasification Wells MW-06 and MW-08, Canyon Fuel Company, Dugout Canyon Mine, C/007/039-AM03B, Outgoing File

Dear Mr. Olsen:

The above-referenced amendment has been reviewed and there are deficiencies that must be adequately addressed prior to approval. A copy of the Technical Analysis is enclosed for your information. In order for us to continue to process your application, please respond to these deficiencies by June 13, 2003 with the required number of copies or your application will be denied.

Please remember that you are responsible for incorporating the response into the application when it is submitted. If you have any questions, please call me at (801) 538-5268 or Peter Hess at (435) 613-5622.

Sincerely,

/S/

Pamela Grubaugh-Littig
Permit Supervisor

PHH/sd
Enclosure
cc: Price Field Office
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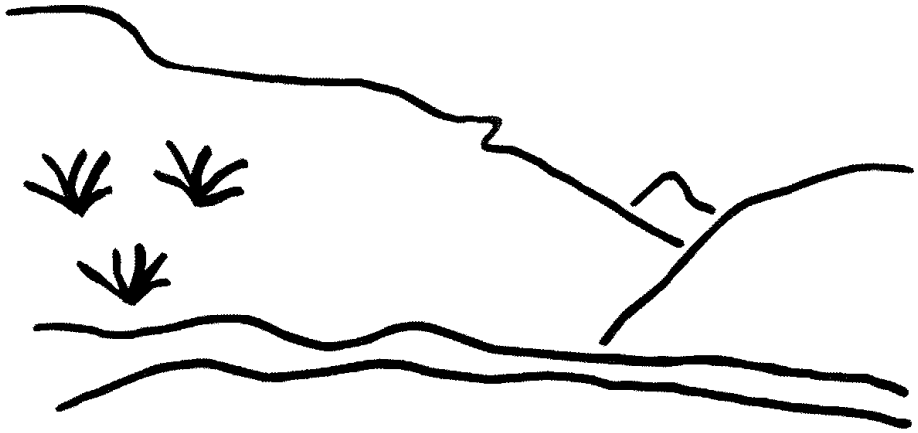
State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Dugout Canyon Mine
Methane Degas
C/007/039-03B
Technical Analysis
May 6, 2003

TABLE OF CONTENTS

TABLE OF CONTENTS

TECHNICAL ANALYSIS

The Division regulates the Surface Mining Control and Reclamation Act of 1977 (SMCRA). When mines submit a Permit Application Package or an amendment to their Mining and Reclamation Plan, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the permittee must comply with the minimum regulatory requirements as established by SMCRA.

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

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

INTRODUCTION

The permittee submitted a proposal to the Division on March 7, 2003 to drill two methane degasification boreholes for the purpose of enhancing the coal extraction process from the fourth longwall panel to be mined from the Rock Canyon seam in Township 13 South, Range 12 East, Sections 15 and 16. Section 15 involves State coal ownership under lease ML-42648. Section 16 is fee coal, owned by Canyon Fuel Company, LLC. All surface ownership for Sections 15 and 16 is by Canyon Fuel Company, LLC.

SUMMARY OF DEFICIENCIES

The Technical analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the division, result in denial of the proposed permit changes, or may result in other executive or enforcement action and deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Regulations

R641-301-731, The applicant will commit to establishing silt fences between the construction sites and stream channel adjacent to drill pad MW-06. 22

R645-301-121.200, Clarify **#1)** inconsistencies described above concerning Attachment 3-1 and Figure 1 (map) and Table 1, and **#2)** inconsistencies between species listed in Table 1 and overstory percentage values provided in the "Findings" section. 13

R645-301-121.200, Provide a brief description for the long-term plan for the plant and rock debris stockpiles in the reclamation section of this amendment. 38

R645-301-131, Provide the all required information for the **1)** Raptor survey and **2)** Bat survey. 8

R645-301-132, Provide the names or qualifications of the principle investigator(s) leading the **1)** Cultural resource survey, **2)** Bat survey, and **3)** Raptor survey (names). 8

R645-301-321, **1)** Work with the Division to select appropriate reference area(s). Provide vegetation inventory, evaluate vegetation status, and show sample adequacy for the reference area(s). **2)** Provide productivity surveys for the well sites and the reference area(s). The Permittee must follow Division's guidelines, which includes the recommendation for NRCS to conduct the survey. 3) Provide for the well sites and reference areas: **a)** Plant identification to the species level, **b)** Plant productivity values, and **c)** Vegetation community types. 13

SUMMARY OF DEFICIENCIES

R645-301-322, **1)** Conduct site-specific occurrence surveys during appropriate seasons of the year and provide impact assessments for all TE species. **2)** Resurvey for the TE and sensitive species, declared to have suitable habitat, during appropriate seasons of the year prior to disturbance. **3)** Assess for MSO habitat within a half-mile radius of the mine permit area and include results in the MRP. **4)** Assess possible adverse effects of mine water consumption to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Follow requirements provided above. 16

R645-301-323.100, Provide location and boundary of reference area(s) on a map. 24

R645-301-323.400, Provide a map showing locations of raptor nests and drill holes as well as a well the boundary lines of the mine permit area. 17

R645-301-333, Include a separate planting for the C4 plant species, during the monsoon season. 45

R645-301-356.110, Provide the type of the vegetation survey methods used. The specific sampling method used must follow the Division's guidelines. 13

R645-301-731, The applicant will ensure protection of the stream channel adjacent to upper Fish Creek by installing and maintaining silt fences below the disturbed areas of the access road and drill pad during operations. 34

GENERAL CONTENTS

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

Soils

Baseline soils information (Attachment 2-1) was compiled by Mr. Dan Larsen (Soil Scientist) with EIS Environmental and Engineering Consulting. Mr. Larsen's resume is attached with the report.

Cultural Resource Data

John Senulis of SENCO-PHENIX directed the cultural resource survey (Attachment 4-1). The crew consisted of Jeanne Senulis and Cathy Dodt-Ellis. The attachment does not provide qualifications of the surveyors (R645-301-132).

Vegetation

Mr. Mel Coonrod (Silviculturist and Zoologist) and Mr. David Steed (Ecologist) of Environmental and Engineering Consulting were the project leads for the vegetation inventory (Attachment 3-1). The attachment states that Mr. M. Dean Stacy also participated.

Threatened and Endangered Species

Mr. David Steed (Ecologist) of Environmental and Engineering Consulting conducted the threatened, endangered, and sensitive species inventory report (Attachment 3-2; as shown on field data sheets, only). The attachment states that Mr. M. Dean Stacy also participated.

DWR conducted the raptor survey. The attachment does not provide surveyor names (R645-301-132) or the survey report (R645-301-131).

Bats

JBR Environmental Consultants conducted the bat survey (pg. 3; sec. 322.200). The attachment does not provide names or qualifications of the surveyors (R645-301-132), or the survey report (R645-301-131).

Findings:

The information provided is not adequate for the reporting of technical data requirements of the regulations. Prior to approval, the Permittee must:

R645-301-131, Provide the all required information for the **1)** Raptor survey and **2)** Bat survey.

R645-301-132, Provide the names or qualifications of the principle investigator(s) leading the **1)** Cultural resource survey, **2)** Bat survey, and **3)** Raptor survey (names).

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

Much of the information concerning the mine permit area resources are provided in the MRP. The Permittee provides supplemental information specifically concerning areas for the degassing wells in this amendment.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The applicant provides geologic information describing the existing stratigraphy and structure of the Dugout Mine area in Section 621 through 627 of the MRP. Hydrologic resources are described in Chapter 7 of the MRP. The information provided in the amendment is designed for incorporation into the MRP.

The boreholes are located in the Book Cliffs between Dugout and Soldier Canyon Mines at approximately 8,000 feet. The UTM coordinates are T. 13 S., R. 12 E., SE1/4 SE1/4 NE1/4 of Section 16 (site MW-06) and SW1/4 SW1/4 of NE1/4 Section 15 (site MW-08) as shown in Figure 1-1.

The Pine Canyon Utah USGS quadrangle map also shows the location. From the Quad map, one can see that the site is on a narrow ridge, above a small drainage contributing to Fish Creek. The soil survey indicates that the northwest slopes of the ridge supports Douglas fir and the southwest slopes support Ponderosa pine.

Findings:

The information provided meets the minimum requirements of the Environmental Resource Information.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

SENCO-PHENIX conducted the cultural resource survey above Fish Creek and Soldier Creek drainages on July 8, 2002 (Attachment 4-1). The survey was conducted on seven of the eight proposed drill holes and connecting access roads. MW-2 drill hole had been previously surveyed. The survey results of the seven sites show no historic or archeological resources located within the project area. This contractor recommends a finding of no effect without stipulations.

The surveyors conducted a Class III intensive walkover. John Senulis directed the crew, which consisted of Jeanne Senulis and Cathy Dodt-Ellis. The survey was conducted by constructing meandering transects at intervals no farther than 15 meters apart. The drill holes and access roads were given buffer zones of three and thirty meter acres, respectively.

The Permittee agrees to inform all personnel to refrain from collecting or disturbing cultural resources in the area. The Permittee will notify officials if cultural resources are identified during operations or reclamation work.

Findings:

The information provided for the development of drill hole sites MW-6 and MW-8 is adequate to meet the minimum requirements of the Historical and Archeological Resource Information regulations.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The MW-06 site is at an elevation of 7,860 feet; MW-08 site is at an elevation of 8,520 feet.

The application indicates on page 7-3 that climatological information can be found in Appendix 4-1 of the MRP behind the air quality permit.

Climatological information for the higher elevations of the mine permit area is found on pages A4-2-1 through A4-2-9 in Climatological Information, Appendix 4-1 of the MRP. Figure 3 (page A-2-4-6) is an isopleth of the mean annual precipitation for central Utah, showing the locations of the well sites receiving approximately 12 inches precipitation annually. The source of this information is the USGS. **This conflicts with the soil survey information** (Attachment 2-1) where annual precipitation of 16-20 inches is described for the soil types at the two sites.

Figure 4 graphically summarizes the seasonal precipitation for the years 1958 to 1965 from the Sunnyside weather station. During the months of December through March, one might expect six to ten inches of snow at the sites. Between ¾ and 1 inch of rainfall occurs during each of the months February to September. If the precipitation at these sites were patterned after that of Sunnyside, fall seeding would be ideal.

Findings:

The information provided adequately addresses the minimum requirements of the climatological information section of the regulations.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

In brief, the Division highly recommends that the Permittee conduct a new vegetation survey. The paragraphs below include specific concerns relating to the current survey.

Mr. Mel Coonrod (Silviculturist and Zoologist) and Mr. David Steed (Ecologist) of Environmental and Engineering Consulting conducted the vegetation inventory on June 4, 2002 (Attachment 3-1). The survey crew surveyed 15 transects for the proposed eight wells. Each transect spanned 100 feet and was inventoried on ten-foot intervals. The amendment states that there was a total of 100 sampling points per transect, but the derivation of the number is unclear. The report does not specify the actual survey methods used. Future surveyors should know the methods used previously in order to select the best-fit evaluation method. The permittee must identify the type of vegetation survey method used (R645-301-356.110). The specific sampling method used must follow the Division's guidelines.

The Permittee plans to assign reference areas for the degasification wells before drilling, during the 2003 growing season. **The Permittee must receive Division approval of reference areas for each vegetation type as described in the Division's guidelines. The Permittee must also provide a vegetation inventory for the reference area, evaluate vegetation status, and show sample adequacy as described in the Division's guidelines.** Also, **show on a map the vegetation community type, location, and dimensions of reference area(s).** The Permittee must provide productivity measurements as weight per unit area for the reference area once selected. The Permittee may choose to have NRCS provide the productivity survey or follow other related Division guidelines (R645-301-321).

Attachment 3-1 provides a summary table of the species surveyed for each transect near the proposed drill wells. An accompanying map provides the location of survey transects and drill wells. The transect numbers in association with the drill wells do not consistently agree with the transect numbers on the map. For example, for MW-8 the associated transect number on the table and map are 5 and 4, respectively. Similar inconsistencies exist for MW-1, -3, and -5. The permittee needs to clarify the inconsistencies between the map and table (R645-301-121.200).

The survey for MW-6 showed that the herbaceous and woody species percentage cover equaled 15 and 20, respectively. Oregon grape and wheatgrass (sp.) were the primary contributing herbaceous species. Wild rose was the primary contributing woody species. Twenty-seven percent of the cover came from litter and rock, and 38 percent is bare ground. ***Because of the inconsistency between Table 1 and the map, mentioned above, this type of summary cannot be made for MW-8.***

The attachment also provides the productivity values and overstory percentage for each transect ("Findings"). The crew derived canopy cover values from ocular estimations. The values are reported as follows:

Well	Productivity (pounds per acre)	Overstory (percentage)
MW-6	100	10 (Spruce/Fir)
MW-8	300	0

The species contributing to the overstory percentage values are confusing when considering the species and values summarized on Table 1. For MW-6, the tree/shrub listed on Table 1 are snowberry and rose, yet the species contributing to the overstory percentage values are from spruce and fir. ***Because of the inconsistency between Table 1 and the map, mentioned above, this type of comparison cannot be made for MW-8.*** Even if these inconsistencies are corrected, the Permittee must follow Division's guidelines for measuring productivity (R645-301-321).

Additional problems of the vegetation survey include:

- Lack of identification to the species level for many plants surveyed.
- Missing plant productivity values for the well sites.
- Missing vegetation community types for the well sites.

Furthermore, these survey items are also required for reference areas (R645-301-321).

Findings:

The information provided is not adequate for the reporting of vegetation resource requirements of the regulations. The Division highly recommends that the Permittee conduct a new vegetation survey. Below are the findings relating to the current survey, which the Permittee must address:

R645-301-356.110, Provide the type of the vegetation survey methods used. The specific sampling method used must follow the Division's guidelines.

R645-301-121.200, Clarify **#1)** inconsistencies described above concerning Attachment 3-1 and Figure 1 (map) and Table 1, and **#2)** inconsistencies between species listed in Table 1 and overstory percentage values provided in the "Findings" section.

R645-301-321, **1)** Work with the Division to select appropriate reference area(s). Provide vegetation inventory, evaluate vegetation status, and show sample adequacy for the reference area(s). **2)** Provide productivity surveys for the well sites and the reference area(s). The Permittee must follow Division's guidelines, which includes the recommendation for NRCS to conduct the survey. 3) Provide for the well sites and reference areas: **a)** Plant identification to the species level, **b)** Plant productivity values, and **c)** Vegetation community types.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

In brief, the Division highly recommends that the Permittee conduct a new threatened and endangered species (TE) survey. The paragraphs below include specific concerns relating to the current survey.

Mr. David Steed (Ecologist) of Environmental and Engineering Consulting conducted the threatened, endangered, and sensitive species inventory on May 10, 2002 (Attachment 3-2). The TE survey was not comprehensive and included surveys for TE species not listed for Carbon County. The survey crew surveyed for twenty-seven plant and two animal species. These species are included on Federal threatened and endangered (TE) list for Carbon and Emery Counties or are on the sensitive list for the area. Although the Permittee conducted surveys of many TE and sensitive species, the Permittee must conduct site-specific occurrence surveys during appropriate seasons of the year and provide impact assessments for all TE species (R645-301-322).

For the sites evaluated for TE species, including MW–6 and MW–8, the surveyors noted "no observation" for all species surveyed. The survey, however, shows suitable habitat for the Last chance townsendia (*Townsendia aprica*), Tufted cryptantha (*Cryptantha caespitosa*), Canyon sweetvetch (*Hedysarum occidentale* var. *canone*), Helenium hymenoxys (*Hymenoxys helenioides*), Bicknell milkvetch (*Astragalus consobrinus*), Basalt milkvetch (*Astragalus subcinereus*), and Sedge fescue (*Festuca dasyclada*). The Permittee must resurvey for these TE and sensitive species during appropriate seasons of the year prior to disturbance (R645-301-322).

The Permittee provides *Final Report: Assessing the impact of scale on the performance of GIS habitat models for Mexican Spotted Owl* (MSO), David W. Willey, October 22, 2002 (Attachment 3-3). The report summarizes the study that evaluated the performance of the 1997 and 2000 models developed by Dr. Willey et. al. for predicting MSO habitat. The study included four project areas near Price including the Pine Creek area north of the Dugout Canyon Mine permit area.

To date, the MRP does not apparently include an assessment for the Mexican Spotted Owl (MSO) specifically for the Dugout Mine permit area. The Permittee must assess for MSO habitat within a half-mile radius of the mine permit area using the 1997 or 2000 model. If the model predicts possible MSO habitat, the Permittee must contact the Division before drilling. The MRP must include the results of the MSO modeling (R301-322.100).

DWR conducted the raptor survey in 2002. The amendment does not provide the survey report (refer to Finding R645-301-131), but provides a map of the over flight, albeit indistinguishable. The amendment states that the 2002 survey results showed three inactive golden eagle nests within sections 16 and 22 (pg.3-2). Because the amendment does not provide a clear map of the over flight, it is difficult to assess possible impact from mining to these nests. The Permittee must present raptor information clearly and correctly. Provide a map (recommended scale is one inch equals 400 feet) showing locations of raptor nests and drill holes as well as the boundary lines of the Mine permit area (R645-301-323.400; -322.100).

The Permittee must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Effects must be addressed by calculating the amount of water used by the ine. Consumption estimates should include evaporation from ventilation; coal preparation; sediment pond evaporation; subsidence effects on springs; alluvial aquifer abstractions into mines; postmining inflow to workings; coal moisture loss; and direct diversions. Mitigation is required if the loss is estimated to be greater than 100 acre-feet per year (R645-301-322; -333).

JBR Environmental Consultants conducted the bat survey in June 2002 (pg. 3; sec. 322.200). The attachment does not provide the survey report (refer to Finding R645-301-131). The amendment states that the 2002 survey results showed bats in the area, but none were TE species (pg. 3-3).

Findings:

The information provided is not adequate for the reporting of fish and wildlife resource requirements of the regulations. The Division highly recommends that the Permittee conduct a new TE survey. Below are the findings relating to the current survey, which the Permittee must:

R645-301-322, **1)** Conduct site-specific occurrence surveys during appropriate seasons of the year and provide impact assessments for all TE species. **2)** Resurvey for the TE and sensitive species, declared to have suitable habitat, during appropriate seasons of the year prior to disturbance. **3)** Assess for MSO habitat within a half-mile radius of the mine permit area and include results in the MRP. **4)** Assess possible adverse effects of mine water consumption to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Follow requirements provided above.

R645-301-323.400, Provide a map showing locations of raptor nests and drill holes as well as a well the boundary lines of the mine permit area.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Attachment 2-1 Topsoil Evaluation for Methane Degas Wells Dugout Canyon Mine Carbon County Utah, May 20, 2002 indicates that the soils in the vicinity of MW-06 were classified in the, Midfork-Comodore Complex. According to the information provided in Attachment 2-1 the Midfork-Comodore Complex includes Midfork family bouldery loam and Comodore bouldery loam on the slopes and 30% other soils. In Midfork and Commodore loam soils, the surface soil has a layer of partially decomposed twigs, leaves, and needles between one or two inches thick covering a brown bouldery loam (topsoil) layer about six inches thick. Effective rooting depth of Commodore soils is 20 inches. Effective rooting depth of Midfork soils is 60 inches. The potential plant community in this unit is Douglas-fir canopy of 90%, and understory including 10% grasses, 5% forbs, and 85% shrubs. The important plants are sedge, mountainlover, and snowberry.

Mr. Larson investigated the MW-06 site in May of 2002 and found the site to be previously disturbed by logging as shown in his sketch. Mr. Larsen's designation of north on the sketch does not agree with the Permittee's designation on other figures of the site. A road bisects the site and the Division attempted to orient Mr. Larsen's sketch with the other figures for the site, by this road. (However, during a conversation on April 24, 2003, Mr. Gary Taylor indicated that the Permittee's location of the road on Figure 5-8 was probably in error and Mr. Larsen's sketch was the more accurate. The Permittee drew the intended orientation of the site onto a copy of Mr. Larsen's sketch and faxed it to the Division on April 24, 2003.) The site formerly hosted a logging operation and has 6-9 inches of mixed previously disturbed soils available for salvage over most of the site. East of the road, there is a pocket of the site having 10-14 inches of topsoil.

The soil of MW-08 is identified as Beje-Trag complex, 3-30% slopes. According to the 1988 Carbon County Soil Conservation Service Soil Survey information for Map Unit 7, the location of this drill well on the ridge would indicate that it is Beje loam or Doney family soil. The Beje loam is a shallow soil with a six-inch surface layer and a fourteen-inch subsoil layer over calcareous sandstone. The effective rooting depth is twenty inches. The potential plant community on the Beje soil is 60 percent grasses, 15 percent forbs, and 25 percent shrubs. Important plants are Salina wildrye, mountain big sagebrush, bluegrass, and slender wheatgrass.

Mr. Larsen investigated the MW-08 in May 2002. Mr. Larsen's designation of north on the sketch does not agree with the Permittee's designation on other figures of MW-08. (During a conversation on April 24, 2003, Mr. Gary Taylor indicated that the Permittee's location of the road on Figure 5-8 was probably in error and Mr. Larsen's sketch was the more accurate.) A road transects the study area and the Division oriented Mr. Larsen's sketch with the other figures for MW-08, by this road. His sketch of the site indicates that there is 10 – 25 inches of topsoil available for salvage on the north side of the road.

Soils were not analyzed during the topsoil survey. The application indicates that the salvaged topsoil from MW-06 and MW-08 will be analyzed for the following parameters immediately after soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243).

Findings:

The information provided meets the minimum requirements for Soils Environmental Resource Information. The Permittee has committed to sampling and analysis of the salvaged topsoil from both MW-06 and MW-08 for the following parameters immediately after soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243).

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The two sites are at elevations of 7,860 feet on a steep slope and 8,520 feet on a ridge above a drainage. The site is in the North Horn formation. Alluvial sediments deposited by Dugout and Fish Creek drainages are far below the site as shown on Plate 6-1.

Findings:

The Division finds that the site is not located in an alluvial valley floor.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

Prime farmland does not exist at this elevation in the Book Cliffs. The growing season is short (60 days) and there is no developed water source. The Utah Agricultural Experiment Station Research Report Number 76 entitled “Important Farmlands of Parts of Carbon, Emery, Grand, and Sevier Counties” does not include R 12 E, T 13 S.

Regulation R645-302-313 requires that a reconnaissance inspection is done for all permit applications whether or not Prime Farmland is present and that the Division and Natural Resource Conservation Service will determine the extent of the reconnaissance inspection. On April 24, 2003, the Division consulted with Gary Roeder, Area Conservationist with the NRCS Price Field Office concerning this well location. Mr. Roeder also concluded that the site does not fit the parameters of prime farmland.

Findings:

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

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

A description of the regional geology, including stratigraphy and structure is presented in the Dugout Mine MRP. The applicant describes the stratigraphic units of the mine site in Section 623. A generalized geologic cross-section is shown in Figure 6-1. The wells will be drilled from the North Horn Formation, through the Price River and Castle Gate Formations down to the Blackhawk Formation to just above the coal seam to be mined. A typical drilling pad and well site is shown in Figure 5-2. Figure 5-6 depicts the well design.

No test boring or drill cores are planned at the well sites. The applicant did not ask for a sampling waiver for acid or toxic forming materials. The sampling waiver is not requested, because the strata above the coal seam will not be removed as a result of these wells. The degasification wells are not test borings or water wells. The coal seam, floor and roof materials have already been sampled and characterized for baseline information in the permit.

Findings:

The applicant has submitted sufficient information in the MRP to address the Geologic Resources Information section.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

There are no springs, streams, or ponds on the proposed drill site. A surface water-monitoring program is being implemented for the operational phase of the mine.

Baseline Information

There is no need to collect baseline information from the drilling operation. Ground water baseline information has been collected for the mining operation and is provided in the Dugout Canyon Mine MRP in Chapter 7, Section 724.100. Surface waters in the permit area are currently being monitored under the operation plan.

Probable Hydrologic Consequences Determination

A Probable Hydrologic Consequences determination is presented in Section 728.300 of the MRP. Sediment control measures are planned.

Information on acid and toxic forming materials have been collected for mining of the Dugout Canyon Mine and are discussed in Sections 624.300 and 731.300 of the MRP. Analyses presented in chapter 6 of the MRP indicate that acid and toxic forming materials are not present within the permit area.

Groundwater Monitoring Plan

The well will be cased to create a continuous column from the Blackhawk Formation to the surface. During drilling of the wells, the groundwater could be affected. Once drilling is completed, the well will be cased and grouted. This will seal any groundwater movement between stratigraphic units.

Surface-Water Monitoring Plan

Plate 7-1 of the MRP identifies several springs in the upper reach of Fish Creek, which is the undisturbed drainage near MW-06. The channel is likely perennial or intermittent which requires a buffer zone protection. Regulation R645-301-731.600 states:

> "No land within 100 feet of a perennial stream or an intermittent stream will be disturbed by coal mining and reclamation operations, unless the Division specifically authorizes coal mining and reclamation operations closer to, or through, such a stream. The Division may authorize such activities only upon finding that if coal mining and reclamation operations will not cause or contribute to the violation of applicable Utah or federal water quality standards and will not adversely affect the water quantity and quality or other environmental resources of the stream."

Information in the application presents potential influences to the stream channel adjacent to the pad for MW-06. The drill pad, MW-06, and development to upgrade the access road, Figure 1-1, will take place within 100 feet of a perennial stream channel.

The applicant discusses potential impacts from development in the PHC Determination, Section 728.300, and proposes mitigation for these impacts by constructing sediment control structures, Section 731.100.

The applicant does not identify the locations of the proposed sediment controls for the construction phase of the drill pads. Figures 5-1 and 5-2 should show the location of the sediment control structures. **Silt fences will be constructed prior to earthwork.**

Findings:

The information provided is not adequate for hydrologic resource requirements of the regulations. Prior to approval, the Permittee must:

R641-301-731, The applicant will commit to establishing silt fences between the construction sites and stream channel adjacent to drill pad MW-06.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The affected area boundary is shown in Figures 1 and 5-1.

Existing Structures and Facilities Maps

There are no structures in the vicinity of the proposed drill pads MW-06 and MW-08.

Existing Surface Configuration Maps

The applicant has submitted Figure 1-1, showing the drill hole locations and mine; Plate 1-4, the Permit Area; Figure5-1, Drill Pad Layout MW-06; Figure 5-2, Drill Pad Layout MW-08; Figure 5-3, Operational Layout, MW-06; Figure 5-4, Operational Layout, MW-08; Figure 5-8, Contour Map, MW-06; Figure 5-9, Contour Map, MW-08.

Monitoring and Sampling Location Maps

The monitoring sampling location map (Plate 7-1 in the MRP) indicates that several spring water resources exist in the vicinity of the proposed disturbed area for MW-06. No water sources exist on or adjacent to the proposed drill pad of MW-08.

Subsurface Water Resource Maps

Subsurface water resources are described in Section 722.100 and 728.100 of the MRP and the amendment. Drilling will penetrate several formations. During the drilling process, some perched water zones may be contacted; however, drilling mud should seal the adjacent areas from groundwater movement. During final well development, the well will be cased and the areas around the casing sealed to prevent vertical migration of ground water. No surface or ground water discharges will occur at the well site.

Surface Water Resource Maps

Plates 7-1, the surface water-monitoring map, and 7-2, the water rights map, provided in the MRP indicates that MW-06 is the only drill pad adjacent to water resources.

Vegetation Reference Area Maps

The application must include the location and boundary of reference area(s) on a map (R645-301-323.100).

Well Maps

Figure 1-1 identifies the drill hole sites that will be used for methane degasification wells.

Findings:

The information provided is not adequate for the reporting of map resource requirements of the regulations. Prior to approval, the Permittee must:

R645-301-323.100, Provide location and boundary of reference area(s) on a map.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

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

Analysis:

This plan is relevant to the mining operation because the purpose of the boreholes is to enhance the ventilation system, thereby enhancing the extraction process.

A clear description of the facilities during the drilling and operational phases of the wells is provided.

The applicant plans to construct two pads for degasification wells, MW06 and MW-08. The pads will be graded to provide a level area for a drill rig, and other required apparatus.

The purpose of the two degasification boreholes is to improve the dilution/venting capabilities of the in-mine ventilation system such that dangerous levels of combustible gases will not accumulate in the gob and bleeder areas. According to Figure 5-6 (page 5-20), the degasification wells will be drilled to depths such that the total hole depths will stop about twenty-five feet above the roof line of the coal seam. **Chapter 6, Geology**, page 6-2, section **625**, also 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.

Holes MW-06 and MW-08 will not be plugged post drilling, as their intent 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 to be two to three years after the mining of the panel has been completed.

Findings:

The information provided in the amendment is adequate to meet the minimum regulatory requirements.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Figure 5-8 and Figure 5-9 illustrate the disturbed area of the two wells. Plates 5-1 and 5-2 are the corresponding cross section for each well site. The drilling layouts for the two sites are shown in Figures 5-1 and 5-2. The proposed operational layouts are shown in Figures 5-3 and 5-4.

Approximate dimensions of the MW-06 site are 255 ft x 175 ft or 44,625 sq ft (Fig 5-1). For MW-06, Plate 5-1 cross section A-A' shows a thirty foot cut slope and the need for up to twenty feet of fill. It is expected that this site will generate 1,387cu yds of material (37,449 cu ft) (Table 2-1). This is an average of twelve inches topsoil salvaged from the site. The soils consultant indicates that there is between six and fourteen inches of topsoil available at this site (Attachment 2-1). The Permittee's estimate of soil salvage is reasonable for MW-06.

Approximate dimensions of the MW-08 site are 370 ft x 165 ft or 61,050 sq ft (Fig 5-1). For MW-08, Plate 5-2 cross section A-A' shows a thirteen foot cut slope and the need for ten feet of fill. It is expected that this site will generate 2,967 cu yds of material (80,109 cu ft) (Table 2-1). This is an average of fifteen inches topsoil salvaged from the site. The soil's consultant indicates that there is very thick topsoil north of the road, between ten and twenty-five inches of topsoil are available at this site (Attachment 2-1). The Permittee's estimate of soil salvage is reasonable for MW-08.

Vegetation will be removed and stored on the perimeter for use in reclamation (Section 232.600).

A qualified person will supervise the soil salvage operations (Section 231.100). Steepness of grade has not been cited as a limitation to topsoil salvage at these sites (Section 232.700). A dozer or front-end loader will be used for topsoil removal (Section 232.100). The stockpile dimensions for each site are outlined in Table 2-2. A berm or silt fence will be constructed around the stockpile and the long term stockpile will be roughened and seeded with the mix described in Table 3-2 (Section 231.100 and 234.200).

A commitment in Section 243 of the application indicates that after salvage, the soils of MW-06 and MW-08 will be analyzed for the following parameters: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus.

Page 2-7 of Chapter 2, SOILS, section 234.200, Protection of Contaminants and Compaction indicates "the stockpile will be isolated from the main surface area by a berm and/or silt fence". The permittee submitted additional information on May 1, 2003, which includes a design for the containment berms that will protect the resource as well as minimize the amount of suspended solids reporting to the sediment controls on the perimeter of the disturbance. The designs have been added as pages 40, 41, and 42 of Attachment 7-1. Same will provide treatment of the precipitation intercepted on the topsoil piles of MW-06 and MW-08 by providing for total containment of the 10 year 24 hour design event. Mr. Dave Spillman has provided a P. E. certification for all information submitted within Attachment 7-1.

Findings:

The information provided meets the minimum requirements of the Operation Plan, Topsoil and Subsoil removal.

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

Chapter 5, Engineering, page 5-7, section 527.100, Road Classification discusses the existing access roads to the proposed sites for MW-06 and MW-08. "MW-06 and MW-08 will be developed on or next to existing private roads as shown on Figure 1-1. The existing roads will be classified as primary roads and will be maintained as required by (the) landowner." As shown on Plate 1-1, Surface Ownership of the approved mining and reclamation plan, Canyon Fuel Company is the owner of the surface in Sections 2,3,4,5,8,9,10,11,12,14,**15,16**,17, and E1/2NW1/4, and W1/2NE1/4. Page 1-1 of the Chapter 1, Legal and Financial Information, TABLE 1-1, indicates that MW-06 is located in Township 13 South, Range 12 East, Section 16; MW-08 is located in T13S, R12E, Section 15. As noted above, all surface areas of both Sections 15 and 16 are owned by the permittee.

The permittee has classified the access roads in the area as primary. The roads are in place at the present time and **will not be reclaimed after the useful life of the wells has been completed.** Figure 1-1, page 1-7 depicts the roads which will provide access to the two degasification wells. Based on that drawing, it appears that the permittee will need to upgrade approximately 1,200 feet of road to access MW-06 and 1,800 feet of road to access MW-08. As indicated on page 5-7 of Chapter 5, Engineering, section 529, Management of Mine Openings, the well pad of MW-06 will be built on the existing road. Access will be barred on the road, as two gates will be installed as part of the disturbed area perimeter fence (See Figure 5-3,Operational Layout, page 5-17). Well MW-08 (See Figure 5-4, Operational Layout, page 5-18) will be northeast of an existing road. No access will be barred by the MW-08 well site. As the access roads in this area are the property of CFC, they have the right to bar access on them.

Findings:

The access roads to the well sites are pre-existing and the property of Canyon Fuel Company. These primary roads will be retained as part of the approved post mining land use and are classed as primary by the permittee's application. Any upgrades made to the roads will be allowed to remain, as to reclaim the upgrades would be ludicrous. The minimum regulatory requirements of R645-202-232 have been met.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The permittee submitted revised information on May 1, 2003 to address an initial concern of where and how the water to drill the degasification wells would be obtained. Page 7-7 of Chapter 7, Section 731.800, Water Rights and Replacement, indicates, "Water used at the well sites will be purchased from Price River Water Improvement District and hauled to the sites."

Groundwater Monitoring

The boreholes (wells) are degasification wells associated with the dilution and venting of combustible gases from the underground workings. The wells are not relevant to a ground water monitoring regime.

The wells will be cased to create a continuous column from the Blackhawk Formation to the surface. During drilling of the wells, the groundwater could be affected. Once drilling is completed, the well will be cased and grouted. This should seal any groundwater movement between stratigraphic units.

Surface Water Monitoring

No surface water monitoring is proposed for the drilling site. No surface water will be encountered other than that produced directly on the site. No discharges will occur from the disturbed area.

Based on the review of Figure 5-8, the disturbance created by the methane degasification hole MW-06 will come to within thirty-five feet of a contributory channel of Fish Creek. The channel is classed as ephemeral, and has been dry for several years. A review of Plate 7-1 in the approved mining and reclamation plan shows seven monitoring stations along the channel adjacent to MW-06. Only SC-14 is monitored during the mining phase. Operational monitoring point SC-14 lies approximately 2300 feet down gradient of MW-06. It was last sampled on 10/11/2002. A stream buffer zone will be established in this area.

Acid- and Toxic-Forming Materials and Underground Development Waste

Acid and toxic forming materials have been assessed in association with mining operations of the Dugout Canyon mine. No acid forming or toxic forming materials have been identified.

The well design is shown on Figure 5-6. The well will be drilled to a depth of over 2,000 feet and will encounter various strata of rock. Fragments of this rock will be brought to the surface with the drilling slurry. The drilling slurry in the mud pit will be sampled for acid/toxic forming characteristics as described in Table 6 of the Division's Topsoil and Overburden Guidelines (Section 542.400). Acid/toxic forming material will be covered with four feet of non-acid/toxic forming soil.

Water-Quality Standards And Effluent Limitations

There should not be any discharges from the mud pits during the drilling phase of the degasification wells. If a discharge does occur, a compliance action may be necessary. The discharge would be caused by a failure of the permittee to comply with the approved plan.

Discharges from the disturbed area acreage (which will exist during the venting phase of the degasification well operations) will be treated. All intercepted precipitation will report (via a negative 2% reshaping of the area) to a silt fence (MW-08) or a collection ditch/silt fence combination, (MW-06).

The areas of MW-06 and MW-08 **that have been reclaimed** will provide treatment of the intercepted precipitation by utilizing surface roughening. As noted on page 5-12, Chapter 5, section 553.100, **Erosion and Water Pollution,** "temporary sediment controls will consist of silt fences and/or straw bales during and following regrading. As vegetation becomes established on the reclaimed surface, erosion potential will be further minimized."

Upon completion of the venting phase (2-3 years after panel extraction has been completed, (See page 5-6, Chapter 5, section **526.200, Utility Installation and Support Facilities**)), the remaining disturbance associated with the degasification wells will be returned to a condition which parallels the pre-mining use and coincides with the post mining land use, i.e., wildlife habitat and livestock grazing. The area will be reshaped to approximate original contour (See page 5-12, section **553.100, Disturbed Area Backfilling and Grading**), roughened to enhance moisture retention, and re-vegetated using the seed mix shown on page 3-8, Chapter 3, Table 3-2, Reclamation Seed Mix.

Temporary sediment control will be established about the final reclamation by establishing silt fences and/or straw bales where needed.

The disturbed area perimeter fence will remain in place until the Division is satisfied that all reclamation criteria have been met.

Diversions: General

No permanent diversions are planned. A drainage ditch will collect runoff and direct it to a silt fence.

The diversion of any overland flows around the degasification well sites will be accomplished by installing silt fence on the uphill side of the cut bank.

Stream Buffer Zones

The upper reach of Fish Creek lies within 40 feet (Figure 5-8) of drill pad MW-06. The applicant will be required to maintain sediment control structures to prevent contamination of the stream or channel. There no streams within the buffer zone at drill pad MW-08.

Sediment Control Measures

Sediment control measures will be implemented to contain disturbed area runoff on site. Calculations were presented in Attachment 7-1.

Plate 5-1, (MW-06), shows a longitudinal cross section B-B' as well as a lateral cross section A-A'. Section A-A' shows that a cut/fill combination will be made to establish the pad area. The borehole location will be the demarcation of the toe of the cut versus the head of the fill. As the fill area is immediately adjacent to the Fish Creek drainage, **the permittee must install silt fence for the entire length of the toe of the fill.** Page 7-8, section 732, Sediment Control Measures, commits to minimizing additional contributions of sediment to stream flow by stating that "the structures to be used for runoff control at the well sites are a ditch, silt fences, and/or straw bale dikes".

Chapter 7, section 731.100 Hydrologic Balance Protection / Surface Water Protection, discusses methods to protect the hydrologic balance. "… construction, maintenance, and reclamation operations will be conducted to handle earth materials and runoff in a manner that prevents, to the extent possible, additional contributions of suspended solids to stream flow outside the permit area, and otherwise prevent water pollution." The 120 foot by 240 foot "pad" area depicted on FIGURE 5-1, (page 5-15), shows that an incisement will be constructed on a 2% grade on all of the inslopes to direct any intercepted precipitation toward the mud pit during the drilling phase of the well.

Similar in construction technique to MW-06, MW-08 will have a pad dimension(s) of 160 feet in width by 340 feet in length. MW-08 is approximately 2200 feet from the Fish Creek drainage. The outslope of the fill which will be created by the construction will be established at approximately a 1H:1V slope. The pad area will be sloped at a negative 2% gradient to report any intercepted precipitation into the mud pit during the drilling process.

Both of the mud pits (MW-06 and MW-08) will be incised in the area of the pad where earth cuts have taken place. No impoundment will be constructed where fill has been placed. The plan view of MW-06 (Figure 5-1, page 5-15) depicts a mud pit 55 feet by 55 feet. The depth necessary for the construction of the mud pit to contain the 10-year 24-hour event can be determined from the information provided in Attachment 7-1.

Similarly, MW-08 will have a square configuration, with a sixty-two foot lateral length. A depth for the "to be constructed" mud pit can be determined from the 10 year 24 hour design event calculations from Attachment 7-1.

The incised mud pits associated with the degasification wells are designed to meet the 10 year 24 hour event, and are P.E. certified by the permittee's engineering manager.

The usable life of the mud pits will be short (probably less than a month). As such quarterly and annual inspections of same will not be conducted. The mud pits will not utilize spillways to discharge effluent off the disturbed area. As noted previously within this document, the pits are designed to retain the drilling mud and cuttings, as well as the sediment and runoff received from a 10 year 24 hour event. Thus, total containment is the treatment method utilized for the collected materials. The permittee has committed to pumping down the pits as needed to ensure that an adequate amount of storage volume for drillings effluent and sediment/collected runoff is maintained. This should be enhanced by the installation of a sediment marker, (i.e., on site personnel will have a definitive indicator that will report when the mud pits need pumping to ensure retention of an adequate storage volume to treat the design event).

The mud pits do not contain a discharge structure; treatment is provided by total containment.

Any flow reporting from MW-06 and MW-08 post drilling will be intercepted by either a silt fence or a collection ditch/silt fence combination prior to leaving the permitted area. The permittee is aware that diversions and silt fences must be maintained until Division authorization is granted to remove them.

Siltation Structures: General

Silt fences and ditches will be used on the pad sites to control sediment.

As discussed previously, the mud pits for degasification wells MW-06 and MW-08 are designed and P.E. certified by Mr. Dave Spillman, Utah registered professional engineer. The pits are capable of containing the drilling mud/cuttings and the runoff intercepted from a 10 year 24 hour design storm.

The mud pits do not meet the criterion established to be classified as an MSHA pond.

The mud pits will be incised and will be monitored during the construction process by the permittee's qualified individual. The life span of the pits will be congruent with the length of time necessary to drill the wells, (probably less than one month). Therefore, quarterly and annual certifications will not occur.

The mud pits will be incised in areas where the earth has not been broken, (i.e., not located in a fill area). The drilling locations are in remote areas where the likelihood of a catastrophic overtopping of a pond causing a public safety hazard or serious environmental damage is nil. The permittee has committed to pump water from the mud pits periodically to ensure that room is available to contain the storm event, (See page 7-8, section 732.200, Sedimentation Pond). Also, the approved mining and reclamation plan contains a commitment to address the requirements of R645-301-515.200. As the mud pits are incised, the only hazard that might exist would be that of the pond overtopping. The commitment to pump the ponds periodically appears adequate, but raises a concern. **A drilling mud/sediment maximum level indicator should be installed such that site personnel can visually monitor the level of the drilling mud in the pits, so that an adequate volume of storage is retained for the 10 year 24 hour event.** As the mud pits serve a dual purpose, a more accurate method of ensuring that adequate sediment storage and treatment volume is ensured is necessary.

Siltation Structures: Sedimentation Ponds

No sedimentation pond is proposed for the site; however, the mud pit will be used to contain runoff on site during pad development and drilling phase.

There is no permanent siltation structures (sedimentation ponds) associated with degasification wells MW-06 and MW-08 (See page 7-9, Section 733.200< Chapter 7). As noted above, the pad areas for each well will be constructed such that inslopes are created on a negative 2% gradient in order to direct intercepted precipitation to the associated mud pits. The mud pits have been designed to contain drilling mud/cuttings as well as runoff from the 10 year 24 hour event, (See page 7-8, section 732.200, Sedimentation Pond). Storage calculations for the two mud pits are shown in Attachment 7-1. The calculations are P.E. certified by David G. Spillman, Manager of Engineering Services for the CFC Dugout operation.

As wells MW-06 and MW-08 are prepared for the venting phase, the two mud pits will be reclaimed, along with as much of the pad area as possible. The reclaimed areas will be stabilized by roughening of the area. Additional erosion control will be provided by applying mulch. As depicted on FIGURE 5-3, approximately 75% of the acreage associated with the degas well will be reclaimed. The existing road will be left intact, but gated at both ends of the gas well disturbance. The un-reclaimed area surrounding the well head will be sloped at a 2% down gradient to report any intercepted runoff to a diversion ditch located on the NE side of the disturbance. The P.E. certified design for the ditch is included in Attachment 7-1, page 8, **Drainage Ditch for MW-08.** Page 19 of Attachment 7-1 depicts a cross-section of the designed ditch, and shows a top width of 1.29 feet with a flow depth of 0.32 feet and 0.3 feet of freeboard. The flow collected by this ditch will be reported to a silt fence on the north end of the remaining disturbed area that will treat the disturbed area runoff at 2.5 GPM/square foot of fabric.

The permittee is obliged to maintain all sediment control structures until sufficient vegetation has been re-established on the well sites. This will be determined by a vegetation cover analysis that indicates that the new vegetation equals or exceeds that which exists in the undisturbed area.

Siltation Structures: Other Treatment Facilities

Other treatment facilities will consist of silt fences, straw bales, and ditches.

Siltation Structures: Exemptions

No exemptions have been requested.

Discharge Structures

No discharge structures are proposed.

There are no discharge spillways associated with either MW-06 or MW-08. The mud pits treat utilizing total containment, retention and evaporation.

Impoundments

No impoundments are proposed other than the berm that surrounds the gas well pad.

These regulations are not applicable; there are no permanent impoundments associated with the drilling of either of the degasification boreholes.

Findings:

The information provided in the amendment is not considered adequate to meet the minimum Hydrologic Information requirements of the regulations. Prior to approval the permittee must provide the following in accordance with:

R645-301-731, The applicant will ensure protection of the stream channel adjacent to upper Fish Creek by installing and maintaining silt fences below the disturbed areas of the access road and drill pad during operations.

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:

Affected Area Maps

The affected area is identified as the well drilling pad that is identified in Figure 5-1 and the access road illustrated in Figure 1. Runoff controls for the road are described in the MRP under Section 534 of the MRP.

Mining Facilities Maps

Operational facilities and hydrologic controls are well defined or illustrated.

Findings:

Refer to Maps, Plans and Cross Sections of Mining Operations deficiency.

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:

The applicant has indicated that the well site will be reclaimed according to Section 540 in the MRP. A statement under Section 542.600 indicates that the roads will be left "since it is a pre-existing road".

Upon completion of the drilling activities, all machinery will be removed and the mud pits backfilled and compacted. Approximately 75% of each disturbance will be reclaimed by returning it to approximate original contour, roughening, and reseeding 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 (2-3 years after completion of the long wall panel extraction).

Upon completion of the venting phase, the blower and well head will be removed and the well casing will be plugged. Final reclamation activities will commence, returning the remaining disturbed area to AOC. Revegetation activities will commence; the only remaining equipment will be the disturbed area perimeter fence, which will remain until authorization is granted by the Division to remove same.

Findings:

The information provided in the amendment is considered adequate to meet the minimum requirements of the coal rules.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Analysis:

The Permittee plans to collect and stockpile plant debris and rocks prior to soil removal (Chapter 3, pg. 7, sec. 342). The purpose of these stockpiles is to protect wildlife and provide habitat. It is unclear the intended future for these stockpiles during and after reclamation (R645-301-121.200).

Findings:

The information provided is not adequate for the reporting of Fish and Wildlife requirements of the Reclamation regulations. Prior to approval, the Permittee must:

R645-301-121.200, Provide a brief description for the long-term plan for the plant and rock debris stockpiles in the reclamation section of this amendment.

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:

This regulatory requirement has been previously discussed within this document. Upon completion of the drilling phase of MW-06 and MW-08, approximately 75% of the disturbance(s) will be reclaimed by regrading that portion to approximate original contour, roughening the area to enhance moisture retention and re-seeding the area with the seed mix approved by the Division. See page 5-9, 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". After the venting phase of the degasification wells has been completed (2-5 years after extraction of the longwall panel has been completed), the remainder of the disturbance will be reclaimed, returning the remainder of the pad to approximate original contour, followed by roughening and reseeding 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 requirements of R645-301-202-241 have been adequately addressed.

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 degasification 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."

The sealing of wells involves meeting the minimum regulatory requirements associated with R645-301-765. Page 7-12, **Chapter 7, HYDROLOGY**, section **748, Casing and Sealing Wells,** refers one to **Chapter 5, ENGINEERING**, Section 542.700, which states, "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 will cave 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 well head, pulling the mine gases from the underground gob area.

More than 90% of the subsidence will occur within the first year after completion of the extraction process. The casing of the degasification well may be subjected to crushing or shearing anywhere along its length. 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 length.

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. This commitment is the best that can be given at this point in time, as only the future will tell if the plugging of the wells will be adequate. The minimum regulatory requirements of the R645 rules relative to minor coal exploration have been addressed.

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution

The reclamation timetable is shown on Figure 5-7. The first phase of reclamation will occur immediately after drilling and reduce the operational area to one quarter of the disturbed area. The remaining area will be graded, topsoiled, roughened, seeded, and mulched. A small storage pile of topsoil will remain for use on reclamation of the operational area. See Figures 5-3 and 5-4.

The incised mud pit will be allowed to dry and fill with soil that will be compacted to minimize settling (Section 542.500). The plan indicates there will be mixing of the cover material with the clays of the mud pit to avoid creating an abrupt boundary between the layers (Section 242.100, page 2-9). The entire site will be ripped to a depth of eighteen to twenty four inches (Section 242.100 and 341.200) to reduce compaction.

Topsoil will be re-spread using a trackhoe. The soils will be handled when loose and friable (not too wet, not too dry), see Section 242.100. Redistribution thickness is shown in Table 2-3.

The soils of MW-06 and MW-08 will be analyzed for the following parameters: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243) to determine if amendments are needed.

Findings:

The information provided meets the minimum requirements of the Reclamation Topsoil Redistribution Regulations.

HYDROLOGIC INFORMATION

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

Analysis:

Hydrologic Reclamation Plan

A Reclamation Plan is provided in Section 540 of the MRP.

Ground-water monitoring is not required for this application.

Surface-water monitoring is not required during the reclamation period for this application; however, the applicant will have to show that there are no excess contributions of settleable solids for Phase III bond release.

Acid and toxic-forming materials are not expected.

No transfer of wells is planned.

The applicant plans for total containment of runoff and sediments.

The ditches directing flow to the silt fence shown on the operational maps will be reclaimed.

All siltation structures will be removed.

No sedimentation ponds are planned.

All hydrologic structures will be removed, regraded, or reclaimed after completion of the methane-venting phase.

Wells will be sealed as identified in Sections 551 and 748 of the MRP. Permanent sealing method is described in Section 542.700 of the MRP. Sealing of the wells will be in accordance with the Division guidelines, R645-301-765.

The sediment control for the drilling phase of the degasification wells has been addressed above, under 514.300.

The venting phase of the degasification well process will utilize surface roughening and vegetation as the primary means of sediment control in the area which will be returned to approximate original contour post drilling. The portion of the drill pad that will remain disturbed for MW-06 will be sloped at a negative 2% grade to the NE. A drainage ditch located parallel with the NE disturbed area perimeter will collect the sheet flow and report it to a silt fence on the NE corner of the remaining drill pad. Pages 7-10 and 7-11 of Chapter 7, Hydrology, section 242.200, indicates that that the silt fences are designed and certified by a registered professional engineer (See Attachment 7-1). Locations of the silt fences associated with MW-06 and MW-08 are shown on Figures 5-3 and 5-4. These sediment control methods will remain in place until the venting phase of the wells has been completed (approximately 2 to 3 years after the completion of mining in that particular panel; See page 5-6, section 526.200, Utility Installation and Support Facilities).

Upon completion of the methane-venting phase, the remainder of the disturbance will be reclaimed, returning it to approximate original contour. Any topsoil remaining in storage will be spread on the reshaped surface. The shaped and topsoiled area will then be roughened to enhance moisture retention. Revegetation of the areas will be initiated by reseeding with the seed mix described in Table 3-2, Reclamation Seed Mix, (See pages 3-8 and 3-9, Chapter 3, Biology). The disturbed area perimeter fences will be maintained until an approval to remove them is granted by the Division (See page 5-5, Chapter 5, Engineering).

Findings:

The minimum regulatory requirements have been met.

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 reclamation timetable is shown on Figure 5-7. The first phase of reclamation will occur immediately after drilling and reduce the operational area to one quarter of the disturbed area. The remaining area will be graded, topsoiled, roughened, seeded, and mulched. A small storage pile of topsoil will remain for use on reclamation of the operational area. See Figures 5-3 and 5-4. The mud pit and other areas of the site will be reclaimed in the same season that the well is drilled. A radius of 20 feet around the well casing will be kept clear of vegetation (Section 529). A road through the MW-06 site and a road cut will remain (Figure 5-3).

The concept of immediately stabilizing the site is sound.

The site will be fully reclaimed upon cessation of methane venting (Section 541).

Findings:

The information provided is adequate and 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 Permittee plans to reclaim the disturbed areas in two phases, which includes the following:

1. Phase I: Contemporaneous Reclamation. Apply final reclamation procedures to site-specific areas no longer needed for operations.
   - Grade.
   - Rip to 18-24".
   - Apply topsoil and leave in roughened state.
   - Mulch at a rate of 2,000 pounds per acre and anchor with tackifier.
   - Apply the final seed mix.

2. Phase II: Final Reclamation. Apply final reclamation procedures to the remaining disturbed areas no longer needed for operations.
   - Plug the wells.
   - Prepare the site.
   - Plant as above.
   - Fence the areas until bond release.

The seed mix is the same for both Phase I and II. The Permittee agrees to hydro seed at a final rate of 112 pure live seed per square foot. Application of seed will include mulch. The sites will also receive 500 transplants per acre (pg. 9, sec.352). The species and planting rates are the following:

Species	**PLS/sq.ft.**
Blue grama	33
Needle and thread	3
Palmer penstemon	14
Sanberg bluegrass	25
Western wheatgrass	8
Wyoming big sage	29
TOTAL	112
	Transplants/acre
Snowberry	125
Woods rose	125
Oregon grape	125
Current	125
TOTAL	500

Revegetation: Timing

C/007/039-AM03B makes the commitment to reclaim as much of the area being disturbed as possible upon completion of the drilling phase of degasification wells MW-06 and MW-08. A revegetation seed mix has been included as part of Chapter 3, page 3-8, **Table 3-2, Reclamation Seed Mix.** Roughening of the area will enhance moisture retention and promote new growth.

Submittal AM03B also contains verbiage relative to the completion of all required reclamation activities upon the completion of the venting phase for the wells. This will occur anywhere from two to three years after extraction of the longwall panel has been completed. All acreage associated with the degasification wells will be reshaped to approximate original contour, roughened and revegetated to control erosion and promote the use of the area in accordance with the approved post mining land use.

Chapter 5 of the amendment provides an overview of the reclamation timetable. The Permittee plans to hydro seed in the fall. The seed mix contains Blue grama, which is a species that uses the C4 photosynthetic pathway. Application of this species should include a separate planting during the monsoon season, possibly later July or early August (R645-301-333). To make this seeding more efficient, the Permittee may want to add another C4 species to the list.

Revegetation: Standards For Success

The Permittee plans to develop a final plan for success standards before drilling and following the selection of the reference area. The amendment states that the plan will follow the Division's guidelines for sampling techniques, statistical methods, and post-land use parameters.

Findings:

The information provided is not adequate for the reporting of Revegetation requirements of the Reclamation regulations. The Division submits one finding and one stipulation. For the stipulation, the Permittee must submit the final plan for the success standards before drilling and following the selection of the reference area. For the finding, the Permittee must:

R645-301-333, Include a separate planting for the C4 plant species, during the monsoon season.

STABILIZATION OF SURFACE AREAS

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

Analysis:

The area will be ripped to a depth of 18 – 24 inches (Section 242.100).

Erosion control measures will include silt fences, berms, seeding, and mulching of the soils (Section 231.100). Disruptive gullies (greater than nine inches) will be reseeded (244.300). Surfaces will be left rough. Mulch will be applied at 2,000 lbs/ac with a tackifier Section 341.200).

The Permittee should contemplate the addition of mulch generated from the grubbing of vegetation. This would be an inexpensive method of adding surface protection.

Findings:

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

BONDING AND INSURANCE REQUIREMENTS

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

Analysis:

General

The permittee has submitted reclamation costs for well sites MW-06 and MW-08. An estimate of $19,357 has been submitted to reclaim the 1.02 acres associated with MW-06. A bond amount of $24,793 has been estimated for the reclamation of the 1.41 acres associated with MW-08. The reclamation cost figures have been reviewed by the Division and are determined to be adequate.

Findings:

The minimum regulatory requirements of R645-301-800, Et. Seq., have been met.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The information presented in the amendment should not change the PHC significantly, and therefore, the CHIA should not have to be changed.

Findings:

The minimum regulatory requirements have been addressed.