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of
Colorado

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Entek GRB LLC, FRU Federal 11-14 Pad, SESW Sec 11 T11N R88W, Routt County, Form 2A#400264092, Form 2#400267082; COGCC Response to Routt County LGD's Comments of 6-7-12

Kubeczko - DNR, Dave <dave.kubeczko@state.co.us>
To: Dave Kubeczko - DNR <dave.kubeczko@state.co.us>

Fri, Nov 30, 2012 at 12:43 PM

Scan No 1293086
2#400267082

COGCC Response to LGD Comments - CORRESPONDENCE

2A#400264092

----- Forwarded message -----

From: Kubeczko - DNR, Dave <dave.kubeczko@state.co.us>

Date: Fri, Nov 30, 2012 at 12:41 PM

Subject: Entek GRB LLC, FRU Federal 11-14 Pad, SESW Sec 11 T11N R88W, Routt County, Form 2A#400264092, Form 2#400267082; COGCC Response to Routt County LGD's Comments of 6-7-12

To: Chris Brookshire <cbrookshire@co.routt.co.us>

Chris,

COGCC appreciates Routt County's participation in the LGD comment portion of the Form 2A and Form 2 permitting process. Attached is COGCC's Responses to Routt County's comments (submitted on June 7, 2012) for the Quicksilver Resources, Pirtlaw Partners Ltd 32-09 Pad, Form 2A#400264092 and Form 2#400267082.

These responses will become an attachment to the Form 2A and Form 2. COGCC's review process is complete and the Form 2A and Form 2 permits will be approved soon. If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or email; or Greg Deranleau at (303) 894-2100 x5153. Thanks.

Dave

David A. Kubeczko, PG

Oil and Gas Location Assessment Specialist

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h Mail/3016x GRB LLC, FRU Federal 11-14 Pad, SESW Sec 11 T11N R88W...

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Response to Routt County LGD Comments_Correspondence_11302012.pdf
123K**

Routt County LDG Comments
Regulatory Form 2A#400264092 and Form 2#400267082
Entek GRB LLC, FRU Federal 11-14 Pad; SESW Sec 11 T11N R88W, Routt County

Comments submitted on June 7, 2012: COGCC Response to Comments sent to Routt County LGD, Chris Brookshire, on November 30, 2012:

Comment No. 1 - ROUTT COUNTY SPECIAL USE PERMIT.

Routt County has a permitting process for all oil/gas operations. The consultant for this application has been contacted and is aware that the applicant must make application for a Special Use Permit.

COGCC Response to Comment No. 1 - ROUTT COUNTY SPECIAL USE PERMIT.

No COGCC response necessary.

Comment No. 2 - WILDLIFE CONCERNS.

This site is mapped for wildlife concerns which include Elk Production and Summer Concentration and Greater Sage Grouse Production and Brood Area. Elk Production restrictions are 3/15 – 6/30 with Greater Sage Grouse restrictions 3/1-6/30. All operations must meet the requirements/restrictions placed by the CPW.

COGCC Response to Comment No. 2 - WILDLIFE CONCERNS.

Colorado Parks and Wildlife and the Bureau of Land Management (BLM -responsible for both the surface and subsurface) have had consultations with Entek GRB concerning wildlife issues at this location, as well as the other locations. Entek GRB has agreed to the following wildlife BMPs proposed by CPW on June 6, 2012:

1. This location is within an elk production area. Where oil and gas activities must occur in elk production areas, conduct these activities outside the time period from May 15 through June 30. This is the same timing stipulation that BLM will impose and Entek agrees.
2. Restrict post-development well site visitations to portions of the day between 9:00 a.m. and 4:00 p.m. during the greater sage-grouse leking season, from March 1 to May 15. BLM will require this time of day restriction during the greater sage-grouse leking season, from March 1 to May 15. Entek agrees with the exception for emergencies and required maintenance.
3. Install and utilize bear-proof dumpsters and trash receptacles for all food-related trash on location following COGCC Rule 1204 a-1. Entek agrees to install and utilize bear-proof dumpsters and trash receptacles for all food-related trash on location following COGCC Rule 1204 a-1.
4. Interim and final reclamation will match existing vegetation. Entek agrees that Interim and final reclamation will match existing vegetation unless BLM requires otherwise.
5. As this well pad location is grazed, CPW recommends fencing the well pad for interim and final reclamation so that livestock and wildlife are excluded, and vegetation has a chance to become established. Entek agrees to fence the pad location.

These BMPs have been placed on the Form 2A permit and are fully enforceable by COGCC. The BLM has the responsibility for both the protection of all surface resources and the development of the mineral resources. They need to seek a balance between all surface resources/uses/issues when evaluating the

Federal Application Permit for Drilling (APD). The BLM have their own resource specialists and will conduct a detailed analysis of this location. Based on information on the Form 2A and discussions with the BLM, COGCC believes that this is an appropriate location for the development of the mineral resources. The COGCC will defer any additional wildlife BMPs, stipulations, and/or COAs on this location to the BLM.

Comment No. 3 - NEARBY SURFACE WATER CONCERNS.

Best Management Practices must be adhered to, to prevent any contamination of waterbodies. Any access roads and well pad must have a comprehensive BMP and SWAMP plan and continually monitored for protection of these water sources from erosion and contaminants. The access road will cross waterbodies and the well pad is located between two drainages.

COGCC Response to Comment No. 3 - NEARBY SURFACE WATER CONCERNS.

Entek has a SWPPP in place and will be maintained to CDPHE standard, this should be adequate. COGCC has placed the following COAs on the Form 2A:

COA 44 - The access road will be constructed to prevent sediment migration from the access road to nearby surface water or any drainages leading to other nearby surface waters.

COA 23 - Operator must ensure secondary containment for any volume of fluids contained at well site during drilling and completion operations (as shown on the Proposed BMPs attachment); including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. Any berm constructed at the well pad location will be stabilized, inspected at regular intervals (at least every 14 days), and maintained in good condition.

In addition, COGCC conducted an onsite inspection at the proposed well pad location; and there appears to be a stream and a pond within one-mile, so these should be sampled if there is water present. Entek has agreed to sample nearby groundwater, springs, and/or surface water if sufficient water is present prior to drilling and completion.

COA 9 - Baseline Water Testing: Prior to drilling, operator shall sample the two (2) closest domestic water wells, springs, or surface water features within a one (1) mile radius of the proposed oil and gas location. Testing preference shall be given to domestic water wells and springs over surface water. Testing of surface water features shall only be conducted if two (2) water wells or springs do not exist within a one (1) mile radius of the selected oil and gas location. If possible, the water wells or springs selected should be on opposite sides of the oil and gas location not exceeding a one (1) mile radius. If water wells or springs on opposite sides of the oil and gas location cannot be identified, then the two (2) closest wells or springs within a one (1) mile radius of the oil and gas location shall be sampled. The sample location shall be surveyed in accordance with Rule 215.

Sampling and analysis shall be conducted in conformance with an accepted industry standard as described in Rule 910.b.(2).

Initial baseline testing shall include: pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime and coliform), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Hydrogen sulfide shall also be measured using a field test method. Field observations such

as pH, temperature, specific conductance, odor, water color, sediment, bubbles, and effervescence shall also be included. COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

If free gas or a dissolved methane concentration greater than 1.0 milligram per liter (mg/l) is detected in a water well, gas compositional analysis and stable isotope analysis of the methane (carbon and hydrogen – ^{12}C , ^{13}C , ^1H and ^2H) shall be performed to determine gas type. If test results indicated thermogenic or a mixture of thermogenic and biogenic gas. If the methane concentration increases by more than 5.0 mg/l between sampling periods, or increases to more than 10. mg/l, the operator shall notify the Director and the owner of the water well immediately.

After 90 days, but less than 180 days of completion of the first proposed well a “post-completion” test shall be performed for the same analytical parameters listed above and repeated one (1), three (3) and six (6) years thereafter. If the well is a non-producing well, then the one (1), three (3) and six (6) year samples will not be required. If no significant changes from the baseline have been identified after the third test (i.e. the six-year test), no further testing shall be required. Additional “post-completion” test(s) may be required if changes in water quality are identified during follow-up testing. The Director may require further water well sampling at any time in response to complaints from water well owners.

Copies of all test results described above shall be provided to the Director and the landowner where the water quality testing well is located within three (3) months of collecting the samples used for the test. The analytical data and surveyed well locations shall also be submitted to the Director in an electronic data deliverable format.

Operator may conduct baseline groundwater sampling in accordance with the Colorado Oil and Gas Association (COGA) Voluntary Baseline Groundwater Quality Sampling Program (updated November 15, 2011).

Documented refusal to grant access by well owner or surface owner (for surface water and spring sampling) shall not constitute a violation of this COA.

Comment No. 4 - SURFACE CASING PLACEMENT CONCERNS.

Routt County requests information from the COGCC after drilling operations are complete for the location of aquifers and showing that casing was completed per minimum requirements of the COGCC regulations to protect all aquifers.

COGCC Response to Comment No. 4 - SURFACE CASING PLACEMENT CONCERNS.

Form 5's are reviewed after-the-fact to verify compliance with the drilling and cementing rules. The county can review forms and logs on their own after approval, and if the operator does not submit data and forms per Rule 308A in a timely manner, then the county can file a complaint. In addition, Rule 317.i. applies if unanticipated aquifers are encountered while drilling the production hole:

317. GENERAL DRILLING RULES; i. Production casing cementing. The operator shall ensure that all cement required under this rule placed behind production casing shall be of adequate quality to achieve a minimum compressive strength of at least three hundred (300) psi after twenty-four (24) hours and eight hundred (800) psi after seventy-two (72) hours measured at ninety-five degrees Fahrenheit (95 °F) and at eight hundred (800) psi. After thorough circulation of a wellbore, cement shall be pumped behind the production casing (200) feet above the top of the shallowest known producing horizon. All fresh water aquifers which are exposed below the surface casing shall be cemented behind the production casing. All such cementing around an aquifer shall consist of a continuous cement column extending from at least fifty (50) feet below the bottom of the fresh water aquifer which is being protected to at least fifty (50) feet above the top of said fresh water aquifer.

Cement placed behind the production casing shall be allowed to set seventy-two (72) hours, or until eight hundred (800) psi calculated compressive strength is developed, whichever occurs first, prior to the undertaking of any completion operation.

Comment No. 5 - GROUNDWATER MONITORING CONCERNS.

Routt County requests that the operator be required, at a minimum to comply with COGA Voluntary Baseline Groundwater Quality Sampling Program.

COGCC Response to Comment No. 5 - GROUNDWATER MONITORING CONCERNS.

Entek has agreed to sample two to three domestic water wells, other water wells, or springs prior to drilling and completion of this well. COGCC has placed the following COA on the Form 2A:

COA 9 - Baseline Water Testing: Prior to drilling, operator shall sample the two (2) closest domestic water wells, springs, or surface water features within a one (1) mile radius of the proposed oil and gas location. Testing preference shall be given to domestic water wells and springs over surface water. Testing of surface water features shall only be conducted if two (2) water wells or springs do not exist within a one (1) mile radius of the selected oil and gas location. If possible, the water wells or springs selected should be on opposite sides of the oil and gas location not exceeding a one (1) mile radius. If water wells or springs on opposite sides of the oil and gas location cannot be identified, then the two (2) closest wells or springs within a one (1) mile radius of the oil and gas location shall be sampled. The sample location shall be surveyed in accordance with Rule 215. Sampling and analysis shall be conducted in conformance with an accepted industry standard as described in Rule 910.b.(2).

Initial baseline testing shall include: pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime and coliform), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Hydrogen sulfide shall also be measured using a field test method. Field observations such as pH, temperature, specific conductance, odor, water color, sediment, bubbles, and effervescence shall also be included. COGCC recommends that the latest version of EPA SW 846 analytical methods be used where possible and that analyses of samples be performed by laboratories that maintain state or national accreditation programs.

If free gas or a dissolved methane concentration greater than 1.0 milligram per liter (mg/l) is detected in a water well, gas compositional analysis and stable isotope analysis of the methane (carbon and hydrogen – 12C, 13C, 1H and 2H) shall be performed to determine gas type. If test results indicated thermogenic or a mixture of thermogenic and biogenic gas. If the methane concentration increases by more than 5.0 mg/l between sampling periods, or increases to more than 10. mg/l, the operator shall notify the Director and the owner of the water well immediately.

After 90 days, but less than 180 days of completion of the first proposed well a “post-completion” test shall be performed for the same analytical parameters listed above and repeated one (1), three (3) and six (6) years thereafter. If the well is a non-producing well, then the one (1), three (3) and six (6) year samples will not be required. If no significant changes from the baseline have been identified after the third test (i.e. the six-year test), no further testing shall be required. Additional “post-completion” test(s) may be required if changes in water quality are identified during follow-up testing. The Director may require further water well sampling at any time in response to complaints from water well owners.

Copies of all test results described above shall be provided to the Director and the landowner where the water quality testing well is located within three (3) months of collecting the samples used for the test. The analytical data and surveyed well locations shall also be submitted to the Director in an electronic data deliverable format.

Operator may conduct baseline groundwater sampling in accordance with the Colorado Oil and Gas Association (COGA) Voluntary Baseline Groundwater Quality Sampling Program (updated November 15, 2011).

Documented refusal to grant access by well owner or surface owner (for surface water and spring sampling) shall not constitute a violation of this COA.

Comment No. 6 - GRAZING AND HUNTING CONCERNS.

There is a grazing lease and hunting lease. Care should be taken to protect livestock from vehicles and fencing should be considered at the well site. Hunting operations should be honored and drilling not take place during this time.

COGCC Response to Comment No. 6 - GRAZING AND HUNTING CONCERNS.

Colorado Parks and Wildlife and the BLM (responsible for both the surface and subsurface) have had consultations with Entek GRB concerning wildlife issues at this location, as well as the other locations. Entek GRB has agreed to the following wildlife BMP proposed by CPW on June 6, 2012:

1. As this well pad location is grazed, CPW recommends fencing the well pad for interim and final reclamation so that livestock and wildlife are excluded, and vegetation has a chance to become established. Entek agrees to fence the pad location.

In addition, the following COGCC rule is enforceable at this oil and gas location:

1203. GENERAL OPERATING REQUIREMENTS IN SENSITIVE WILDLIFE HABITAT AND RESTRICTED SURFACE OCCUPANCY AREAS

a. **General Operating Requirements.** Within sensitive wildlife habitat and restricted surface occupancy areas, operators shall comply with the operating requirements listed below.

- (11) Limit access to oil and gas access roads where approved by surface owners, surface managing agencies, or local government, as appropriate.
- (12) Post speed limits and caution signs to the extent allowed by surface owners, Federal and state regulations, local government, and land use policies, as appropriate.
- (13) Use wildlife-appropriate fencing where acceptable to the surface owner.
- (14) Use topographic features and vegetative screening to create seclusion areas, where acceptable to the surface owner.
- (16) Reduce traffic associated with transporting drilling water and produced liquids through the use of pipelines, large tanks, or other measures where technically feasible and economically practicable.

Entek has agreed to fence the location to keep livestock off this site. Hunting timing stipulations would be a civil matter under a SUA; therefore it cannot be addressed on the State's Form 2A permit. The BLM will impose stipulations for big game wintering and Sage Grouse.

Comment No. 7 - AIR QUALITY MONITORING CONCERNS.

Continued best management practices should be used to test or monitor air quality. The COGCC should work with the CDPHE to develop monitoring system requirements and schedules for all operators. New technology should be used to prohibit emissions from tanks, equipment and flares at the onset of production.

COGCC Response to Comment No. 7 - AIR QUALITY MONITORING CONCERNS.

Garfield County, in conjunction with Colorado State University and Oil and Gas Operators has initiated a long-term air quality monitoring program that will be conducted from Fall 2012 through Fall 2015. The initial criteria presented by Garfield County at the Northwest Forum meeting of September 6, 2012 should be more than sufficient to evaluate the need for air monitoring requirements at future well pad locations. Currently, air monitoring is regulated by the Colorado Department of Public Health and Environment.

COGCC cannot "prohibit" emissions or flares. Operators are required to comply with CDPHE rules incorporated by reference in COGCC Rule 805.b.(1) regarding odor emissions. Operators are required to comply with statewide green completion requirements identified in Rule 805.b.(3). Operators are required to seek approval for long-term production venting or flaring on a Sundry Notice, per Rule 912.b. COGCC will approve production flaring (production venting is not encouraged) if costs for pipeline construction are prohibitive based on an economic analysis submitted with the Sundry Notice. Flaring is required if hydrogen sulfide is present in the gas. Flared or vented gas must be reported monthly on Form 7, per Rule 912.c. Flared gas subject to Rule 912.b. approval must be directed to a controlled device operated efficiently to provide maximum reduction of air contaminants where practicable and without endangering the safety of the well site personnel and the public, per Rule 912.d. Operators shall notify the local emergency dispatch or the local governmental designee of any natural gas flaring with reasonable notice timeframes specified in Rule 912.e.

When production flaring is approved per Rule 912.b., COGCC requires annual updates (requests to flare) on Sundry Notices, which discuss whether or not any new gathering systems or increased development of the field have changed pipeline economics such that installation of a new pipeline would be an economically viable option in lieu of continued flaring. COGCC encourages operators to use a portion of the gas flow for lease operations, if possible. COGCC also encourages other innovative approaches, in lieu of flaring (e.g., on-site gas turbine electric generation or re-injection into offset wells for pressure maintenance [UIC approval would be required for gas injection]).