

September 15, 2003

TO: Internal File

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

FROM: Jerriann Ernstsens, Ph. D., Environmental Scientist/Biology

RE: Methane Degas, Canyon Fuel Company, LLC., Dugout Canyon, C/007/039, Task ID #1642

**SUMMARY:**

The Division received an amendment to address the drilling of three methane degasification wells (G1-G3) at the Dugout Canyon Mine on July 31, 2003. The Permittee provided attachments for the vegetation, raptor, and Mexican Spotted Owl (MSO) surveys for G1, G2, G3, G4, G5, and G6 degas well sites. This memo reviews the biology section of the amendment for the G1-G3 degas wells, only. Direct references to figures, tables, or appendices apply to the *Degas Methane Amendment G1, G2, G3*, stand-alone document. References to these records from the MRP are noted as such.

**TECHNICAL ANALYSIS:**

## **GENERAL CONTENTS**

### **REPORTING OF TECHNICAL DATA**

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

**Analysis:**

Dr. Patrick Collins of Mt. Nebo Scientific, Inc. conducted the July 2003 vegetation inventory as well as the threatened, endangered, and sensitive plant species inventory (Attachment 3-1).

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Dean Stacy of NRCS (Price office) conducted the August 2003 productivity estimates.

DWR (Chris Colt and LeRoy Mead) conducted the 2003 raptor survey.

Environmental and Engineering Consultants (EIS) conducted the Mexican Spotted Owl (MSO) survey. Vicky Miller (personal communications, 8/12/03) clarified that Tom Paluso (EIS engineer) conducted the survey. The amendment contains a copy of the corporate TE permit (exp. 12/31/05) with Mel Coonrod as principal officer. In order for a person to conduct official surveys, they must have fulfilled the following sequential requirements:

- Belong to the permit holding corporation.
- Take the species-specific course and exam.
- Submit the application for permit to the USFWS.
- Record name to the corporate permit records.

The corporate permits shows that Tom Paluso is authorized to conduct MSO surveys.

### **Findings**

The information provided is adequate for the reporting of technical data requirements of the regulations.

## **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 environmental resources are provided in the MRP and confidential files. The Permittee provides supplemental information specifically concerning the degas wells in this amendment.

## **VEGETATION RESOURCE INFORMATION**

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

### **Analysis:**

Dr. Patrick Collins of Mt. Nebo Scientific, Inc. conducted the June 2003 (July) vegetation inventory as well as the threatened, endangered, and sensitive plant species inventory (Attachment 3-1). The inventories covered the proposed three well sites (~200 x 300 feet) and

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two-associated reference sites. Dr. Collins used the following approved methods for the vegetation inventory:

- Meter square quadrat method for cover.
- Point-quarter method for woody species density.

Table 1 shows the results of the vegetation inventory for percent cover, percent cover by life forms, and woody species density.

Table 1. Vegetation inventory

Site	Total Living % Cover	Grass % Cover	Forb % Cover	Woody % Cover	Woody Sp. Density Individ/Acre
Ref Area Aspen/Doug	90	15	34	51	4265
G1 (A/D) Prev disturb	38	21	50	28	1241
Ref Area Sage/Snow	63	17	46	37	4811
G2 (S/S) Undisturbed	66	18	39	44	4812
G3 (S/S) Undisturbed	60	12	44	44	6306

Table 1 notes that G1 was previously disturbed (prev disturb). Dr. Collins notes that the G1 disturbance includes an old road and logging remains. The woody percent cover for the G1 site appears lower than for the reference area. The woody species density for the G1 site is significantly lower than for the reference area. The other two degas well sites are apparently similar in cover and community composition. There is no significant difference in woody species density between the G2 site and the reference area. The woody species density for the G3 site is significantly lower than for the reference area. Dr. Collins notes a concern of meeting performance standards (Attachment 1, pg. 14). Meeting the standards for G1 may not be a concern provided a full commitment by the mine operator to implement and direct the approved DOGM reclamation procedures.

There are two reference areas for the degas wells: 1-Maple, aspen, Douglas fir, and 2-Sagebrush, snowberry, grass. These names/descriptions reasonably correspond to the descriptions of the community types categorized on Plate 3-1 of the MRP. The Division had a concern over the apparent close proximity of the Sagebrush, snowberry, grass reference area to the road. The Permittee mentioned (personal communications 8/19/03) that this reference area is at least 500 feet from the road on one side and 2000 feet on the other side. The Permittee assures

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the Division that no disturbance will occur to the area other than grazing. If conditions change and disturbance is evident, the Permittee plans to fence this reference area on the two sides that face the adjacent road. The other reference area is apparently protected from disturbance by the natural topography.

The Permittee provided productivity values for three degas wells and two associated reference areas. Predisturbance (apart from G1) productivity values are particularly important for these sites because the postmine land use is grazing. Dean Stacy of NRCS (Price office) conducted the August 2003 productivity estimates.

NRCS states that the sage/snowberry community is experiencing changes in productivity values with a decrease in herbaceous values and increase in woody plant values. Mr. Stacy believes that this change is a result of previous land management practices (*or lack of*). This lack of management is resulting in sagebrush becoming the dominant species. In a normal year, productivity is expected to be 1,500 lbs/acre (1988 Carbon County Soil Survey). This reported value matches the value estimated by NRCS in 2003.

The 2003 productivity values for the aspen/Douglas fir reference area are 40% lower than values reported in the 1988 Carbon County Soil Survey. Mr. Stacy notes that this community is also experiencing changes in productivity values with a decrease in herbaceous values and increase in woody plant values. Furthermore, that G1 shows no resemblance to its assigned community type or expected productivity value because of previous disturbance. NRCS believes that the change in community condition is a result of previous land management practices (*or lack of*).

Table 1. Production results

Site	Productivity Lbs. per acre
Ref Area Aspen/Douglas fir	300
G1 (A/D) Previously disturbed	100
Ref Area Sage/Snow	1,500
G2 (S/S) Undisturbed	1,500
G3 (S/S) Undisturbed	1,500

**Findings**

The information provided is adequate for the reporting of vegetation resource requirements of the regulations.

## FISH AND WILDLIFE RESOURCE INFORMATION

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

### Analysis:

Previously, the Permittee provided the following information concerning TES for different sites of the mine permit area:

*The Permittee provided a TES inventory (Incoming 2003; Degas Wells MW-6 and -8; Attachment 3-2) conducted by Mr. David Steed (Ecologist) of Environmental and Engineering Consulting on May 10, 2002. 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 on sensitive lists for the area.*

*For the sites evaluated for TE species, including MW-6 and -8, the surveyors noted "no observation" for all species surveyed. The survey, however, shows suitable habitat for the following species:*

*Last chance townsendia (Townsendia aprica – USFS SS; Emery, Sevier, et. al.)*

*Tufted cryptantha (Cryptantha caespitosa - CS; Carbon)*

*Canyon sweetvetch*

*(Hedysarum occidentale var. canone – USFS SS; Manti-LaSal/Carbon, Emery, et. al.)*

*Helenium hymenoxys (Hymenoxys helenioides – CS; Carbon, Emery, Sevier, et. al.)*

*Bicknell milkvetch*

*(Astragalus consobrinus - USFS SS; Manti-LaSal-potential/Emery, Sevier)*

*Basalt milkvetch (Astragalus subcinereus – BLM SS; W.Emery, E.Sevier)*

*Sedge fescue (Festuca dasyclada – USFS SS; Manti-LaSal/Emery)*

*Graham beardtongue*

*(Penstemon deaveri – Utah Heritage Program; extreme northeastern corner of Carbon County)*

*[Parenthetical information shows species name and DOGM research results for management responsibility; county or forest location.]*

*It is evident from the list that three of the seven species are tracked in Carbon county: Tufted cryptantha, Canyon sweetvetch, and Helenium hymenoxys. The other four species in the list were probably included as an oversight by Mr. Steed because he included Emery County in the TES survey. A June 24, 1995, survey for canyon sweetvetch found this sensitive species along Dugout Creek approximately one-half mile below the gate.*

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*The Division is aware of a fairly extensive population in the permit area in Fish Creek Canyon, and the plant could occur in other parts of the permit area and proposed addition.*

*EIS conducted a survey of the proposed M-series drill sites on June 21, 2001. The consultants surveyed for the loggerhead shrike, burrowing owl, canyon sweetvetch, and Creutzfeldt cryptantha. The inventory found no suitable habitat for any of the species except the canyon sweetvetch. The sweetvetch was not found within any of the areas to be disturbed.*

For the current amendment, Dr. Collins conducted a literature search on TES plant species for the degas wells. Note that G1 and G2 are in same township and range as MW-6 and -8. His results showed that the area includes suitable habitat only for canyon sweetvetch (*Hedysarum occidentale* var. *canone*). Dr. Collins did not specifically mention Tufted cryptantha, *Helenium hymenoxys*, or Graham beardtongue in his literature or survey results. The surveyor ground-truthed (June 2003) for TES plant species and observed no TES species growing at any of the three degas well sites or reference areas.

Previously, the Permittee provided the following information concerning the MSO for different sites of the mine permit area:

*EIS conducted a survey for the MSO in Pace Canyon on June 18 to July 3, 2001. The surveyor used the USFWS established protocol for the MSO. The results showed no spotted owl in the area surveyed even though suitable habitat exists.*

*The Permittee provided Final Report: Assessing the impact of scale on the performance of GIS habitat models for MSO David W. Willey, October 22, 2002 (Incoming 2003; Degas Wells MW-6 and -8; 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.*

For the current amendment, Tom Paluso of Environmental and Engineering Consultants (EIS) conducted a MSO survey for Dugout Canyon. The consultant conducted a ground-truth survey (May 20 - June 18, 2003) for MSO habitat within a half-mile radius around the G1-G6 degas well area. The calling procedure included calling at 7 different points with points no greater than 0.5 mile apart. The consultant called for 20 minutes using three different calling types. The results showed no MSO responses within a half-mile radius around the G1-G6 degas well area. The results, however, showed responses from Great Horned Owl (5/20/03: site not provided) and Northern Saw-whet (5/20/03: G2; 5/27: G6; 6/4: G6 and G5; 6/11: G3).

*Previously, an EIS survey documented two saw-whet owls responses. One saw-whet owl was heard near drill hole DT-2. The Utah Field Office Guidelines for Raptor Protection*

*from Human and Land Use Disturbances (Laura Romin and James Muck, May 1999, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City) require a 0.25-mile seasonal buffer from March 31 to August 31 for this species. Chris Colt, UDWR<sup>1</sup>, stated that the survey did not locate an owl nest but only the owl's response to a call. The survey did not attempt to locate saw-whet owl nests. Mr. Colt stated that if young owls were present then they should be mobile by July 15 in this area. However, Mr. Colt recommended that a one or two night survey be conducted within a 300-meter perimeter of drill pad DT-2 prior to drilling. Limiting drilling to after August 31 or surveying to be sure no nest occurs within 300 meters of the drill pad will ensure compliance with the Migratory Bird Treaty Act.*

DWR conducted the raptor survey in 2003. The Permittee provides a summary table of DWR's results and maps of the overflight survey. The amendment states (pg. 3-3) that the 2003 results showed "no raptor nests...recorded in the survey area" of the degas wells (sections 24 and 19). The Permittee provided a map showing the overflight pattern, locations of raptor nests, but not locations of the drill hole sites or boundary lines of the mine permit area. The map shows that a Red-tailed Hawk nest 1304 is on the border of section 24 and 13. The results, however, show that this nest was "inactive" on 5/21/03.

Other than the raptor and MSO survey, there was no other TES animal species survey for the degas wells. The amendment includes two tables (Attachment 3-2): Utah's State Listed Species by County (Carbon) and County Lists of Utah's Federally Listed TEC species (Carbon). Page 3-3 states that there are no known federal or state listed TES species within the area of the degas wells. The bald eagle and black-footed ferret, however, could potentially inhabit the area (Incoming 2003; Degas Wells MW-6 and -8; section 322.220). Although there have been no confirmed sightings of black-footed ferrets in Carbon County in several years, bald eagles probably occur within the permit area during the winter.

The Permittee mentioned (8/12/03) that she read all the animal species on the two tables to Bill Bates (DWR) and that he supports that no known TES are within the degas well area. As required by R645-301-358.100, the permittee must promptly report to the Division siting(s) of state or federally listed endangered or threatened species within the permit area. Seasonal or migrating bald eagles are expected and would not need to be reported.

JBR Environmental Consultants conducted the bat survey in June 2002 (Incoming 2003; Degas Wells MW-6 and -8; pg. 3; sec. 322.200). The previous attachment, however, did not provide the survey report. The current amendment also does not include the bat survey. The Permittee mentioned (personal communications 8/11/03) that the bat survey in 2002 was required because Dugout was planning to mine in escarpment areas. The mine operator never

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<sup>1</sup>Phone conversation on August 10, 2001.

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mined in that area of concern. The Permittee states that there is no bat habitat in the area of the degas wells; therefore, the bat survey does not apply.

Plate 3-2 shows the G-series degas wells are located near (approximately 1 mile) critical deer winter range and elk winter range.

### **Findings**

The information provided is adequate for the reporting of fish and wildlife resource requirements of the regulation.

## **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:**

Figure 1 provides locations of the G1-3 drill holes on a topographic map. The Permittee assigned two new reference areas for the degasification wells. The locations of these two reference sites are shown in a topographic map in the Vegetation survey (Attachment 3-1, Figure 3-1. Figure 3-2 shows the vegetation types for the area specific to the degas wells.

### **Findings:**

The information provided is adequate for the reporting of map resource requirements of the regulations.

## **OPERATION PLAN**

Possible adverse affects to the four Colorado River endangered fish species (Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker) are addressed by calculating the amount of water used by a mine. The USFWS provides the Windy Gap Process that explains the factors necessary for consumption calculations. In brief, consumption estimates must 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.

Dugout Creek is within the drainage of the Green River. Through effects of water quantity and quality on the river, the mine could potentially adversely affect the four Colorado River endangered fish species. The Permittee attempts to address the possible adverse effects to the four Colorado River endangered fish species by stating that the drilling of the degas wells does not involve the mining of coal therefore, the Windy Gap Process calculations does not apply. Irrespective of this statement, 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. The Permittee must provide all evidence and equations leading to the sum of water consumption for the entire mine operations. The calculations are due before on September 2005 for the midterm review.

The amendment refers to the MRP for information concerning the protective measures in the Operation Plan. The Permittee provides little additional information for the Operation Plan concerning the degas wells in this amendment.

**Findings:**

The information provided is adequate for the reporting of the Operation Plan of the regulations. The Permittee, however, must 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. The Permittee must provide all evidence and equations leading to the sum of water consumption for the entire mine operations. The calculations are due before on September 2005 for the midterm review.

## RECLAMATION PLAN

### POSTMINING LAND USES

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

**Analysis:**

The amendment states that livestock and wildlife grazing is the postmining land use (pg. 4-3).

**Findings:**

Information provided in the application is considered adequate to meet the minimum Postmining Land Uses section of the Reclamation Plan regulations.

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## 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 states that enhancement measures will include establishment of young vegetation that may help “break up” the large blocks of sagebrush communities (“monoculture”) near G2 and G3.

### Findings:

The information provided is adequate for the reporting of Fish and Wildlife requirements of the Reclamation regulations.

## 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 by gouging (\*See *Findings*).
  - Hydroseed the final seed mix (slurry will include a small amount of fiber).
  - Wood fiber mulch at a rate of 2,000 pounds per acre with tackifier.
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.

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The seed mix is the same for both Phase I and II. The Permittee agrees to hydroseed at a final rate of 106 pure live seed per square foot. The Permittee will seed the areas in the fall. The species and planting rates are the following:

<i>Species</i>		<i>PLS/sq.ft.</i>
<i>Elymus elymoides</i>	Bottle brush squirrel tail	4
<i>Poa pratensis</i>	Kentucky bluegrass	16
<i>Elymus spicatus</i>	Bluebunch wheatgrass	12
<i>Poa secunda</i>	Sandberg bluegrass	25
<i>Bromus marginatus</i>	Mountain brome	3
<i>Penstemon strictus</i>	Rocky mountain penstemon	11
<i>Lupinus x alpestris</i>	Mountain lupine	1
<i>Artimesia tridentata</i>	Wyoming big sage	29
<i>Symphocarpus oreophilus</i>	Mountain snowberry	5

The Division provides the following comments and recommendations for the seed mix:  
Mountain brome-

- Not included in the vegetation survey.
- Consider *Bromus carinatus* (California brome; surveyed on site). When ordering seed make sure to specify the species.

The seed mix provides a vegetative cover composed of native species (Welsh considers Kentucky Bluegrass as native). The goals are to quickly stabilize the disturbed site and provide compatible browsable and forgable habitat for the postmine land use. The Permittee will fence the well sites to prevent grazing until bond release.

**Revegetation: Timing**

The Permittee will seed the areas in the fall.

**Revegetation: Mulching and Other Soil Stabilizing Practices**

The Permittee will apply 2000 pounds per acre of wood fiber mulch to the disturbed areas (Section 341.200). The application states the area will be left in a roughened state after ripping.

**Revegetation: Standards For Success**

The Permittee plans to measure success of vegetation based on extent of cover. The success standards for the reclaimed areas are the associated reference sites. The amendment

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states that the plan will follow the Division's guidelines for sampling techniques, statistical methods, and post-land use parameters. The Permittee plans to use the following sampling methods:

- Cover: line interception.
- Density: belt transect or plot.
- Productivity: clipping.

The Permittee will measure productivity using the clipping method. The Permittee may want to consider the following excerpt from the vegetation guidelines:

*Exclosures:*

*The use of exclosures for productivity measurements is optional where domestic livestock will not be in the study area prior to sampling. If livestock are to be in the study area prior to sampling, then exclosures should be used. When used, exclosures should be large enough to prevent animals from reaching through and grazing on the plot to be sampled. Exclosures should be randomly placed and anchored to the ground, before the growing season begins. The number of exclosures established should be based on previously collected production data and field experience. To reduce variability and sample sizes, community types should be separated as much as possible. Exclosures should be numbered in the order of the random numbers generated for their placement. Sampling should follow the number sequence until sample adequacy is met or all exclosures have been sampled.*

**Findings:**

The information provided is adequate for the reporting of Revegetation requirements of the Reclamation regulations. \*The Permittee committed to extreme surface roughening technique as described in The Practical Guide to Reclamation in Utah (personal contact, 9/12/03).

**RECOMMENDATIONS:**

Approve the application.