

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

OK

July 8, 2004

TO: Internal File

THRU: Peter H. Hess, Environmental Scientist III/Engineering, Team Lead *PHH by an*

FROM: Jerriann Ernsten, Ph. D., Environmental Specialist/Biologist *JE*

RE: Degassification Wells G4, G5, and G6, Canyon Fuel Company, Dugout Canyon, C/007/039, Task #1943

SUMMARY:

The Division received an amendment to address the drilling of three methane degasification wells (G4-G6) at the Dugout Canyon Mine on June 4, 2004. The Division reviewed the submittal for the G1-G3 wells last year. 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 with that submittal. This memo reviews the biology section of the amendment for the G4-G6 degas wells, only. Direct references to figures, tables, or appendices apply to the *Degas Methane Amendment G1-G6*, stand-alone document. References to records from the MRP are noted as such.

The Permittee agrees to mitigate for Northern Saw-whet Owl by installing nesting boxes. The Permittee will include the specifics of the mitigation project in the 2004 Annual Report (due spring of 2005) for DOGM by briefly describing the project goals and procedures, implementation date(s), overseeing agency and contacts (DOGM and DWR), and nest box locations (range, township, and sections). The Permittee will include the specifics of this mitigation project in the 2004 Annual Report for DOGM (due spring of 2005) by briefly describing the project goals and procedures, implementation date(s), overseeing agency and contacts (DOGM and DWR), and nest box locations (range, township, and sections). The Permittee must reference, in MRP section -342.100, that the information concerning the owl mitigation project is in the 2004 Annual Report.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

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	G4	G5	G6
Disturbed acre	0.7	1.2	0.75

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).

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

DWR (Chris Colt and LeRoy Mead) conducted the 2003 and 2004 raptor surveys.

Environmental and Engineering Consultants (EIS) conducted the 2003 and 2004 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 environmental resources for the permit area is in the MRP and confidential files. This amendment provides supplemental information focusing on the degas wells.

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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 well sites (~200 x 300 feet) and two-associated reference sites. 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 (TLC)	Grass % of TLC	Forb % of TLC	Woody % of TLC	Woody Sp. Density Individ/Acre
Ref Area: B Aspen/Doug	90	15	34	51	4265
G1 Prev disturb	38	21	50	28	1241
G4 Prev disturb	48	23	55	23	358
G6 Part disturb	94	23	5	73	2355
Ref Area: A Sage/Snow	63	17	46	37	4811
G2 Undisturbed	66	18	39	44	4812
G3 Undisturbed	60	12	44	44	6306
G5 Undisturbed	63	15	43	43	6718

Table 1 shows that G1, G4, and G6 were previously disturbed (prev/part disturb). Collins notes that these disturbances include road and logging impacts. The woody percent cover for the G1 and G4 sites appear lower and the G6 site appears higher than for the corresponding

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reference area (B). The woody species density is significantly lower for G1 and G4 and significantly higher for G6, G3, and G5 than corresponding reference areas. There is no significant difference of wood species density between G2 and the corresponding reference area. Collins notes a concern of meeting performance standards for certain wells (Attachment 1, pg. 14). The Division expects that meeting the standards will not be a concern provided the Permittee implements recommended reclamation procedures and shows prudent land stewardship practices.

There are two reference areas for the degas wells: A-Maple, aspen, Douglas fir and B-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 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.

Pre-disturbance productivity values are particularly important for these sites because the postmine land use is grazing for some of the disturbed area. Dean Stacy (NRCS Price office) conducted the August 2003 productivity estimates for the degas wells and two associated reference areas. Stacy states that both the aspen/Douglas fir and sage/snowberry communities are experiencing changes in productivity values with a decrease in herbaceous values and an increase in woody plant values. Stacy attributes the lack of proper land management practices to the decline in productivity.

In drought years, productivity is expected to be 1,500 lbs/acre and 300 lbs/acre for the sage/snowberry and aspen/Douglas fir community types, respectively (1988 Carbon County Soil Survey). The estimated productivity values for the wells approach or match the Soil Survey expected value.

Table 1. Production results

Site	Productivity Lbs. per acre
Ref Area: B = Aspen/Doug fir	300
G1 Previously disturbed	100
G4 Prev disturbed	150
G6 Partially disturbed	300
Ref Area: A = Sage/Snowberry	1,500
G2 Undisturbed	1,500
G3 Undisturbed	1,500
G5 Undisturbed	1,500

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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 TES survey was not comprehensive and included surveys for TES 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 TES 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.]

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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. 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 MW-8. His results showed that the area includes suitable habitat only for canyon sweetvetch (*Hedysarum occidentale* var. *canone*). 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 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.*
- *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, but did not include the Dugout mine area.*

For the current amendment, Tom Paluso of Environmental and Engineering Consultants (EIS) conducted a MSO survey for Dugout Canyon. The consultant conducted a calling survey (May 20 - June 18, 2003 and spring of 2004) for MSO individuals within a half-mile radius around the G1-G6 degas well area. The calling procedure included calling at seven 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).

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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, UDWR¹, 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.

Preliminary results of the Mexican spotted owl survey (May 2004) showed positive responses for the Northern Saw-whet Owl at many of the calling stations. Because the Permittee wants to drill during the exclusionary period and survey results are positive for this owl, the Division is requiring the Permittee to mitigate (R645-301-342.100). In consultation with DWR (Tony Wright, July 6, 2004), an appropriate mitigation project is to install nest boxes designed for the Northern Saw-whet owl. DWR will provide box design and conduct installation. The Permittee must contact DWR and install the boxes prior to October 1, 2004. DWR will determine the number of nest boxes, but the required number will not exceed ten.

The Permittee will include the specifics of the owl mitigation project in the 2004 Annual Report for DOGM (due spring of 2005) by briefly describing the project goals and procedures, implementation date(s), overseeing agency and contacts (DOGM and DWR), and nest box locations (range, township, and sections). The Permittee must reference, in the MRP section 342.100, that the information concerning the owl mitigation project is in the 2004 Annual Report.

DWR conducted a helicopter raptor survey in 2003 and 2004. 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). Results are still pending for the 2004 survey.

The plan provides 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 were no other TES animal species survey for the degas wells. The amendment includes two tables (Attachment 3-2): Utah's State Listed

¹Phone conversation on August 10, 2001.

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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). There have been no confirmed sightings of black-footed ferrets in Carbon County in several years, and bald eagles probably only occur within the permit area during the winter seasons.

The Permittee's representative 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 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 regulations.

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 G1-6 drill holes on a topographic map. The Permittee assigned two 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:

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

OPERATION PLAN

Analysis:

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 provides examples of 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 loss is 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 do not apply. Irrespective of this statement, the Permittee must address the adverse effects to the four Colorado River endangered fish species. The Permittee must provide all evidence and equations leading to the sum of water consumption, including water consumed, for dust suppression for the entire mine operations. The calculations are due before amendment approval of the SILTA lease amendment. Statements of "no water consumption" are not acceptable.

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, including water consumed for dust suppression, for the entire mine operations. The calculations are due before amendment approval of the SILTA lease amendment. Statements of "no water consumption" are not acceptable.

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:

Livestock and wildlife grazing and reestablishment of preexisting roads are the postmining land uses (pg. 4-3; 3-16).

Findings:

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

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

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

Analysis:

The Permittee predicts 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

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The Permittee plans to reclaim the disturbed areas in two phases:

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.

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.

The seed mix is the same for both Phase I and II. Fall plantings include hydroseeding at a final rate of 106 pure live seed per square foot. 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 a native). The goals are to quickly stabilize the disturbed site and provide compatible browsable and forgeable 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

Reclamation includes ripping the area to a roughened state and applying 2000 pounds per acre of wood fiber mulch to the areas (Section 341.200).

Revegetation: Standards For Success

The Permittee will follow the Division's vegetation guidelines to measure density/diversity. The success standards for the reclaimed drill sites are the corresponding reference areas. The Permittee plans to use the following sampling methods:

- Cover: line interception.
- Density: belt transects or plots.
- Productivity: clipping.

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 The Practical Guide to Reclamation in Utah (personal contact, 9/12/03).

RECOMMENDATIONS:

The amendment meets the minimum regulatory requirements and should be approved. The Permittee plans to conduct a Northern Saw-Whet Owl mitigation project before October 1, 2004. This project is in exchange for drilling throughout the night during the exclusionary period for this species.