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Colorado State Office

Glenwood Springs Energy Office

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Environmental Assessment of the Rulison Geographic Area Plan for Oil and Gas Development



Drafted by Wildlife Specialties, LLC & Western Ecological Resources
for
Glenwood Springs Energy Office
2425 S. Grand Ave. Suite 101
Glenwood Springs, CO 81601

EXECUTIVE SUMMARY

Project Proposal

EnCana Oil and Gas (USA) Inc. proposes to develop oil and gas resources in an area of approximately 1,885 acres of Federal, private, and split-estate lands located southwest of Rifle, Garfield County, Colorado. The proposed development plan, referred to as the Rulison Geographic Area Plan (RGAP), was prepared by the Bureau of Land Management (BLM), Glenwood Springs Energy Office (GSEO) to meet the requirements for an Environmental Assessment (EA) under the National Energy Policy Act (NEPA). The RGAP was prepared based on information provided by EnCana and its consultants and on independent review and analysis by a BLM Interdisciplinary (ID) Team.

The proposed action put forth by EnCana and embodied in the RGAP consists of drilling up to 68 wells from six existing well pads (three on private surface and three on Federal surface) and six new pads (two on private surface and four on Federal surface). The bottomhole locations of the 68 wells would include 42 completed in Federal mineral estate and 17 in private mineral estate. The drilling rate is expected to result in 23 wells being completed in 2007, with the remainder being completed within 2 to 3 years.

The ability of EnCana to reach the planned 68 bottomhole locations from a total of 12 pads (six new, six existing) results from the use of directional drilling technology. Consequently, surface locations would be at a density of one pad per approximately 157 acres, or about four pads per square mile. Because of this type of clustered development, with up to 11 wells on a pad, total surface disturbance from well pads construction would be approximately 29.8 acres, representing a range in pad size from 3.2 to 6.0 acres. Interim reclamation of the pads following completion of the wells would reduce the long-term area of surface disturbance to approximately 9.0 acres for the six new pads. One of the existing pads would need to be reconfigured to accommodate the new wells to be drilled there, resulting in an estimated 1 acre of new surface disturbance.

Other ground-disturbing activities described in the RGAP would include 6.0 miles of new access roads and 6.0 miles of new pipelines collocated with the new roads. The new roads and buried pipelines would be built within a 75-foot right-of-way (ROW), to be reduced to a 25-foot road surface following construction. An additional 0.4 mile of new pipeline would be built within a separate 55-foot ROW to service one of the new pads. The initial disturbance of road and pipeline construction would be 50.7 acres. Long-term surface disturbance would be 18.2 acres.

Permanent surface facilities needed at each pad to support oil and gas development would include the wellheads, separation/dehydration units, and aboveground tanks for storage of condensate and produced water. Each pad would also have a "reserve pit" for the disposal of drill cuttings and miscellaneous drilling debris. Following completion of the wells at a pad, the reserve pit would have hydrocarbons and debris removed and would then be dried, backfilled, covered, and reclaimed. Produced water from the wells would be transported by truck or buried pipeline to EnCana's existing Hunter Mesa water treatment facility or an approved disposal facility. Gas pipeline compressors are expected to be located at a centralized facility.

Following completion activities at a pad, areas not needed during production would be revegetated using reclamation methods, standards, and species specified by BLM. When all of the wells at a pad are no longer producing economic quantities of gas, the wells would be closed and abandoned, and the pad would undergo final reclamation.

No Action Alternative

In order to provide a basis for comparison, the environmental impacts of implementing a no action alternative were also evaluated. In this case, “no action” means that the BLM would not approve any of the proposed developments on Federal surface or involving Federal mineral estate. There are, however, elements of the RGAP that are proposed on private surface locations involving privately held mineral estate. For the purposes of comparative analysis, it is assumed that these developments would occur even if the BLM does not approve the developments on the Federal leases.

These developments would consist of the drilling and completion of 3 fee wells on one existing private pad. In order to support the development of these wells, the existing pad would be expanded slightly. Since access to this location already exists, no new road construction would be necessary. Under this alternative, natural gas and produced water would be transported offsite through existing pipelines. Construction, drilling and completion, production, interim reclamation, workovers or recompletion, final abandonment, final reclamation, and weed management would follow the methods presented in the proposed action.

Impacts and Mitigation

The estimated total surface disturbance under the proposed action would be approximately 81.5 acres (29.8 acres for pads, 48 acres for new roads and collocated pipelines, 2.7 acres for a separate new pipeline, and 1 acre expansion of one existing pad). Long-term disturbance would be approximately 27.2 acres. Protective surface use stipulations associated with the Federal leases and surface use conditions of approval (COAs) associated with an existing ROW grant include the following:

- Winter Timing Limitation (TL) to preclude exploration, drilling, and completion activities from January 16 through April 30 within 1,189.76 acres on two Federal leases.
- Winter TL to prohibit construction or drilling traffic from December 1 through April 30 on the Federal ROW.
- Controlled Surface Use (CSU) to protect fragile soils by requiring that certain performance objectives be met prior to construction.

COAs developed in conformance to these restrictions on surface use, or within the general authority for resource protections granted to BLM under 43 CFR 3101, are provided in Appendices D and E of the RGAP. These COAs are mitigation measures addressing road construction and maintenance; dust abatement; reclamation; control of noxious weeds; protection of federally listed, proposed, or candidate threatened or endangered species; protection of raptors, migratory birds, and winter big game; protection of cultural resources; protection of paleontological resources; protection of surface water, including waters of the U.S.; and protection of visual resources. Downhole COAs (Appendix E) are also enforced by BLM to ensure that drilling operations protect prospectively valuable mineral resources and groundwater, including connected surface waters and domestic water wells.

Based on the existing site conditions of the RGAP area, environmental consequences expected to result from the proposed action, the COAs presented in Appendices D and E, and applicable Federal and State standards for air quality, water quality, and hazardous materials management, the proposed action is not expected to result in significant impact levels for any environmental elements.

The no action alternative would result in approximately 1 acre of new surface disturbance. Developments at this location would involve the use of an access road for which an existing ROW grant stipulates a winter

TL. The TL stipulation prohibits construction and drilling traffic from December 1 through April 30. Under this alternative, other mitigating measures would be similar to that presented under the proposed action.

Although the types of environmental impacts anticipated under the no action alternative would be generally similar to the proposed action, the scope of the impacts would be smaller because far fewer developments are proposed. With the implementation of the mitigation measures described under the proposed action, the impacts are considered minor. However, this alternative would not meet the purpose and need for action. That is, the development of Federal leases for the purpose of increasing the availability of oil and gas resources to the public would not occur.

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FONSI

CO-140-2006-045 EA

The environmental assessment analyzing the environmental effects of the proposed action has been reviewed. The approved mitigation measures result in a Finding of No Significant Impact on the human environment. Therefore, an environmental impact statement is not necessary to further analyze the environmental effects of the proposed action.

DECISION RECORD

DECISION: It is my decision to approve the Applications for Permit to Drill (APDs) for all wells and associated developments identified in Tables 1 and 3 of the Proposed Action with the Conditions of Approval identified in Appendices D and E. This decision will provide for the orderly, economical, and environmentally sound exploration and development of oil and gas resources on valid oil and gas leases.

RATIONALE:

1. Approval of the proposed action is validating the rights granted with the Federal oil and gas leases to develop the leasehold to provide commercial commodities of oil and gas.
2. The environmental impacts have been mitigated with measures included in the attached Conditions of Approval.

MITIGATION MEASURES: Mitigation measures presented in Appendices D and E will be incorporated as Conditions of Approval for both surface and drilling operations.

DRAFTED BY: Wildlife Specialties, LLC and Western Ecological Resources
PREPARED BY: Jim Byers, Natural Resource Specialist and Mark Ennes, Planning and Environmental Coordinator, BLM

SIGNATURE OF PLANNING AND ENVIRONMENTAL COORDINATOR:



Planning and Environmental Coordinator

3/13/07

Date

SIGNATURE OF AUTHORIZED OFFICIAL:



Authorized Officer

3/13/07

Date

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INTRODUCTION

EnCana Oil & Gas (USA), Inc. (“EnCana”) is proposing a 2-to 3-year program of oil and gas development on approximately 1,885 acres of public, split estate, and private lands located in the Piceance Basin about 8 miles southwest of Rifle, Garfield County, Colorado. This proposal, referred to as the Rulison Geographic Area Plan (RGAP), arises from the implementation of the prior Porcupine Creek Plan of Development that successfully demonstrated the potential of the area to contain economically viable reserves of natural gas (USDI 1997).

The Department of the Interior, Bureau of Land Management, Glenwood Springs Energy Office (GSEO) administers the Federal mineral estate in the Rulison GAP area. The GSEO has prepared this environmental assessment (EA) in compliance with the National Environmental Policy Act (NEPA) according to the format established by the Council on Environmental Quality (CEQ) regulations that implement NEPA. This EA discloses the direct, indirect, and cumulative impacts of the development proposal and a no action alternative and determines whether significant environmental impacts necessitating an environmental impact statement (EIS) would result.

The proposal consists of constructing, drilling, completing, and operating up to 68 new wells from up to 6 existing and 6 new surface locations. Ancillary facilities connected to the project include access roads, gas and produced water pipelines, and a variety of surface production equipment locations. Included in the proposal is a range of mitigation measures designed to minimize or eliminate impacts to surface and downhole resources.

Purpose and Need for Action

The purpose of the action is to develop oil and gas resources on Federal leases COC 46032, COC 46034, and COC 56040 consistent with existing federal lease rights. The action is needed to increase the development of oil and gas resources for commercial marketing to the public.

The purpose and need for action would have been met by structuring the development of the lease as a series of individual proposals. However, the current Glenwood Springs Resource Area (GSRA) land use plan (USDI 1999a), in addition to more recent BLM policy, specifies the use of multiple well development plan proposals as a means to more effectively manage Federal lease development.

Issues

The CEQ regulations require an “early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a Proposed Action” (40 CFR 1501.7). In order to satisfy this CEQ requirement, the BLM requested input from the public to determine their concerns with EnCana’s proposal and to develop alternatives or mitigation measures that respond to those issues.

A Public Notice addressing the RGAP proposed action was published in the Glenwood Post Independent on February 3, 10, and 17, 2006 and in the Rifle Citizen Telegram on January 26, February 2, 9 and 17, 2006. Additionally, a letter containing the public notice information was mailed directly to multiple state and Federal agencies, adjacent landowners, a Special Recreation Permit holder, Garfield County, and the Colorado Division of Wildlife (CDOW). The 30-day public comment period ended on February 20, 2006.

In response to the solicitation for comment identified in the Public Notice, BLM received comments from the CDOW, the Colorado Mule Deer Association, and the Garfield County Board of County Commissioners (Appendix A).

Concerns raised through the public participation process included:

- effects on big game and wildlife habitat
- recreation and big game hunting
- soil erosion
- construction and operational methods to prevent erosion
- interim reclamation methods
- public access

THE PROPOSED ACTION

The RGAP is intended to describe a reasonable foreseeable development (RFD) scenario given current market conditions and company constraints. If fully developed, this proposal would result in up to 68 bottomhole locations drilled at 12 surface locations (i.e., six new locations and six existing pads). If approved, EnCana expects to drill up to 23 wells in 2007 and an equal or greater number per year in subsequent years (i.e., up to the maximum of 68). However, the total number of wells drilled would depend largely on factors out of EnCana's control, such as geologic success, engineering technology, economic factors, availability of commodity markets, and lease stipulations and notices.

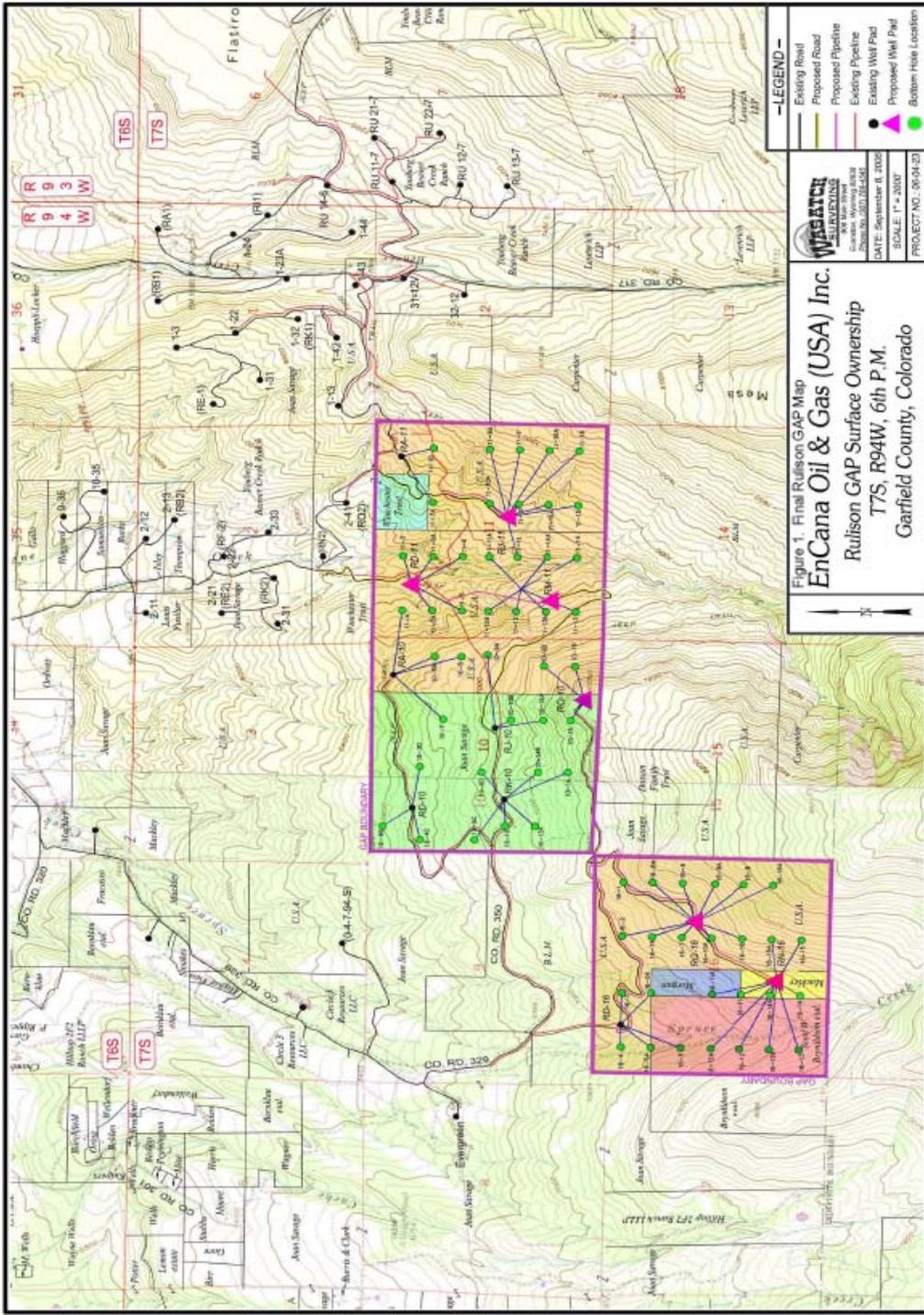
In light of these factors, all or any combination of the following development scenarios could ultimately be implemented:

- Six existing well pads:
 - One private pad (RD10) drilling three fee bottomholes
 - Two private (Savage) pads (RJ10, RK10) drilling nine Federal bottomholes (split estate)
 - Three Federal pads (RA10, RA11, RD16) drilling 10 Federal & one fee bottomholes
- Six new well pads:
 - Two Federal surface pads (RD11, RM11) drilling 12 fee bottomholes (atypical split estate)
 - Two Federal pads (RJ11, RG16) drilling 19 Federal & one fee bottomholes
 - Two private pads (RO10, RN16) drilling 13 Federal bottomholes

Associated with these developments would be the construction of up to 6 miles of new access roads and associated pipelines, an additional 0.4 mile of separate pipeline, and the expansion of an existing pad (Figure 1).

The proposed development area encompasses approximately 1,885 acres, of which 870 acres are characterized by Federal surface and mineral ownership, 635 acres are characterized by typical split estate (i.e., private surface and Federal mineral ownership), 313 acres are characterized by atypical split estate (i.e., Federal surface and private mineral ownership), and 67 acres are characterized by private surface and mineral ownership (Figure 2).

Each major element of the proposed action is described below under the headings, **Development** (Construction, Drilling, and Completion), **Production** (Operation and Maintenance), and **Abandonment and Reclamation**. The proposed elements contain standard 13-Point Surface Use Plan (SUP) (Appendix B) and 10-Point Drilling Plans for gas well development (Appendix C). With the BLM's approval, all



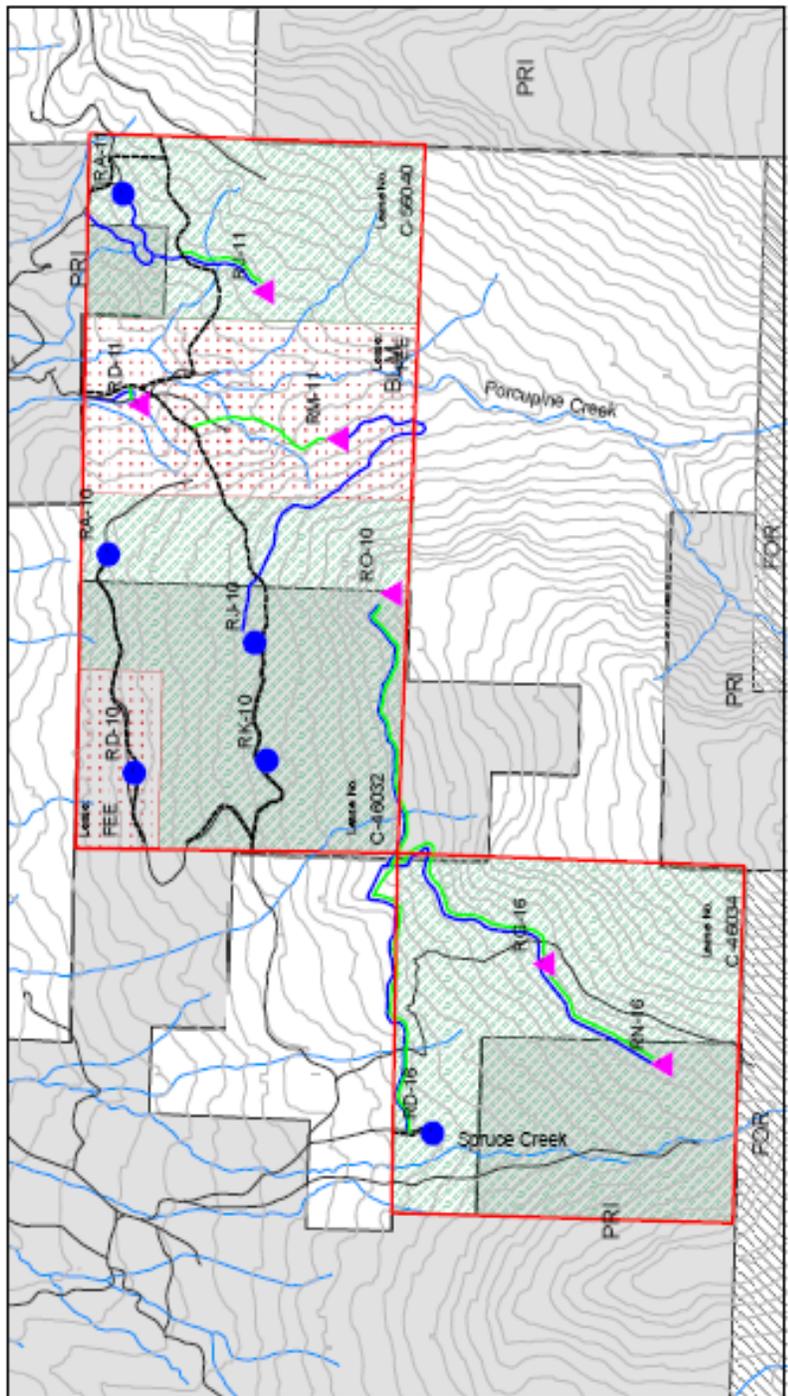


Figure 2. Surface and Mineral Ownership Rulison GAP

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Pipeline
 - Proposed Pipeline
 - Existing Well Pads
 - ▲ Proposed Well Pads
 - Streams
 - Federal Mineral Ownership
 - Private Mineral Ownership
- Land Ownership**
- BLM
 - FOREST
 - PRIVATE



1 inch equals 2000 feet
Date: March 2007

prepared by:
Western Ecological Resources, Inc.
711 Walnut Street
Boulder, CO 80503
(303) 448-9050 FAX (303) 448-9038



measures discussed in the SUP would be implemented as part of the proposed action. Any deviations from the standard practices below are identified in the standard and site-specific Conditions of Approval (Appendices D and E)

Development - Construction, Drilling and Completion

During the course of development, numerous construction activities would be completed. All of these activities could occur simultaneously. The following is a description of construction methods proposed for well pads, access roads, and gas gathering and produced water pipelines.

The locations of the various developments reflect the results of onsite exams conducted by the BLM, the operator, and subcontractors to assess proposed pad and pit layout, proposed access routes, cuts and fills, topsoil stockpiling, erosion control, and reclamation potential. The primary purpose of the onsite inspections was to assess potential resource impacts associated with their construction. In some cases, revisions to the design of the proposed developments were made to minimize potential impacts.

Construction

Proposed Well Pads

The proposed well pads would be constructed from the native soil and rock materials present using a bulldozer, grader, front-end loader, or backhoe. The pad would be constructed by clearing vegetation, stripping and stockpiling topsoil, and leveling the pad area using cut-and-fill techniques. All cut slopes associated with pad construction would be "step cut" and left rough to provide catchments for seeds and moisture. The tops of the cut banks and pad corners may be rounded to improve their appearance. EnCana's stormwater management policy may include additional engineering measures such as the construction of drainage systems and the installation of culverts, to prevent erosion and sediment loading.

Initially, the size of the newly constructed pads would range from 3.2 to 6.0 acres (Table 1). The variation in the size of the pads is a function of topography and the number of bottomhole locations targeted. The construction of the 6 proposed pads would result in an estimated 29.8 acres of new surface disturbance.

On each pad, reserve pits would be excavated to contain drilling fluids. Given the variation in the size and dimensions of the proposed well pads and the number of proposed wells that may be drilled at any given location, the size of the reserve pits would vary. In order to safely contain cuttings and drilling fluids, the reserve pits would be constructed to allow for a minimum of 2 feet of freeboard between the maximum fluid level and the top of the berm around the pit. In addition to the berm, catchments would be excavated around the pits to prevent the infiltration of stormwater. The fluids contained in the pits would be allowed to evaporate unless an alternative method of disposal is approved.

A fence would be constructed around each pit to protect wildlife. The fence would remain until all wells have been drilled and completed.

After all wells are drilled, completed, and production facilities are installed at each pad, interim reclamation activities would begin. Generally, cuts would be revegetated and fills would be recontoured to blend in with adjacent natural slopes and seeded to reestablish vegetation.

Table 1. Proposed Well Pads, Access Roads, and Pipelines.					
<i>Well Pads</i>	<i>Mineral Lease</i>	<i>Legal Description (T. 7S., R. 94W.)</i>	<i>Surface Ownership</i>	<i>Acres of Short-term Disturbance</i>	<i>Acres of Long-term Disturbance</i>
RO10	C-46032	SWSE, SESE Section 10	60% Federal, 40% Private	4.7	1.5
RD11	FEE	Lots 3 & 4 Section 11	100% Federal	3.2	1.5
RJ11	C-56040	NWSE Section 11	100% Federal	4.8	1.5
RM11	FEE	SWSW Section 11	100% Federal	5.6	1.5
RG16	C-46034	SWNE Section 16	100% Federal	5.5	1.5
RN16	C-46034	SESW Section 16	100% Private	6.0	1.5
Subtotal				29.8 acres	9.0 acres
<i>Roads</i>	<i>Length (miles)</i>				
RO10	1.8	SESE, SWSE Section 9 SWSE, SESW, SWSW Section 10 NWNW Section 15 NWNE, NENW, and NWNW Section 16	59% Federal; 41% Private	16.4 (75' R/W)	5.5
RA11 Road realignment	0.6	Lots 1 & 2 Section 11	26% Federal; 74% Private	3.7 (50' R/W)	1.9
RD11	0.4	Lot 3 Section 11	100% Federal	2.4 (50' R/W)	1.2
RJ11	0.9	Lot 2, NWSE, SWNE Section 11	93% Federal; 7% Private	8.2 (75' R/W)	2.7
RM11	1.2	NESE, SWNE Section 10 SWSW Section 11	85% Federal; 15% Private	7.3 (50' R/W)	3.6
RG16	0.6	NWNW Section 15, NENE, SENE Section 16	94% Federal; 6% Private	5.5 (75' R/W)	1.8
RN16	0.5	SWNE, NWSE, NESW, & SESW Section 16	76% Federal; 24% Private	4.5 (75' R/W)	1.5
Subtotal	6.0			48.0 acres	18.2 acres
<i>Pipeline Corridor*</i>	<i>Length (miles)</i>				
RM11	0.4	NWSE, SWNW Section 11	100% Federal	2.7 (55' R/W)	0.0
Subtotal	0.4			2.7 acres	
GRAND TOTAL	6.4 miles			80.5 acres	27.2 acres
Notes: Short-term disturbance road width estimated at width shown in Table and long-term road disturbance width was estimated at 25 feet. The long-term disturbance area and road & pipeline lengths for each well pad were taken from survey plats provided by Wasatch Surveying of Evanston, WY in February and July of 2006. Short-term disturbance area for well pads was estimated at 1.5 acre/pad.					
* Pipelines serving proposed well pads would be buried within 75 ft disturbance corridor alongside proposed access road except for RM11 pad listed which has separate 55 foot pipeline right-of-way as shown.					

These interim reclamation techniques would reduce the amount of surface disturbance from the 29.8 acres associated with initial construction to an estimated 9 acres (see Table 1). The 9 acres of disturbance would remain over the life of the project (i.e., 20 to 30 years).

Two of the proposed pads, RD11 and RM11, would be located on Federal surface that is not part of a Federal lease (i.e., the mineral estate is privately held). Therefore, EnCana proposes to apply to the BLM for a right-of-way authorization that would grant legal access to these locations for well pad construction and drilling.

Existing Well Pads

The six existing well pads were constructed using the same general methodology as proposed for the new pads. The development of the wells proposed for five of the six locations would not require additional new surface disturbance. The developments of wells on one of the existing pads (i.e., RD10) would require that the pad be reconfigured slightly. The reconfiguration would result in approximately 1 acre of new surface disturbance. The development of the existing wells pads on Federal surface or involving Federal mineral estate (i.e., RA10, RA11, RD16, RK10, and RJ10) would be subject to the same mitigation measures as described for the proposed well pads, while the development of RD10 would be subject to state authority.

It is assumed that the existing well footprint would suffice for the proposed wells or that the proposed wells will satisfy language presented in BLM Washington Office Instruction memorandum No. 2005-247 (dated 9/30/05) which states:

“Additional disturbance or expansion of the existing well pad is not restricted as long as it is tied to the original location or well pad. This provision does not extend to new well sites merely in the general vicinity of the original location or well pad.”

Table 2. Existing Pad Locations.			
<i>Well Pads</i>	<i>Mineral Lease</i>	<i>Legal Description (T. 7S., R. 94W.)</i>	<i>Surface Ownership</i>
RA10	C-46032	Lot 2, Section 10	100% Federal
RA11	C-56040	Lot 1, Section 11	100% Federal
RD 10	Fee	Lot 4, Section 10	100% Private
RD16	C-46034	NWNW, Section 16	100% Federal
RK10	C-46032	NESW, Section 10	100% Federal
RJ10	C-46032	NWSE, Section 10	100% Private

Proposed Access Roads

In general, access to the area would be from Interstate 70 at the Rifle exit (i.e., Exit 90). Vehicles would travel west on Garfield County Road 317 (Beaver Creek Road), Garfield County Road 325 (Porcupine Creek Road), or Garfield County Road 329 (Spruce Creek Road) to reach the proposed and existing pads in the project area.

Within the project area, the road network would extend from existing ranch access roads and other two-track roads to provide access to the pad locations (see Figure 1). The extension of the road network would involve the construction of approximately 6 miles of new roads. The roads would be constructed or upgraded to meet standards for the anticipated traffic flow and all-weather requirements.

Roads and the majority of proposed pipelines would be constructed within a 75-foot right-of-way (ROW), which would be reduced to a 25-foot running surface (including bar ditch) after interim reclamation (see Table 1). Bulldozers and/or road graders would first clear vegetation and topsoil from the ROW. The roads would then be constructed using standard equipment and techniques approved by the BLM, which could include ditching, draining, crowning, surfacing, sloping, and dipping the roadbed as necessary.

The average road grade would be 10% or less, wherever possible. The 10% grade would only be exceeded in areas where physical terrain or unusual circumstances require it. Minimum horizontal curve radii would be 100 feet. Where terrain would not allow a 100-foot curve radius, the curve would be widened. Road construction would result in approximately 48 acres of short-term surface disturbance. Following interim reclamation, the long-term surface disturbance would be approximately 18.2 acres.

Where required, drainage crossings would be of the typical dry creek drainage crossing type. Crossings would be designed to minimize siltation and the accumulation of debris in the drainage crossing. Water diversions including cutouts would be placed at frequent intervals along access roads to prevent the erosion of drainage ditches, as described in the *Surface Operating Standards for Oil and Gas Exploration & Development* (USDI and USDA 2006)

The access roads would be inspected and maintained on a quarterly basis, at a minimum, and could include such actions as:

- grading of the road surface
- cleaning relief ditches, culverts, and cattle guards
- implementing supplemental erosion control measures
- closing roads in periods of excessive soil moisture
- implementing road and slope stabilization measures
- conducting weed control
- applying dust abatement measures.

Various segments of the proposed and existing access roads are not located on EnCana's lease holdings. In order to gain legal access for the use of existing roads and the construction and use of the proposed roads, EnCana intends to apply for a ROW authorization that would grant access across BLM-administered lands not located on their lease holdings. EnCana would apply for authorizations for an existing road that would provide access from Beaver Creek Road (CR 317) and for proposed road segments RM11 and parts of RA11 and RO10.

Proposed Gas Gathering and Water Pipelines

A gas gathering and produced water pipeline network would be needed to gather and deliver gas offsite to existing EnCana trunk pipelines and transport produced water to centralized tank batteries within and outside the project area.

Approximately 6.4 miles of pipelines would be installed as part of the proposed action (see Figure 1). Six miles of pipelines would be collocated with the access roads and would be buried within the 75-foot access road ROW. An additional 0.4 mile of pipeline, which would serve proposed pad RM11, would be constructed within its own 55-foot ROW. Because they would be located with proposed access roads, the construction of the 6 miles of pipeline would result in no additional disturbance over the long-or short-term. The construction of the 0.4 mile segment of pipeline would result in approximately 2.7 acres of short-term surface disturbance, which would be eliminated after reclamation.

All pipelines would be buried to a minimum depth of 4 feet from surface to top of pipe. The pipeline trench would be excavated mechanically; pipe segments would then be welded together and tested, lowered into the trench, and covered with excavated material. Generally, a mile of pipeline would be constructed in 4 to 6 days.

Each pipeline would be pressure tested with fresh water and/or nitrogen gas to locate any leaks. Fresh water or nitrogen used for testing would be obtained offsite and transported to the testing location by truck. After testing, the water would be disposed of at an existing offsite evaporation pond facility, or discharged into surface water drainages if approved by the BLM and the State of Colorado. Nitrogen would be vented to the atmosphere if used instead of water.

Mitigation Common to All Construction Operations

All trees removed during construction activities would be cut to a maximum stump height of 6 inches and cut into 4-foot lengths. The lengths would be stacked off location, or windrowed to serve as silt catchments. Trees would not be dozed off the construction location, except on private surface with landowner consent. Trees may also be used on pipeline routes as part of final reclamation.

Cut pinyon pine trees would be chipped, buried, or disposed to prevent the spread of the pinyon *Ips* beetle. Rootballs would be buried, placed offsite, or scattered over the disturbed area as part of final reclamation. Other vegetation, such as sagebrush and other shrubs, may be scattered offsite or placed on well pad fills to help screen the pads.

Drilling and Completion

Up to 68 wells would be drilled as part of the proposed action (Table 3). The number of wells proposed for drilling in 2007 is 23. Production results from these wells would be used to plan the 2008 and 2009 drilling programs.

EnCana's drilling operations would be conducted in compliance with all Federal Oil and Gas Onshore Orders, and all applicable rules and regulations. The drilling operation would be conducted in two phases. The first phase may use a small drilling rig to drill to a depth of approximately 630 – 1,500 feet, or 50 feet below the base of any freshwater aquifers encountered. This surface hole would be cased with steel casing and cemented in place entirely from a depth of about 630 – 1,500 feet to ground level. This surface casing would serve the purposes of providing protection for any freshwater aquifers present and to contain pressure that may be encountered while drilling deeper. The BLM would be notified in advance of running surface casing and cement in order to witness these operations. This part of the drilling operation would normally take 2 to 3 days to complete.

Prior to drilling below the surface casing, a Blowout Preventer (BOP) would be installed on the surface casing, and both the BOP and surface casing would be tested for pressure integrity. The BOP and related equipment would meet the minimum requirements of Onshore Oil and Gas Order No. 2, and the BLM would be notified in advance of all pressure tests. Following the use of the surface-hole rig, if used, a larger drilling rig would be used to drill to target depths of about 6,600 to 9,700 feet. A downhole mud motor may be used to increase penetration rate. The rig would pump drilling fluids to drive the mud motor, cool the drill bit, and remove cuttings from the well bore.

In order to achieve borehole stability, minimize possible damage to the formations, provide adequate viscosity to carry the drill cuttings out of the well bore, and reduce downhole fluid losses, various non-toxic chemicals and certain materials may need to be added to the mud system.

Table 3. Locations of Proposed Wells.

<i>Lease</i>	<i>Pad</i>	<i>Proposed Wells</i>	<i>Surface Location (T. 7S., R. 94W.)</i>	<i>Bottom Hole Location (T. 7S., R. 94W.)</i>
C-46032	Existing RA10 (Four wells)	Federal 10-8	Section 10, 518 ft FNL& 895 ft FEL	Section 10, 1980 ft FNL & 450 ft FEL
		Federal Savage 11-4	Section 10, 509 ft FNL & 913 ft FEL	Section 11, 660 ft FNL & 660 ft FWL
		Federal Savage 10-7	Section 10, 475 ft FNL & 967 ft FEL	Section 10, 1600 ft FNL & 1980 ft FEL
		Federal 10-8A	Section 10, 535 ft FNL & 877 ft FEL	Section 10, 1390 ft FNL & 450 ft FEL
	Existing RJ10 (Three wells)	Savage Federal 10-10B	Section 10, 2383 ft FSL & 2094 ft FEL	Section 10, 1980 ft FSL & 1980 ft FEL
		Savage Federal 10-15A	Section 10, 2374 ft FSL & 2112 ft FEL	Section 10, 1270 ft FSL & 1980 ft FEL
		Federal 10-9A	Section 10, 2392 ft FSL & 2076 ft FEL	Section 10, 2580 ft FSL & 400 ft FEL
	Existing RK10 (Six wells)	Savage Federal 10-12	Section 10, 2091 ft FSL & 1344 ft FWL	Section 10, 1980 ft FSL & 660 ft FWL
		Savage Federal 10-14	Section 10, 2088 ft FSL & 1359 ft FWL	Section 10, 660 ft FSL & 1980 ft FWL
		Savage Federal 10-5C	Section 10, 2094 ft FSL & 1329 ft FWL	Section 10, 2640 ft FSL & 330 ft FWL
		Savage Federal 10-13A	Section 10, 2085 ft FSL & 1374 ft FWL	Section 10, 1320 ft FSL & 660 ft FWL
		Savage Federal 10-14A	Section 10, 2082 ft FSL & 1389 ft FWL	Section 10, 1320 ft FSL & 1980 ft FWL
		Savage Federal 10-6D	Section 10, 2079 ft FSL & 1404 ft FWL	Section 10, 2570 ft FSL & 1980 ft FWL
	New RO10 (Three wells)	Savage Federal 10-15	Section 10, 307 ft FSL & 1366 ft FEL	Section 10, 660 ft FSL & 1980 ft FWL
		Federal 10-16	Section 10, 299 ft FSL & 1338 ft FEL	Section 10, 660 ft FSL & 660 ft FWL
		Federal 10-9D	Section 10, 303 ft FSL & 1352 ft FEL	Section 10, 1320 ft FSL & 660 ft FWL
C-56040	Existing RA11 (Two wells)	Federal 11-1D	Section 11, 600 ft FNL & 837 ft FEL	Section 11, 1300 ft FNL & 660 ft FEL
		Federal 11-7A	Section 11, 610 ft FNL & 825 ft FEL	Section 11, 1300 ft FNL & 1980 ft FEL
	New RJ11 (Nine wells)	Federal 11-10	Section 11, 2222 ft FSL & 2288 ft FEL	Section 11, 1980 ft FSL & 1980 ft FEL
		Federal Savage 11-11	Section 11, 2203 ft FSL & 2295 ft FEL	Section 11, 1980 ft FSL & 1980 ft FWL
		Federal 11-9	Section 11, 2240 ft FSL & 2280 ft FEL	Section 11, 1980 ft FSL & 660 ft FEL
		Federal 11-10A	Section 11, 2259 ft FSL & 2250 ft FEL	Section 11, 2640 ft FSL & 1980 ft FEL
		Federal 11-16	Section 11, 2203 ft FSL & 2273 FEL	Section 11, 660 ft FSL & 660 ft FEL
		Federal 11-16A	Section 11, 2222 ft FSL & 2266 ft FEL	Section 11, 1320 ft FSL & 660 ft FEL
		Federal 11-9A	Section 11, 2240 ft FSL & 2258 ft FEL	Section 11, 2640 ft FSL & 660 ft FEL
		Federal 11-15	Section 11, 2184 ft FSL & 2325 ft FEL	Section 11, 660 ft FSL & 1980 ft FEL

Table 3. Locations of Proposed Wells.

<i>Lease</i>	<i>Pad</i>	<i>Proposed Wells</i>	<i>Surface Location (T. 7S., R. 94W.)</i>	<i>Bottom Hole Location (T. 7S., R. 94W.)</i>
		Federal 11-15A	Section 11, 2203 ft FSL & 2317 ft FEL	1320 ft FSL & 1980 ft FEL
FEE	Existing RD10 (Three wells)	Savage Cooper 10-4B	Section 10, 928 ft FNL & 1162 ft FWL	Section 10, 300 ft FNL & 660 ft FWL
		Savage Cooper 10-3D	Section 10, 943 ft FNL & 1162 ft FWL	Section 10, 1100 ft FNL & 2110 ft FWL
		Savage Cooper 10-4C	Section 10, 958 ft FNL & 1162 ft FWL	Section 10, 1130 ft FNL & 330 ft FWL
	New RD11 (Five wells)	Federal Savage 11-3	Section 11, 1012 ft FNL & 1250 ft FWL	Section 11, 660 ft FNL & 1980 ft FWL
		Federal Savage 11-5	Section 11, 1017 ft FNL & 1231 ft FWL	Section 11, 1980 ft FNL & 660 ft FWL
		Federal Savage 11-5A	Section 11, 1039 ft FNL & 1227 ft FWL	Section 11, 1320 ft FNL & 660 ft FWL
		Federal Savage 11-6	Section 11, 1034 ft FNL & 1246 ft FWL	Section 11, 1980 ft FNL & 1980 ft FWL
		Federal Savage 11-6A	Section 11, 1028 ft FNL & 1266 ft FWL	Section 11, 1320 ft FNL & 1980 ft FWL
	New PM11 (Seven wells)	Federal Savage 11-12A	Section 11, 1785 ft FSL & 1151 ft FWL	Section 11, 2600 ft FSL & 660 ft FWL
		Federal Savage 11-13A	Section 11, 1770 ft FSL & 1165 ft FWL	Section 11, 1320 ft FSL & 660 ft FWL
		Federal Savage 11-14	Section 11, 1755 ft FSL & 1179 ft FWL	Section 11, 660 ft FSL & 1980 ft FWL
		Federal Savage 11-11A	Section 11, 1800 ft FSL & 1158 ft FWL	Section 11, 2600 ft FSL & 1980 ft FWL
		Federal Savage 11-12	Section 11, 1785 ft FSL & 1172 ft FWL	Section 11, 1980 ft FSL & 660 ft FWL
		Federal Savage 11-13	Section 11, 1770 ft FSL & 1186 ft FWL	Section 11, 660 ft FSL & 660 ft FWL
C-46034	Existing RD16 (Five wells)	Federal 16-3	Section 16, 562 ft FNL & 1302 ft FWL	Section 16, 660 ft FNL & 1980 ft FWL
		Federal 16-4	Section 16, 601 ft FNL & 1280 ft FWL	Section 16, 660 ft FNL & 660 ft FWL
		Federal 16-5	Section 16, 627 ft FNL & 1265 ft FWL	Section 16, 1980 ft FNL & 660 ft FWL
		Federal 16-5A	Section 16, 614 ft FNL & 1273 ft FWL	Section 16, 1320 ft FNL & 660 ft FWL
		Federal 16-6A	Section 16, 575 ft FNL & 1294 ft FWL	Section 16, 1320 ft FNL & 1980 ft FWL
	New RG16 (11 wells)	Federal 16-10	Section 16, 2173 ft FNL & 1450 ft FEL	Section 16, 1980 ft FSL & 1980 ft FEL
		Federal 16-2	Section 16, 2125 ft FNL & 1386 ft FEL	Section 16, 660 ft FNL & 1980 ft FEL
		Federal 16-8	Section 16, 2159 ft FNL & 1398 ft FEL	Section 16, 1980 ft FNL & 660 ft FEL
		Federal 16-1	Section 16, 2147 ft FNL & 1382 ft FEL	Section 16, 660 ft FNL & 660 ft FEL
		Federal 16-10A	Section 16, 2161 ft FNL & 1434 ft FEL	Section 16, 2640 ft FNL & 1980 ft FEL

Table 3. Locations of Proposed Wells.

<i>Lease</i>	<i>Pad</i>	<i>Proposed Wells</i>	<i>Surface Location (T. 7S., R. 94W.)</i>	<i>Bottom Hole Location (T. 7S., R. 94W.)</i>
		Federal 16-16A	Section 16, 2195 ft FNL & 1446 ft FEL	Section 16, 1320 ft FSL & 660 ft FEL
		Federal 16-7	Section 16, 2149 ft FNL & 1418 ft FEL	Section 16, 1980 ft FNL & 1980 ft FEL
		Federal 16-7A	Section 16, 2137 ft FNL & 1402 ft FEL	Section 16, 1320 ft FNL & 1980 ft FEL
		Federal 16-8A	Section 16, 2135 ft FNL & 1366 ft FEL	Section 16, 1320 ft FNL & 660 ft FEL
		Federal 16-9	Section 16, 2183 ft FNL & 1430 ft FEL	Section 16, 1980 ft FSL & 660 ft FEL
		Federal 16-9A	Section 16, 2171 ft FNL & 1414 ft FEL	Section 16, 2640 ft FNL & 660 ft FEL
	New RN16 (10 wells)	Federal 16-11	Section 16, 1229 ft FSL & 2362 ft FWL	Section 16, 1980 ft FSL & 1980 ft FWL
		Federal 16-11A	Section 16, 1248 ft FSL & 2367 ft FWL	Section 16, 2640 ft FSL & 1980 ft FWL
		Federal 16-12	Section 16, 1244 ft FSL & 2346 ft FWL	Section 16, 1980 ft FSL & 660 ft FWL
		Federal 16-12A	Section 16, 1263 ft FSL & 2351 ft FWL	Section 16, 2640 ft FSL & 660 ft FWL
		Federal 16-13	Section 16, 1206 ft FSL & 2336 ft FWL	Section 16, 660 ft FSL & 660 ft FWL
		Federal 16-13A	Section 16, 1225 ft FSL & 2341 ft FWL	Section 16, 1320 ft FSL & 660 ft FWL
		Federal 16-14	Section 16, 1187 ft FSL & 2331 ft FWL	Section 16, 660 ft FSL & 1980 ft FWL
		Federal 16-14A	Section 16, 1210 ft FSL & 2357 ft FWL	Section 16, 1320 ft FSL & 1980 ft FWL
		Federal 16-15	Section 16, 1172 ft FSL & 2347 ft FWL	Section 16, 660 ft FSL & 1980 ft FEL
		Federal 16-15A	Section 16, 1191 ft FSL & 2352 ft FWL	Section 16, 1320 ft FSL & 1980 ft FEL

For the directional wells, an S-shaped directional design would be used to reach the targeted bottomhole locations. In general, a target radius of 200 feet would be used. Specific directional plans for each well will be included with the APDs. Downhole operations would be done with tools to facilitate proper direction and path of the well.

All well pads would have a lined reserve pit to receive the drill cuttings from the well bore (e.g., shale, sand, and miscellaneous rock minerals) and to contain drilling fluids carried over with the cuttings. No hazardous substances would be placed in the pit. Frac pits to contain water used in the completion process would be planned for each new pad location in this GAP. Frac pits would be lined.

Compliance with Onshore Order No. 1 would determine the timing and closure of frac pits. In instances where well drilling would occur in more than one drilling season on a pad, the frac pit would be drained dry prior to winter shutdown period or before the expiration of the 90-day period as mandated by Onshore Order No. 1, whichever occurs first.

After drilling the hole to its final depth, logging tools would be run into the well to evaluate the potential hydrocarbon resource. If the evaluation indicates adequate hydrocarbon resources are present and recoverable, steel production casing would be run and cemented into place in accordance with the well design as approved by the BLM and any applicable Conditions of Approval (COAs). The proposed casing and cementing program would be designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. BLM approval is required prior to the use of any isolating medium other than cement.

After production casing has been cemented in place, the drilling rig would be removed, and a completion rig would be moved in. Well completion consists of running a Cement Bond log to evaluate cement integrity and to correlate the cased hole logs to the open hole logs. The casing is then perforated across the hydrocarbon producing zones, and the formation is stimulated to enhance the production of oil and gas. The typical method used for stimulation consists of a hydraulic fracture treatment in which sand and non-toxic fluids are pumped into the producing formation with sufficient pressure to fracture the rock formation. The sand serves as a propellant to keep the created fracture open, thereby allowing reservoir fluids to move more efficiently into the well bore.

A natural gas well in this GAP would require about 12-15 days to drill and approximately 30-45 days to complete. Pads with multiple well bores would be occupied for a more extended period of time, depending on the number of well bores. When possible, all well bores planned on individual pads would be drilled and completed within one drilling season and the pad reclaimed. If, due to the exploratory nature of this GAP, all well bores are not drilled, EnCana may request approval to leave the pad and pits open until the following drilling season. If granted, all pits would be pumped dry, the liner removed, and the pit fenced.

Production - Operation and Maintenance

Surface Facilities

Surface facilities at each well pad location would consist of wellheads, separation/dehydration units, and aboveground condensate and produced water tanks with approximately 300- to 400-barrel capacities. Multi-well locations would share production equipment, whenever feasible, to minimize surface occupancy/disturbance. All production equipment would be painted to match the surrounding terrain and located to reasonably minimize visual impact. BLM would select the

color for all facilities, including containment rings, at sites associated with Federal surface or with the development of Federal mineral estate. In situations where both the surface and mineral estate are privately held, the BLM would recommend colors to the landowner.

The production equipment would be fenced within a 45-foot by 25-foot area to prevent contact with wildlife and livestock. Telemetry equipment would be used to remotely monitor well conditions after a reasonable level of development. The use of telemetry would minimize traffic to and from the well locations. Automated tank gauging would also be employed to minimize the risk of spills.

Tank batteries would be placed within secondary containment to prevent the offsite migration of accidentally spilled condensate or produced water. Secondary containment would consist of corrugated steel containment berms or earthen berms. Compaction and construction of earthen berms surrounding the tank batteries would be performed to prevent lateral movement of fluids through the utilized materials. Secondary containment would be sized to contain a minimum of 110 percent of the storage capacity of the largest tank within the berm. All loading lines would be placed inside the containment berm.

Centralized compression would take place when possible to minimize the area impacted by compressor noise. If production requirements make onsite compression necessary, a Sundry Notice (Form 3160) would be submitted for approval to the Authorized Officer detailing specifications prior to installation of compressors.

Produced water may be confined to the reserve pit for a period of 90 days after initial production. Produced water at well pads would be transported by truck or buried pipeline to EnCana's existing Hunter Mesa water treatment facility in the Mamm Creek Field, and/or trucked offsite to an approved disposal facility. Condensate would be transported to market by tanker trucks.

Interim Reclamation

After completion activities, EnCana would reduce the size of the well pad to the minimum surface area needed for production facilities and future workovers, while providing for reshaping and stabilization of cut and fill slopes. In brief, interim reclamation would be accomplished by grading, leveling, and seeding, as recommended by the BLM. Interim reclamation would reduce the disturbed area at each pad to approximately 1.5 acres after well development.

The following is a summary of interim reclamation activities that would take place immediately after well completion:

- The well location and surrounding areas(s) would be cleared of all debris, materials, and trash not required for production. Other waste and spoil materials would be disposed of at a local landfill.
- All pits, cellars, rat holes and other bore holes not necessary for further lease operations, excluding the reserve pit, would be back-filled immediately to conform to surrounding terrain. Pits, cellars, and/or boreholes required for further lease operations would be fenced.
- Any hydrocarbons in the reserve pit would be removed in accordance with 43 CFR 3162.7. The reserve pit would then be completely dried and all cans, barrels, pipe, etc. would be removed. The accessible portion of pit liner would be removed to the local landfill and the

remaining buried part of liner would be backfilled in place with native soils and materials. The backfilling of the reserve pit would be done in such a manner that the mud and associated solids would be confined to the pit and not squeezed out and incorporated into the surface materials. The backfilled pit would be covered with a minimum of 3 feet of overburden. When work is complete, the pit area would support heavy equipment without sinking.

- Areas not necessary for production and future workovers would be reshaped to resemble the original landscape contour. Stockpiled topsoil would be redistributed and disked on the area to be reclaimed and reseeded according to BLM recommendations. In the case of private surface and mineral locations, a seed mixture would be recommended to the landowner.

Interim reclamation would be completed within 90 days from the date of well completion, weather permitting. Dry or non-producing well locations would be plugged, abandoned and reclaimed within 90 days of well completion, weather permitting.

Some locations would require special reclamation practices. These practices could include hydromulching, straw mat application, fertilizing, seedbed preparation, contour furrowing, watering, terracing, water barring, and topsoil replacement. In order to prevent grazing pressure, pads would be fenced for the first two growing seasons or until the seeded species have established.

Workovers or Recompletion

Periodically, the workover or recompletion of a well may be required to ensure that efficient production is maintained. Workovers can include repairs to the well bore equipment (e.g., casing, tubing, rods, or pump), the wellhead, or the production facilities. These repairs would usually be completed during daylight hours. The frequency of this type of work cannot be accurately projected because workovers vary from well to well; however, an average may be one workover per well per year for a period of 7 days. In the case of multi-well pads, space for equipment would usually be limited to the “in-use” (i.e., disturbed) area of the surface location, although it is possible that interim reclamation could be delayed by workover operations. In the case of a well recompletion, a reserve pit may have to be constructed.

Abandonment and Reclamation

Well and Pipeline Plugging and Abandonment

Upon abandonment, each borehole would be plugged, capped, and its related surface equipment removed. Subsurface pipelines would be plugged at specific intervals. A Sundry Notice would be submitted by the operator to the BLM that describes the engineering, technical, or environmental aspects of final plugging and abandonment. This notice would describe final reclamation procedures and any mitigation measures associated with the final reclamation performed by the operator. The BLM and Colorado Oil & Gas Conservation Commission (COGCC) standards for plugging would be followed. A configuration diagram, a summary of plugging procedures, and a job summary with techniques used to plug the well bore (e.g., cementation) would be included in the Sundry Notice.

Final Reclamation

All surface disturbances would be recontoured and revegetated in accordance with the GSRA reclamation policy, including control of noxious weeds (USDI 1999b). One of EnCana's goals is to accomplish as much reclamation during the life of the well as possible, even on those pads with a large final reclamation or "in use" area. Unreclaimed areas or reclaimed areas that do not meet the objective of 3-to-4 years of sustained reclamation (i.e., operator complete) would undergo the reclamation retreatment measures described in the 13-Point Surface Use Plan (Appendix B).

EnCana would restore the well locations and access roads to approximately their original contours. During reclamation of these sites, fill material would be pushed into cuts and over the backslope. No depressions would be left that would trap water or form ponds. Upon completion of backfilling, leveling and recontouring, the stockpiled topsoil would be evenly spread over the reclaimed areas(s). All disturbed surfaces would be reseeded with a seed mixture approved or recommended by the BLM. The seedbed would then be prepared by disking and roller packing following the natural contours. Seed would be drilled on contours at a depth no greater than 0.5 inch. In areas that cannot be drilled-seeded, seed would be broadcast-seeded at double the seeding rate and harrowed into the soil. All seeding would be conducted after September 1 and prior to ground frost. Spring seeding would be conducted after the frost leaves the ground but no later than May 15. If the seeding is unsuccessful, EnCana may be required to make subsequent seedings.

Reclamation would be considered successful when the objectives described in the GSRA reclamation policy are achieved. To summarize these objectives, revegetation would be considered successful when the following objectives are met:

- *Immediate short term:* Establishment of desirable perennial vegetation by end of the second growing season, capable of renewing itself.
- *Acceptable establishment:* Acceptable level of desirable vegetation by the end of the fifth growing season.
- *Long-term establishment:* Level of revegetation approximates the original, pre-disturbance condition, in terms of canopy cover and species composition.

Weed Management

Noxious weeds and other undesirable plant species inadvertently introduced due to soil disturbance during construction activities would be monitored and treated over the life of the project by methods approved by the Authorized Officer. Any herbicides needed for the control of noxious weeds and other undesirable species would be identified in a Pesticide Use Permit (PUP). The PUP would be placed on record with the BLM.

THE NO ACTION ALTERNATIVE

The proposed action involves Federal subsurface minerals that are encumbered with Federal oil and gas leases, which grant the lessee a right to explore and develop the lease. Although BLM cannot deny the right to drill and develop the leasehold, individual APDs can be denied to prevent unnecessary and undue degradation. The no action alternative constitutes denial of the APDs associated with the proposed action.

However, there are elements of the proposed action that do not require Federal approval prior to implementation. For example, the 3 proposed fee wells on the existing private pad RD10 are not located on a Federal lease and would probably be developed even if the APDs associated with the Federal leases are denied.

Although the development of the fee wells would not result from the selection of the no action alternative *per se*, impacts to the affected environment would occur from the development of the fee location. These effects provide the basis for comparison to the impacts of the proposed action. This comparison is important because it shows what would happen if the proposed action were not taken.

For the purpose of the following comparative analysis, the no action alternative is associated with the drilling and development of 3 fee wells on 1 existing fee pad, but the development of up to 65 wells and associated access roads and pipelines involving Federal surface and/or Federal mineral estate would not occur.

The development of this location would involve the expansion of the existing RD10 pad by approximately 1 acre to accommodate the three proposed wells. Access to the pad would be by Garfield County Road 320, Garfield County Road 329, and BLM Road 8175. No new access roads would be required.

Gas and produced water would be transported offsite through existing pipelines. Construction, drilling and completion, production, interim reclamation, workovers or recompletion, final abandonment, final reclamation, and weed management would generally follow the methods, including mitigation measures, presented in the proposed action.

SUMMARY OF LEASE AND GRANT STIPULATIONS

Each of EnCana's Federal oil and gas leases include stipulations intended to protect natural resource values. Table 4 provides a summary of lease and grant stipulations that would apply to the proposed action. Not all elements of the proposed action are subject to the same stipulations, however.

Road right-of-way (#COC-65900) issued in 2002 has a term and condition requiring a wildlife winter timing limitation from December 1 through April 30. The winter timing limitation would prohibit construction, drilling, or completion traffic on the subject right-of-way that was serving BLM land in Sections 10 and 16 and the proposed RM11 pad SW¹/₄ of Section 11. Exception language for the timing limitation exists in the terms and conditions.

The lease stipulations would not apply to the existing RD10 pad modifications and the 3 wells proposed in the No Action alternative, since these actions do not occur on a Federal lease. However, the timing limitation stipulation described in Right-of-way Grant COC 65900 (BLM Road 8175) would apply, because this road is proposed for access during the development of this private location.

Although these lease stipulations do not apply to all of the elements of the proposed action and no action alternative, these and any other protective measures deemed appropriate by the Authorized Officer could be applied as COAs on individual APDs.

Table 4. Summary of Lease Stipulations and Road Right-of-Way Grant Terms and Conditions Associated with the RGAP Area.		
<i>Lease/Grant Number</i>	<i>Legal Description of Stipulation/Condition</i>	<i>Lease Stipulation or Grant Terms and Conditions</i>
Oil & Gas Lease COC 46032 (1987)	T.7S., R.94W., Section 10: S1/2NW1/4, SW1/4	Timing Limitation: In order to protect important seasonal wildlife habitat, exploration, drilling, and other development will be allowed only during the period from April 30 to January 15. This limitation does not apply to maintenance and operation of producing wells. Exceptions to this limitation in any particular year may be specifically approved by the appropriate District Manager of the BLM.
Oil & Gas Lease COC 46034 (1987)	T.7S., R.94W., Section 16 (entire)	Timing Limitation: In order to protect important seasonal wildlife habitat, exploration, drilling, and other development will be allowed only during the period from April 30 to January 15. This limitation does not apply to maintenance and operation of producing wells. Exceptions to this limitation in any particular year may be specifically approved by the appropriate District Manager of the BLM.
Oil & Gas Lease COC 56040 (1994)	T.7S., R.94W., Section 11: SE1/4NE1/4, SE1/4	Controlled Surface Use: Prior to surface disturbance of fragile soils, it must be demonstrated to the Authorized Officer through a plan of development that certain performance objectives will be met.
	All lands	Lease Notice: inventory for fossil resources may be required if present. Lease Notice: inventory for biological and/or botanical resources may be required if present.
Road Right-of-Way Grant COC 65900 (2002)	T.7S., R.94W., Section 9: Lot 7 E1/2SW1/4, N1/2 SE1/4	Timing Limitation: Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: "Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months.

LAND USE PLAN CONFORMANCE REVIEW

The proposed action and no action alternative are subject to and have been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

Name of Plan: Glenwood Springs Resource Management Plan (USDI 1984).

Date Approved: Amended in November 1991 - Oil and Gas Leasing and Development – Final Supplemental Environmental Impact Statement; amended in March 1999 – Oil and Gas Leasing & Development Final Supplemental Environmental Impact Statement

Decision Number/Page: Record of Decision, Glenwood Springs Resource Management Plan Amendment, November 1991, page 3. Record of Decision and Resource Management Plan Amendment, March 1999, page 15.

Decision Language: “697,720 acres of BLM-administrated mineral estate within the Glenwood Springs Resource Area are open to oil and gas leasing and development, subject to lease terms and (as applicable) lease stipulations.” This decision was carried forward unchanged in the 1999 RMP amendment (USDI 1999a).

“In areas being actively developed, the operator must submit a Geographic Area Proposal (GAP) that describes a minimum of two to three years activity for operator controlled leases within a reasonable geographic area” (USDI 1999a).

Discussion: The proposed action is in conformance with the 1991 (and 1999) RMP amendments because the Federal mineral estate proposed for development is open for oil and gas leasing and development. In addition, the proposed action describes a multi-year development plan over a large geographic area and, as such, is in conformance with decision to require operators to submit GAPs.

STANDARDS FOR PUBLIC LAND HEALTH

In January 1997, Colorado BLM approved the Standards for Public Land Health. The five standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. The environmental analysis must address whether the proposed action or alternatives being analyzed would result in impacts that would maintain, improve, or deteriorate land health conditions relative to these resources. These analyses are presented below.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the human and natural environment resources that could be affected by the proposed action and no action alternative. In addition, the section presents comparative analyses of the direct and indirect consequences on the affected environment stemming from the implementation of the various actions.

A variety of laws, regulations, and policy directives mandate the evaluation of the effects of a proposed action and alternative(s) on certain critical environmental elements. Not all of the critical elements that require inclusion in this EA are present or, if they are present, may not be affected by the proposed action and alternative (Table 5). Only those mandatory critical elements that are present and affected are described in the following narrative. In addition to the mandatory critical elements, additional resources would be impacted by the proposed action and alternative. These are described in the section titled,

Other Affected Resources.

Critical Environmental Elements

Air Quality

Affected Environment: The proposed action area (i.e., Garfield County) has been described as an attainment area under CAAQS and NAAQS (Colorado Ambient Air Quality Standards and National Ambient Air Quality Standards). An attainment area is an area where ambient air pollution amounts are determined to be below NAAQS standards.

Table 5. Critical Elements of the Human Environment									
Critical Element	Present		Affected		Critical Element	Present		Affected	
	Yes	No	Yes	No		Yes	No	Yes	No
Air Quality	X		X		Prime or Unique Farmlands		X		X
ACECs		X		X	Special Status Species*	X		X	
Cultural Resources	X		X		Wastes, Hazardous or Solid	X		X	
Environmental Justice		X		X	Water Quality, Surface and Ground*	X		X	
Floodplains		X		X	Wetlands and Riparian Zones*	X		X	
Invasive Non-native Species	X		X		Wild and Scenic Rivers		X		X
Migratory Birds	X		X		Wilderness and WSAs		X		X
Native American Religious Concerns	X		X						

* Public Land Health Standard

Proposed Action:

Environmental Consequences: The Roan Plateau RMPA and EIS describe potential effects from oil and gas development (USDI 2006:4-26 to 4-37). Analysis was completed with regard to greenhouse gas emissions, a near-field and far-field analysis for carbon monoxide, particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide, hazardous air pollutants including: benzene, ethylbenzene, formaldehyde, hydrogen sulfide, toluene, and xylenes. Sulfur and nitrogen deposition analysis, acid neutralizing capacity, and visibility screening-level analysis were also completed in the Roan Plateau RMPA and EIS. Findings indicate that no adverse long-term effects would result under that plan. Since the proposed action is within the scope of the reasonable foreseeable development (RFD) scenario analyzed in that document, it is anticipated that the proposed action would be unlikely to have adverse effects on air quality.

Activities described in the proposed action would result in localized short-term increases in vehicle and equipment emissions. Concentrations of emissions would be below applicable ambient air quality standards as analyzed in the Roan Plateau RMPA & EIS. However, it is anticipated that construction and production activities would likely produce high levels of dust in dry conditions without dust abatement. To mitigate dust generated by these activities, the operator would be required to implement dust abatement strategies as needed by watering the access road and construction areas and/or by applying a surfactant approved by the Authorized Officer (Appendix D, Number 2).

No Action Alternative:

Environmental Consequences: The no action alternative would impact the air quality in similar ways to the proposed action. However, since the scope of developments would be far less extensive than under the proposed action, the intensity of the impact would be negligible in comparison.

Cultural Resources

Affected Environment: Section 106 of the National Historic Preservation Act (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470) and its implementing regulations found at 36 CFR Part 800 requires federal agencies to take into account the effects their actions will have on cultural resources for any endeavor that involves Federal monies, Federal permitting or certification, or Federal lands. Because of this, consideration of the environmental consequences of the proposed action extends to all proposed actions within the RGAP, whether the surface ownership is Federal or private.

The RGAP study area covers a total of 7,582 acres. Within this area, 44 cultural resource investigations have occurred covering proposed wells, access roads, pipelines, a ski area, a post sale, range improvement projects, seismic exploration, an electric transmission line, and a prescribed burn (Table 6). These studies are listed by their Glenwood Springs Field Office (GSFO) or Office of Archaeology and Historic Preservation (OAHP) project numbers.

406	1148	9452	5497-10	5498-8	5405-21
GF.FS.R	1161	94102	5497-16	5402-4	5406-6
769	1174	9496A	5497-17	5402-6	5406-6A
778	1175	9496B	5497-18	GF.FS.NR85	5407-8
870	1217	94109	5498-2	5402-15A	
902	1281	1295-1	5498-3	1004-28	
1092	1295	1295-2	5498-4	5404-10	
1114	9451	5497-6	5498-5	1104-4	

Three of these studies were conducted specifically for the RGAP in areas not previously inventoried; a Class I study (5407-8) and two Class III intensive cultural resource inventories (5406-6 and 5406-6A). A Class I study was required since access to conduct a Class III inventory was denied.

The acreage investigated by the Class III inventories was 1,484 acres, or 19.6% of the RGAP study area. The majority of this acreage ($\pm 83\%$) was inventoried on or after 1990 and is considered adequate by current standards.

The RGAP study area includes 29 recorded cultural resources. Of these three (10.4%) are sites eligible or potentially eligible for inclusion on the National Register and are considered to be "historic properties." Seven (24.1%) are sites that are not eligible and 19 (65.5%) are isolated finds (IF). Historic properties within the RGAP study area include: two prehistoric open camps and one prehistoric/historic multi-component site.

Proposed Action

Environmental Consequences: The proposed action has some potential to affect cultural resources identified in the RGAP study area. For archaeological sites, direct impacts result primarily from disturbance of surface and subsurface sediments. For historic properties with protohistoric or historic structural remains, direct impacts result from damage to or destruction of these structures. Direct impacts are generally concentrated in the development phase of the proposed action, though they can happen any time the ground is subject to alteration. Direct impacts to historic properties will be avoided by the proposed action, as currently planned. However, direct impacts to known cultural resources will and have occurred within the RGAP

area. Nine cultural resources are not considered historic properties and avoidance was not required as recording was deemed to fulfill the intellectual information inherent in the resource. Strict adherence to the Education/Discovery Condition of Approval (COA) by EnCana and all of their subcontractors should mitigate the potential occurrence of this adverse impact (Appendix D, Number 4).

Proximity to a cultural resource may in fact adversely impact the significance of a cultural resource by changing the setting, location, association, and feeling particularly for culturally sensitive Native American sites and/or areas of concern. Within the RGAP study area; there are two sites that may be affected by this type of impact.

The proposed action will alter the environmental setting of the project area. It will also affect access to the lands within the RGAP area, primarily by providing new roads and thus new and/or easier access. These changes may not be quantifiable at the level of individual sites, but the cumulative effects of these changes over time and over the entire RGAP area will result in degradation of the condition and integrity to most sites due to the potential for increased surface collection, increased casual travel (which may physically impact sites), and to the integrity of setting, location, association, and feeling for which the surrounding landscape is a part of the site's significance. Mitigation measures designed to reduce these types of impacts are presented in Appendix D (Number 3)

Denial to conduct a Class III inventory is not considered a "routine undertaking" under the Colorado Protocol (1998) of the National BLM/State Historic Preservation Office (SHPO) Programmatic Agreement (1997). As such, formal consultation with the SHPO for the Class I was initiated on November 22, 2006. Concurrence with the determination of "no historic properties affected" for the well and access road covered by the Class I was received on November 30, 2006. No formal consultation was initiated with the SHPO for the Class III inventories, as all historic properties identified during the inventories were avoided by various methods including rerouting and/or relocation of facilities. Based upon the SHPO concurrence with the Class I recommendation, the Class III inventories, and the avoidance of all historic properties the BLM made a determination of "**No Historic Properties Affected**" for EnCana's proposed actions within the RGAP. This determination was made in accordance with the 2001 revised regulations [36CFR 800.4(d)(1)] for Section 106 of the National Historic Preservation Act (16U.S.C 470f), the BLM/SHPO Programmatic Agreement (1997) and Colorado Protocol (1998)].

No Action Alternative

Environmental Consequences: Under this alternative, one pad would be expanded to accommodate three additional wells, the remainder of the 65 wells would not be built, and access would be restricted to existing roads. No new pipelines would be constructed. As a consequence, both known and undiscovered cultural resources and historic properties would be more protected and the potential degradation of site condition and integrity would be reduced or eliminated. Additionally, the information gleaned from the Class III inventories would not have been added the cultural resource data base thereby reducing the information from which cultural resource land managing decisions are based.

Invasive Non-native Species

Affected Environment: Invasive non-native species, including three infestations of Colorado state-listed noxious weeds, are present in the RGAP project area. The first infestation is a dense stand of plumeless thistle (*Carduus acanthoides*) that was observed in an existing road right-of-way near existing well pad RJ10.

A second, more extensive, infestation was observed in 2005 along the Canyon Gas Resources pipeline corridor east of proposed well pad RD11. Noxious weeds found at this location include houndstongue (*Cynoglossum officinale*), cheatgrass (*Bromus tectorum*), musk thistle (*Carduus nutans ssp. macrolepis*), plumeless thistle (*Carduus acanthoides*), Canada thistle (*Cirsium arvense*), and Russian knapweed (*Acroptilon repens*). Other invasive weeds include two-lobed speedwell (*Pocilla biloba*), stickseed (*Lappula squarrosa*), cocklebur (*Xanthium strumarium*), prickly lettuce (*Lactuca serriola*), and yellow and white sweet-clovers (*Melilotus officinale*, *M. albus*).

The third infestation is a 20 x 30 foot area of Russian knapweed located where the Canyon Gas Resources pipeline crosses Porcupine Creek (Scheck, email communication 2/10/06).

Proposed Action:

Environmental Consequences: Noxious weed populations are a threat to land health as they contribute to loss of rangeland productivity, increased soil erosion, reduced species richness, reduced wildlife habitat quality, and reduced aesthetic quality. Surface-disturbing activities create conditions favorable for the invasion and establishment of noxious weeds and other invasive non-native species, particularly when these species are already present in the surrounding area. The presence of noxious weed infestations next to an existing road and along the existing Canyon Gas pipeline within the RGAP area is of particular concern, as these populations would likely expand onto the proposed roads and well pads if not controlled. In addition, heavy machinery and vehicles used by oil and gas personnel have the potential to transport weed seed from other areas. Since numerous noxious and invasive weeds are already present in the RGAP project area, the potential for weed invasion following construction is extremely high. Mitigation measures designed to minimize the spread of invasive non-native species are presented in Appendix D (Number 7).

No Action Alternative:

Environmental Consequences: Compared to the proposed action, the no action alternative would have less potential to promote the spread of noxious weeds because far less ground disturbance would be associated with the development of the existing private pad (i.e., 1 acre versus approximately 80.5 acres). In addition, the ground disturbance that would occur under this alternative would be confined to a single location, while the disturbance under the proposed action would occur at many locations in the project area.

Migratory Birds

Affected Environment: The RGAP project area is comprised primarily of pinyon-juniper and Gambel oak woodlands intermixed with mountain shrubs and small areas of sagebrush. This diversity of habitat types provides cover, forage, and nesting habitat for a variety of migratory birds. Previous oil and gas development activities, which have included the development of 6

well pads, the construction of approximately 5 miles of road and 2 miles of pipeline has fragmented the habitat in portions of the project area.

According to the Southern Rockies/Colorado Plateau Birds of Conservation Concern (BCC) list (USFWS 2002) and the Colorado Breeding Bird Atlas (Colorado Bird Atlas Partnership 1998), four species of conservation concern, the gray vireo (*Vireo vicinior*), pinyon jay (*Gymnorhinus cyanocephalus*), black-throated gray warbler (*Dendroica nigrescens*), and Virginia's warbler (*Vermivora virginiae*) could occur in the project area. Other species that are not on the BCC list but are associated with these habitat types include residents such as the juniper titmouse (*Baeolophus griseus*) and Townsend's solitaire (*Myadestes townsendi*) and migrants such as the common poorwill (*Phalaenoptilus nuttallii*), gray flycatcher (*Empidonax wrightii*), and blue-gray gnatcatcher (*Poliophtila caerulea*).

The results of two recent habitat assessments and raptor surveys (July 2005 and July 2006) indicate that no active nests are presently located within a 0.25 mile radius of the proposed developments (Western Ecological Resource 2005a, 2006a). However, the project area offers suitable foraging and nesting habitat for a variety of raptor species. The suitability of the area was illustrated by the observation of a pair of adult red-tailed hawks (*Buteo jamaicensis*) flying and vocalizing near proposed pads RD11, RJ11 and RM11. These are located within 0.25 mile of Porcupine Creek where suitable nesting habitat is likely to occur. Both birds were calling frequently but did not show any defensive behavior. A more general search of potential nesting habitat was also conducted, but no nests were identified.

Proposed Action:

Environmental Consequences: The proposed action would result in the development of six new well pads and associated roads and pipelines in mostly undisturbed avian habitat, causing the direct loss of a maximum of 81.5 acres currently available for foraging and nesting. Interim reclamation would provide some benefits but a long-term loss of nesting habitat is likely where woodlands are affected.

In addition to direct habitat loss, the implementation of the proposed action would result in a larger area being impacted due to habitat fragmentation. Fragmentation could alter species composition and abundance. Species that require interior habitat could be displaced, while more common species that prefer openings or forest edges could benefit.

Another important mechanism leading a change in breeding bird density and species richness in fragmented habitats is nest predation, which occurs more frequently near forest edges (Dobkin 1994). The most common avian and mammalian nest predators (e.g., American crow, raccoons, and domestic cats) typically occur in higher densities around forest edges (Bider 1968, Whitcomb et al. 1981).

Fragmentation can also increase the risk of nest parasitism by brown-headed cowbirds (*Molothrus alter*), causing declines in local bird populations, including BCC species. These impacts, in conjunction with existing fragmentation and disturbance within and adjacent to the RGAP area, would reduce the value of the largely unfragmented interior habitat available to migratory birds.

Research indicates that noise associated with development and production activities can also lead to lower avian diversity and density in both adjacent and distant areas (Forman 2000, Forman and

Deblinger 2000). Noise can decrease usable habitat for birds by reducing the distance at which calls made by males are heard, impacting mate selection and reproductive potential.

If vegetation is removed for infrastructure development between April 1 and August 15, direct “take” (i.e., destruction) of active nests could occur. Indirect take (e.g., failure due to abandonment of one or both adults) of nearby nests can also occur as a result of intolerance to disturbance, although reactions vary between bird species. Reactions can range from subtle body changes undetectable to human observers to aggressive defense behavior. Some birds may fly away from the nest, appearing undisturbed, leaving nestlings vulnerable to overheating, chilling, predation, or starvation.

The development of reserve pits in the project area may be expected to attract waterfowl and other migratory birds for purposes of resting, foraging, or as a source of free water. The extent and nature of the problem is not well-defined, but birds should be prevented from contacting produced water and drilling and completion fluids which may pose a problem (e.g., acute or chronic toxicity, compromised insulation). Mitigation measures to minimize impacts resulting from contact with these fluids are presented in Appendix D, Number 8).

These impacts may result in a short-term decrease in the local populations of some species such as the pinyon jay and Virginia’s warbler, although a loss of species viability within its overall range is not expected. Other species such as the gray vireo and black-throated gray warbler are less likely to be impacted, because either the project area is on the edge of their geographic range or the scale of habitat loss is within levels tolerated by the species.

No direct effects to nesting raptors are expected as a result of the proposed action. Because upland foraging habitat for raptors is abundant in the area, the proposed action is not expected to impact raptor foraging opportunities or behavior.

In order to protect nesting raptors, a COA is included that would require additional raptor surveys under certain circumstances. Surveys would be required if two years have lapsed between the initial survey and the commencement of new development activities or if changes to the location of planned infrastructure were made after initial surveys were conducted. All potential nesting habitat within 0.25 mile of these developments would be surveyed. If an active raptor nest is located within 0.25 mile of the proposed activity, a 60-day timing limitation during the critical nesting period and/or relocation of the well pad/road/pipeline up to 200 meters may be required. (Appendix D, Number 8).

No Action Alternative:

Environmental Consequences: Under the no action alternative, three additional wells would be developed from one of the existing well pads. The pad would be altered, but this would result in minimal new habitat fragmentation or direct habitat loss. Impacts to migratory birds would be minimal as compared to the proposed action. The greatest increase in disturbance to migratory birds would be related to noise during well development. This would be a localized, short-term event that is not expected to have a negative impact on the breeding population.

Native American Religious Concerns

Affected Environment: The RGAP is located within a larger area identified by the Ute Tribes as part of their ancestral homeland. Cultural resource inventories (see **Cultural Resources**) were conducted to determine if there were any areas that might be culturally sensitive to Native

Americans. No areas were identified during the inventories and none are currently known by the GSFO within the RGAP area. Additionally, the Ute Tribe (Northern Ute), Southern Ute, and Ute Mountain Ute Tribes were notified of the proposed RGAP on January 25, 2007. No responses, questions, or requests for additional information have been received by March 2, 2007.

Proposed Action

Environmental Consequences: Direct impacts of construction have the potential to irreparably damage or destroy buried culturally sensitive sites. Additionally, impacts that affect the physical setting could result in a loss of what makes an area significant. There may also be other unidentified culturally sensitive or significant locations in the area that have not been identified by the Ute tribes. All known Native American sites have been avoided. However, unauthorized modification of roads, pipelines, and well pads may lead to adverse impacts.

The proximity of Native American sites to planned development within the RGAP area may result in indirect impacts that may adversely impact the significance of the resource by changing the setting, location, association, and feeling. Two sites may be affected by this type of impact.

Cumulative impacts of increased development, accesses, construction, operation, and maintenance may also adversely impact these sites, possibly degrading the cultural significance by either destroying the sensitive area or its landscape setting. Impacts to the auditory and visual environment may be of importance in considering values placed on some sites by Native American tribes thus impacting them. Mitigation measures designed to protect resources of potential Native American concern are presented in Appendix A (Numbers 3 and 4).

No Action Alternative

Environmental Consequences: Under this alternative, one pad would be expanded to accommodate three additional wells, the remainder of the 65 wells would not be built, and access would be restricted to existing roads. No new pipelines would be constructed. As a consequence, both known and undiscovered Native American resources would be more protected and the potential degradation of site condition and integrity would be reduced or eliminated. Additionally, the information gleaned from the Class III inventories would not have been added to the cultural resource data base thereby reducing the information from which cultural resource land managing decisions are based.

Special Status Species (includes an analysis on Public Land Health Standard 4)

Affected Environment:

Federally Listed, Proposed, or Candidate Plant Species

Five federally listed or candidate species occur on or have potential to occur on lands administered by the Glenwood Springs Field Office. Only three of these species are currently known to occur in Garfield County. The first, Parachute beardtongue (*Penstemon debilis*), a Federal candidate species, occurs on steep white shale talus of the Parachute Creek Member of the Green River Formation. This species does not occur in the project area because appropriate habitat is lacking.

The second, DeBeque phacelia (*Phacelia submutica*), also a Federal candidate species, occurs on sparsely vegetated steep slopes in clay on Atwell Gulch and Shire Members of the Wasatch

Formation. Although the Shire Member of the Wasatch Formation is mapped on a portion of the project site (Donnell et al. 1989), appropriate habitat is not present because the project area lies at an elevation slightly higher than the known elevation range for the species (i.e., 4,700- 6,200 feet).

The third, Uinta Basin hookless cactus (*Sclerocactus glaucus*), federally listed as threatened, occurs in desert shrub community types that do not occur in the RGAP project area.

Two others species, Dudley Bluffs twinpod (*Physaria obcordata*) and Ute ladies' tresses orchid (*Spiranthes diluvialis*), potentially occur in Garfield County. However, suitable habitat for neither the twinpod nor the orchid is present in the project area.

BLM Sensitive Plant Species

Six BLM sensitive plant species are listed as being potentially present or have been found on lands administered by the Glenwood Springs Field Office. However, suitable habitat for only one species, Harrington's penstemon (*Penstemon harringtonii*), occurs in the project area. The other five species occur on geologic formations not present in the RGAP area, or they occur at lower elevations.

The Colorado Natural Heritage Program (CNHP) has designated Flatiron Mesa, Log Mesa, and its sideslopes as the Flatiron Mesa Potential Conservation Area (PCA) due to the occurrence of Harrington's penstemon (CNHP 2005). Existing pad RA11 and proposed pad RJ11 and its proposed access road, lie within the PCA. In addition, a population of Harrington's penstemon was discovered in 2004 near existing pad RJ10 and in the vicinity of the proposed access route to pad RM11 (WestWater Engineering 2004).

Three surveys for Harrington's penstemon have been conducted in the RGAP area (Western Ecological Resource 2005a, 2005b, 2006). These surveys resulted in the identification of additional potential habitat at proposed pad RO10 and along the easternmost portion of the access route to RO10. Four new subpopulations of Harrington's penstemon were also found along the western portion of the access route to pad RM11 (i.e., subpopulations B1 through B4), and three new subpopulations were found on top of the mesa where pad RO10 and a portion of the access road are proposed (i.e., subpopulations A1, A2, and A3). Figure 3 illustrates the location of populations A and B. In total, 710 plants were found among the two different areas.

Federally Listed, Proposed, or Candidate Animal Species

According to the latest species list from the U. S. Fish and Wildlife Service (Mountain-Prairie Region website), the following federally listed, proposed, or candidate animal species may occur within or be impacted by actions occurring in Garfield County: Canada lynx (*Lynx canadensis*), black-footed ferret (*Mustela nigripes*), bald eagle (*Haliaeetus leucocephalus*), Mexican spotted owl (*Strix occidentalis lucida*), yellow-billed cuckoo (*Coccyzus americanus*), razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), bonytail chub (*Gila elegans*), and humpback chub (*Gila cypha*). The Colorado River and its 100-year floodplain, which lie in proximity to the proposed activity, are designated Critical Habitat for the razorback sucker and Colorado pikeminnow.

Bald eagle nesting and winter habitat exists two miles north of the RGAP area boundary within the 100-year floodplain of the Colorado River. Because of this distance, effects from the proposed action to bald eagle and their habitat are not expected. Habitat for the black-footed

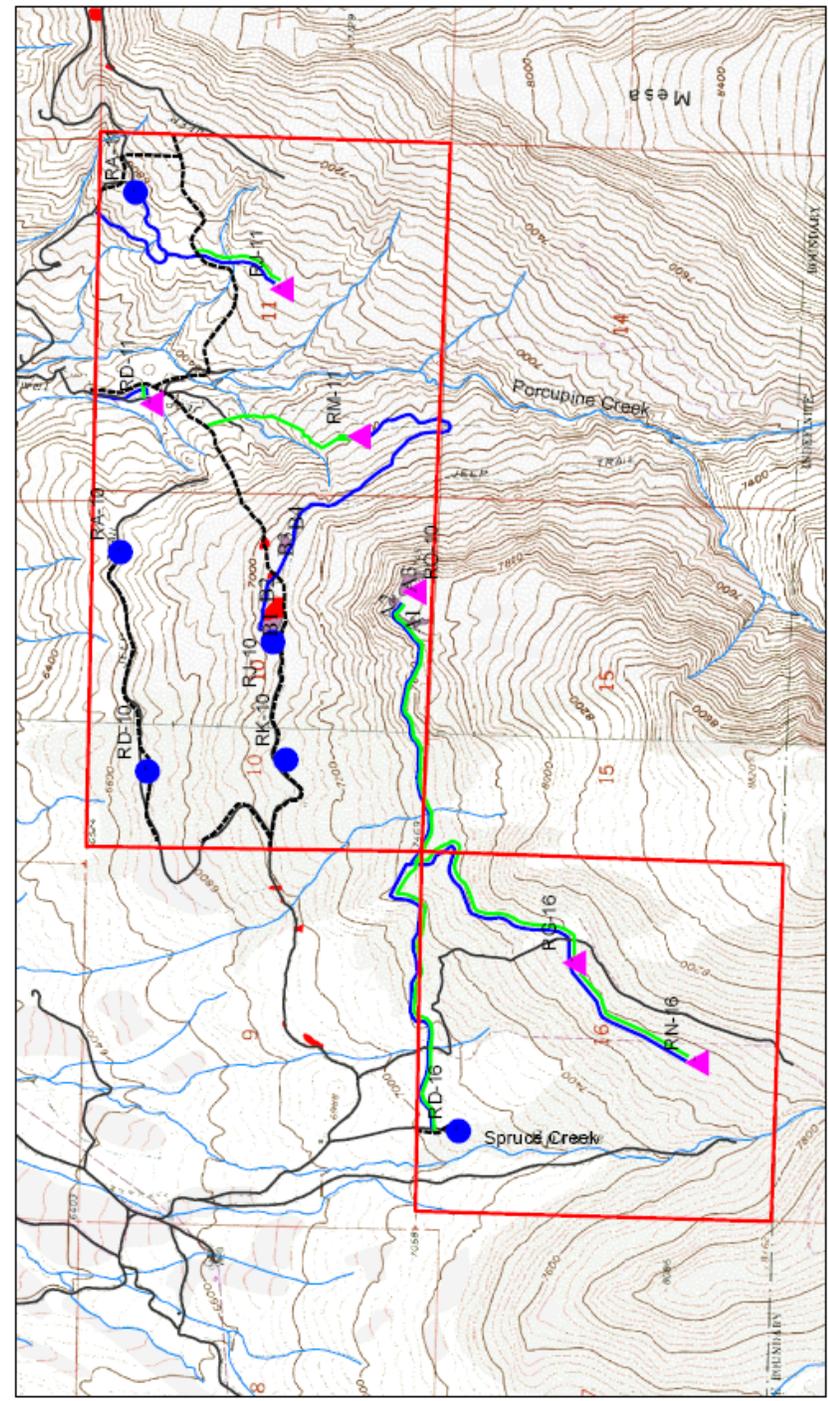


Figure 3. Sensitive Plant Species
Rulison GAP



prepared by:
Western Ecological Resource, Inc.
711 Walnut Street
Boulder, CO 80302
(303) 449-9009 FAX (303) 449-9038

1 inch equals 2,000 feet
Date: March 2007

Please Note: Disturbance
for proposed well pads
will be larger than indicated
by Well Pad Symbol.

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Stream
 - Proposed Stream
 - Existing Well Pads
 - Proposed Well Pads
 - Penstemon harringtonii (WWE, 2004)
 - Penstemon harringtonii (WER, 2006)

ferret, yellow-billed cuckoo and Mexican spotted owl does not occur near the RGAP area and these species would not be affected by the project. Species potentially affected by the proposed action are discussed below.

Canada Lynx – The RGAP contains approximately 6 acres of winter foraging habitat and 120 acres of “other” habitat for lynx (Figure 4). The BLM classifies lynx “other” habitat as areas dominated by sagebrush or aspen within 500 meters (1,640 feet) of spruce-fir forests, while habitat beyond 500 meters of spruce-fir forests is considered “non-habitat” for lynx (Fresques 2006). However, due to the broad scale at which lynx habitat was originally mapped, additional refinement was necessary at the project scale. Further GIS analysis, aerial photo interpretation, and a November 2005 onsite review indicated that activities associated with the proposed action do not occur within 500 meters of spruce-fir forests and that lynx habitat does not exist within the RGAP area.

Razorback Sucker – The razorback sucker is one of the largest suckers in North America, growing to lengths exceeding 3 feet and weighing up to 13 pounds. Once widespread throughout most of the Colorado River Basin, this species is now found only in the upper Green River in Utah, the lower Yampa River in Colorado, and occasionally in the Colorado River near Grand Junction. The current population estimate is about 500 individuals (<http://coloradoriverrecovery.fws.gov>). Razorback suckers inhabit only large rivers and are not found in smaller tributaries and headwater streams. Adults are associated with backwaters and areas of strong current in depths from 4 to 10 feet.

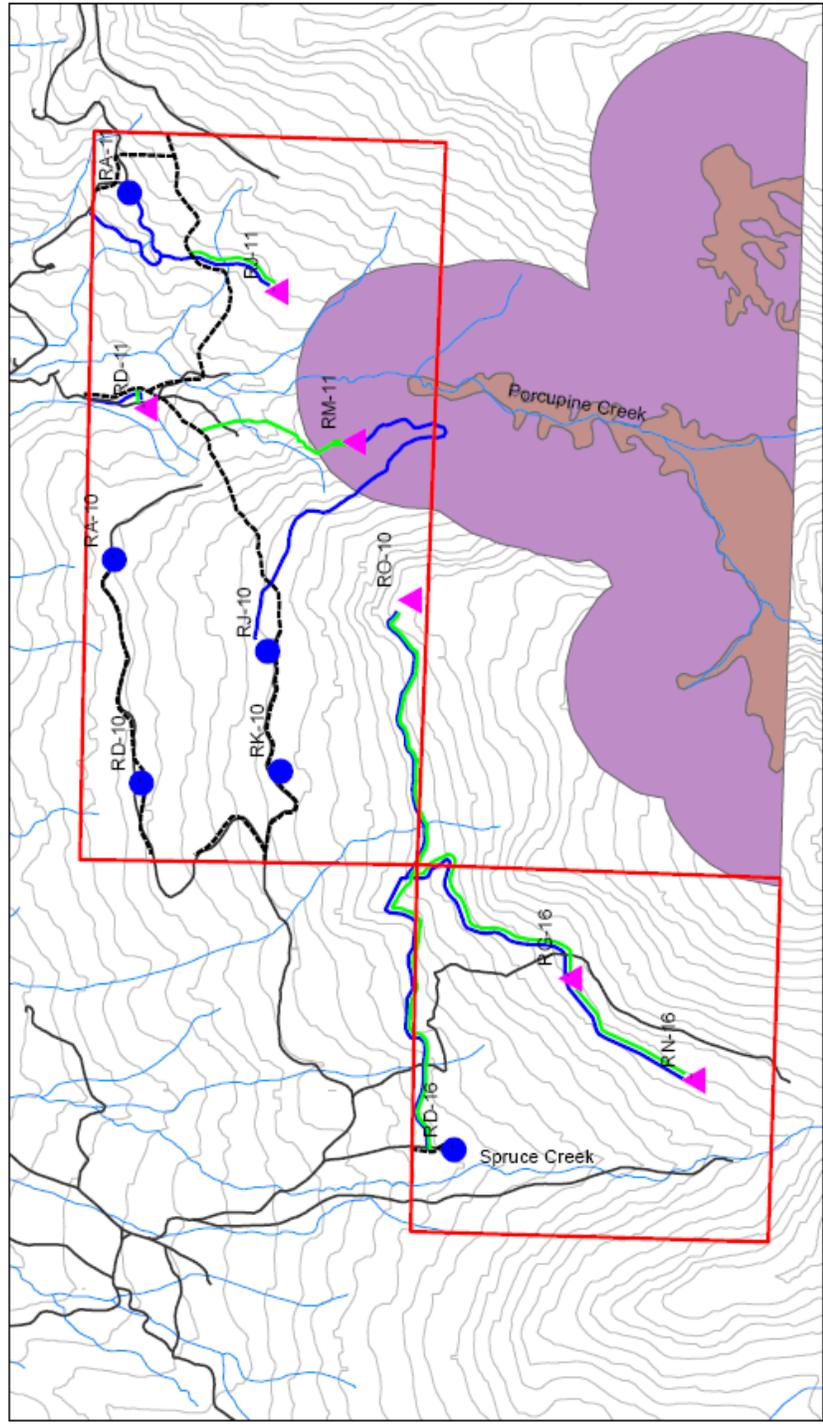
Colorado Pikeminnow – The Colorado pikeminnow is the largest minnow in North America, growing at one time to nearly 6 feet in length and weighing up to 80 pounds. It was historically found throughout the entire Colorado River Drainage but is now restricted to the lower reaches of the Green, Yampa, White, Colorado, Gunnison, Dolores and Animas Rivers (Woodling 1985). Within the Colorado River, this fish is found from Palisade, Colorado, downstream to Lake Powell. Adults are found in large, deep eddies, pools, and other areas adjacent to the main current flow; young inhabit shallow, quiet backwater areas off main river channels.

BLM Sensitive Animal Species

BLM sensitive wildlife species with habitat and/or occurrence records in the area include the milk snake (*Lampropeltis triangulum taylori*), midget faded rattlesnake (*Crotalus viridis concolor*), and Great Basin spadefoot (*Spea intermontana*). In addition, three BLM sensitive fish species - the flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), and roundtail chub (*Gila robusta*) - are known to inhabit the Colorado River.

Milk Snake – The milk snake occurs in a wide variety of habitats in Colorado, including shortgrass prairie, sand prairie, shrubby hillsides, canyons, open stands of ponderosa pine, pinyon-juniper woodland, and arid river valleys. Although no occurrence records for this species exist near the project area, suitable habitat is present (CNHP 2005).

Midget Faded Rattlesnake - The midget faded rattlesnake is a small, pale-colored subspecies of the common and widespread western rattlesnake. The midget faded rattlesnake is endemic to a small area of southwestern Wyoming, northwestern Colorado, and adjacent Utah, including western Garfield County. Suitable habitats include sandy and rocky areas in pinyon-juniper and semi-desert shrub. The relatively densely vegetated and generally north-facing aspects of the RGAP area are less suitable than the more barren south-facing areas north of I-70.



**Figure 4. Mapped Lynx Habitat
Rulison GAP**


 1 inch equals 2,000 feet
 Date: March 2007

- Legend**
-  Project Boundary
 -  Existing Roads/Trails
 -  Proposed Roads
 -  Existing Pipeline
 -  Proposed Pipeline
- Lynx Habitat**
-  Winter
 -  Denning/Winter
 -  Other
 -  Streams
-  Existing Well Pads
 Proposed Well Pads

prepared by:
 Western Ecological Resource, Inc.
 711 Walnut Street
 Boulder, CO 80302
 (303) 449-9009 FAX (303) 449-9038



Great Basin Spadefoot - This species is found in rocky canyons, broad dry basins, and stream floodplains scattered throughout northwestern Colorado. It is inactive most of the year, emerging from the substrate of seasonal ponds or ephemeral streams to breed and feed during periods of protracted surface moisture.

Flannelmouth Sucker - The flannelmouth sucker is restricted to larger streams and rivers in the middle and upper Colorado River Basin. In Colorado, this species is found only in large rivers, where it occupies in all habitat types, including riffles, runs, eddies, and backwaters (Woodling 1985).

Bluehead Sucker - This species is found throughout the middle and upper Colorado River Basin, in a variety of areas from headwater streams to large rivers (Woodling 1985). The bluehead sucker prefers areas with a rock substrate and mid to fast flowing waters.

Roundtail Chub - The roundtail chub is found in the Colorado River mainstem and large tributaries (Woodling 1985). Adults inhabit slow-moving water near areas of faster water and swim into the faster water in small groups to forage. Young-of-the-year prefer shallow river runs, while juveniles concentrate in eddies.

Proposed Action:

Environmental Consequences:

Federally Listed, Proposed, or Candidate Plant Species

The proposed action would not cause direct or indirect impacts to any federally listed, proposed, or candidate plants, because none of these species occur in the RGAP project area.

BLM Sensitive Plant Species

The proposed action could result in both direct and indirect impacts to populations of Harrington's penstemon present in the RGAP project area. Construction of roads and pads as proposed would result in a net loss of 305 individuals (i.e., 43% of populations A and B). However, implementation mitigation measures presented in Appendix E, (RM11 Pad -Number 7) would avoid direct impacts to individual plants along the access road to RM11 pad (Population B) and mitigation measures presented in Appendix E (RO10 pad - Number 7) would decrease the loss of plants in Population A to a total of 26 to 47 individuals (11% to 20% of Population A).

Indirect impacts to Harrington's penstemon could result from loss of potential habitat and loss of pollinator habitat, as well as increased risk of invasion of weeds. Although the proposed action would result in a loss of individual plants, mitigation measures would limit the impact to a small portion of the local population, which would not be likely to reduce long-term viability of this population or of the species as a whole. Harrington's penstemon occurs in numerous other locations in portions of Garfield County and appears to be quite common in Eagle County to the east.

Federally Listed, Proposed, or Candidate Animal Species

Canada Lynx - Because suitable habitat does not exist in the RGAP project area, the proposed action would have **No Effect** on Canada lynx.

Razorback Sucker and Colorado Pikeminnow - Construction of the proposed developments would increase the potential for soil erosion and sedimentation. The mitigation measures presented in Appendix D (Numbers 6 and 23) would reduce the potential. Although a minor temporary increase in sediment transport to the Colorado River may occur, it is not likely that the increase would be detectable above current background levels. In any case, all of these federally listed fishes are adapted to naturally high sediment loads. Therefore, the proposed action would have **No Effect** on the razorback sucker or Colorado pikeminnow.

BLM Sensitive Animal Species

Milk Snake, Midget Faded Rattlesnake, and Great Basin Spadefoot - Direct effects on these species could include injury or mortality as a result of construction, production, and maintenance activities. These effects would be most likely during the active season for these species, which are April to October for the milk snake, March to October for the midget faded rattlesnake, and May through September for the Great Basin spadefoot. Indirect effects for the two snake species could include a greater susceptibility to predation if the road or pad is used for temperature regulation. The potential for injury or mortality as a result of vehicles traveling on new roads and pads would increase for individuals of all three species. However, the potential for effects is low and impacts at the population level are not expected.

Flannelmouth Sucker, Bluehead Sucker, and Roundtail Chub - Mitigation measures presented in Appendix D (Numbers 6 and 23) would be implemented to minimize sedimentation of the Colorado River and tributary streams. Although minor temporary increases may occur, they are unlikely to be detectable above background levels. For this reason, and because the flannelmouth sucker, bluehead sucker, and roundtail chub are adapted to high sediment loads, the proposed action would not be expected to adversely affect these species.

No Action Alternative:

Environmental Consequences:

Federally Listed, Proposed, or Candidate Plant Species

The no action alternative would not cause impacts to any federally listed, proposed, or candidate plants because these species do not occur in the area to be affected.

BLM Sensitive Plant Species

Implementation of the no action alternative would have no impact on Harrington's penstemon, because this species does not occur in the area to be affected.

Federally Listed, Proposed, or Candidate Animal Species

The no action alternative would have **No Effect** on the Canada lynx, because suitable habitat does not occur in the area to be affected.

The no action alternative would have **No Effect** on the razorback sucker or Colorado pikeminnow, because the amount of new surface disturbance would not increase erosion and sediment loading over naturally occurring levels.

BLM Sensitive Animal Species

Impacts to BLM sensitive wildlife species under the no action alternative would be negligible due to the small scope of development.

Analysis on the Public Land Health Standard for Special Status Plant and Animal Species and their Habitats. The RGAP area is part of the Rifle-West watershed where a land health assessment was recently conducted (USDI 2005). The assessment concluded that Standard 4 was being met for species of concern. Habitat alteration associated with gas development actions could result in deteriorated conditions essential for some species of concern.

The assessment also concluded that Standard 4 is currently being met for Harrington's penstemon, but populations are at risk due to unavoidable direct losses of the plant, and indirect effects of concentrated livestock trampling, competition from increased numbers of noxious weeds and other non-native plants, and habitat loss.

Provided that mitigation measures are implemented for the RGAP project area, it is not likely that the Proposed Action would result in a failure to achieve Standard 4 for special status plants and animal species and their habitats.

Wastes, Hazardous or Solid

Affected Environment: Hazardous materials are defined by the BLM as any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 USC 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, 42 USC 9601 et seq., and its regulations. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 USC 9601 (14), nor does the term include natural gas.

The Environmental Protection Agency (EPA) has exempted certain waste materials generated in oil and natural gas exploration and production from regulation as hazardous wastes (USEPA 1988). To classify as exempt waste, these materials must be intrinsic or uniquely associated with the production of oil and natural gas. Examples of these exempt wastes include produced water, drilling fluids, and drill cuttings. Although specifically exempted from regulation as hazardous wastes, these materials are considered to be solid wastes and must be disposed in ways that protect human health and the environment.

A variety of materials typical of oil and gas development could be onsite during construction and operations including: lubricants, diesel fuel, gasoline, solvents, and hydraulic fluids. Drilling and completion operations would require the use of drilling muds and would produce substantial quantities of produced water and condensate. Other solid wastes associated with the proposed development would include human waste and trash.

Proposed Action:

Environmental Consequences:

Potential impacts from hazardous materials on the RGAP project area include potential discharges of waste streams (e.g., drilling muds, produced water, and gas condensate) to local water resources and soils. Drilling muds are typically water based but may contain small concentrations of a variety of contaminants, including mercury, cadmium, arsenic, and hydrocarbons, which could adversely effect soil and water resources.

Produced water is typically high in salinity and may contain other contaminants. Potential releases of produced water could occur from wellheads, tanking, piping, reserve pits, and transport trucks. This could be the result of an accident, tank or piping failure, or pit breach. In addition, releases during the high-pressure fracing period due to poor well completion are also possible.

Gas condensate, which resembles light crude oil, is composed of hydrocarbons in a liquid state. Releases of condensate, which could result from wellhead, pipeline, or tank integrity failures, could contaminate soil and water resources, potentially rendering them toxic.

Refer to Appendix D, Number 22 for standard Conditions of Approval that would mitigate impacts related to Wastes. With the implementation of these mitigation measures, impacts to human health and natural resources from the accidental release of solid or hazardous wastes is considered remote.

No Action Alternative:

Environmental Consequences: Potential impacts of the no action alternative would be similar to the proposed action. However, the no action alternative is associated with developments that are of a much smaller scale than the proposed action. Therefore, there is less potential for environmental impacts associated with the release of hazardous or solid waste.

Water Quality, Surface and Ground (includes an analysis of Public Land Health Standard 5)

Surface Water

Affected Environment: The RGAP area comprises two distinct sub-watersheds: the 4,554 acre Spruce Creek sub-watershed and the 6,279 acre Porcupine Creek sub-watershed. Both the perennial Porcupine Creek and the ephemeral Spruce Creek are directly tributary to the Colorado River (Figure 5). Streamflows in these creeks are influenced heavily by seasonal storm and snowmelt runoff.

According to the *Stream Classifications and Water Quality Standards* (CDPHE, Water Quality Control Commission, Regulation No.37), Porcupine and Spruce Creeks are within the Lower Colorado River Basin segment 4a that includes all tributaries to the Colorado River from the confluence with the Roaring Fork River to a point immediately below the confluence with Parachute Creek.

Segment 4a is classified aquatic life cold 2, recreation 2, water supply, and agriculture. Aquatic life cold class 2 refers to waters not capable of sustaining a wide variety of coldwater or

warmwater biota due to habitat, flows, or uncorrectable water quality conditions. Recreation class 2 refers to waters that are not suitable or intended to become suitable for primary contact recreation. The water supply class refers to waters suitable or intended to become suitable for potable water supplies. The agriculture class refers to waters that are suitable for irrigation or livestock use.

The State of Colorado has developed a *303(d) List of Water Quality Limited Segments Requiring TMDLS* (CDPHE, Water Quality Control Commission, Regulation No.93) identifying stream segments that are not currently meeting water quality standards with technology based controls alone. Porcupine and Spruce Creeks are within the Lower Colorado River Basin segment COLCLC04a, which is listed as impaired due to selenium and has been given medium priority for remediation and protection by the State of Colorado.

Waters of the U.S.

Section 404 of the Clean Water Act requires a Department of the Army permit from the US Army Corps of Engineers prior to discharging dredged or fill material into waters of the United States as defined by 33 CFR Part 328. A Corps permit is required for both permanent and temporary discharges into waters of the United States. Due to the flashy nature of area drainages and anticipated culvert maintenance, the Corps of Engineers recommends designing drainage crossings for a 100-year event. Drainage crossings within the project area would be required to pass a 25-year or greater storm event in accordance with *Surface Operating Standards for Oil and Gas Exploration & Development* (USDI and USDA 2006). The 25-year, 6-hour precipitation event for the proposed action area is approximately 1.6 inches and the 25-year 24-hour precipitation event is approximately 2.2 inches.

Drainage crossings within the project area would consist of culvert and low-water crossings of ephemeral tributaries to Spruce and Porcupine Creeks and the crossing of an isolated wetland/riparian area that was determined in December 2006 to be non-jurisdictional under the Clean Water Act. In December 2005, Cordilleran Compliance Services on behalf of EnCana, submitted permit applications to request Army Corps of Engineers verification of Nationwide Permit applicability for the drainage crossings within the project area (see Figure 5).

Groundwater

Groundwater resources in the RGAP area are located within alluvium along shallow stream channels and in perched zones within the Wasatch Formation. Although the Mesaverde Group contains some water-bearing intervals (Glover et al. 1998), the depth to the top of the Mesaverde Group beneath the project area is more than 5,000 feet below ground surface (bgs). Therefore, these water-bearing zones are too deep to be considered aquifers.

No permitted domestic water wells were identified in the project area (CDWR 2006). Permitted wells likely to be used as a domestic water supply, are present in sections 2, 13, and 14 of T. 7S., R. 94 W.

Proposed Action:

Environmental Consequences:

Surface Water

Potential impacts to surface water associated with the proposed action include increased erosion and sedimentation of streams due to changes in channel morphology changes due to road and pipeline crossings, and contamination by drilling fluids, produced water, or condensate.

Erosion and sedimentation are particular concerns because many of the proposed developments would occur on fragile soils (see **Soils**). Surface waters would be most susceptible to sedimentation during construction, drilling, and completion activities, which would collectively last approximately 30 to 45 days. After this period, reclamation activities would substantially reduce surface exposure, decreasing the risk to surface waters over the long term.

Although surface waters would be most susceptible to sedimentation over the short-term, access roads would remain in place over the life of the well (i.e., 20 to 30 years) and would channel runoff during periods of precipitation. Sedimentation and stream channel impacts associated with roads would be reduced through the implementation of Best Management Practices (BMPs) and other preventative measures. As proposed, these measures would include limiting cut slope steepness, step-cutting, limiting road grade to 10%, crowning road surfaces, and installing culverts and drainage systems.

Other elements of the proposed action are designed to mitigate risks to surface waters associated with the release of drilling fluids, produced water, and condensate. The reserve pit used to contain drilling fluids would be lined to prevent infiltration into surrounding soils. Once completion operations are complete, excess liquids would be allowed to evaporate and backfilling of the pit would be performed in a manner that would avoid incorporating the mud into surface soils.

Tanks used to store produced water and condensate would be placed in secondary containment to prevent offsite release. In the event of an accidental release, produced water and condensate would be confined for cleanup in a containment area and would not migrate to surrounding soils or surface waters. Pipelines associated with the transport of these liquids would be pressure tested to detect leakage prior to use.

Refer to Appendix D, Number 22 for standard Conditions of Approval that would mitigate impacts to Surface Water. Through the use of COAs and BMPs associated with construction activities, prompt interim reclamation, and the implementation of the preventative measures associated with the treatment of fluids, impacts to surface waters would be minimized and should be minor.

Waters of the U.S.

Drainage crossings would require the use of fill material to span drainages which could result in additional sediment available for transport to the drainage if not properly stabilized. Rip rap and revegetation practices should be used to stabilize road fills at crossings. Improperly designed drainage crossings, in particular undersized or poorly aligned culverts, could result in channel degradation that may include: excessive bank erosion at culvert outlets, ponding of flows and excess sedimentation at culvert inlets, and channel scour both at inlets and outlets.

Groundwater

Potential impacts to groundwater resources following implementation of the proposed action include contamination of groundwater from drilling fluids or petroleum constituents. Isolation of water-bearing formations during the installation of production casing would be required to minimize the potential for adverse effects. Any shallow groundwater zones encountered during drilling of the proposed wells would be properly protected, and the presence of these zones reported to the BLM and Colorado Oil and Gas Conservation Commission (COGCC).

To accommodate protection and isolation of usable water zones, 8 5/8 -inch surface casing would be set at 1,500 feet, below the average depth of known aquifers. Cement would be circulated to surface to assure an adequate seal between the pipe and the rock formations. The 4½-inch production casing would be set at total depth of the well, and cement volumes will be sufficient to fill the annulus between the rock formations and the exterior of the casing to 200 feet above the Mesaverde Formation (for additional information, see **Geology and Minerals**). No domestic groundwater wells exist within the RGAP area; the nearest wells are located to the north. These wells are not expected to be impacted by the proposed action.

Deeper water sources within the RGAP area are not useable as aquifers since most are located greater than 5,000 feet below ground surface. In addition, a thick impermeable layer of rock in the top section of the Williams Fork Formation will not allow drilling fluids to migrate to useable water reserves.

Refer to Appendix D, Number 6 for standard conditions of approval that would mitigate impacts to ground water.

No Action Alternative:

Surface Water

Environmental Consequences: The types of potential impacts to surface waters would be generally similar to the proposed action. However, since very little ground disturbance would be associated and similar protective measures and BMPs would be used, potential impacts to surface water are considered negligible.

Waters of the U.S.

Environmental Consequences: There would be no impact because there are no waters of the U.S. in the area of the existing RD 10 pad.

Groundwater

Environmental Consequences: Since the same protective measures would be employed, impacts from the no action alternative would be similar to those from the proposed action.

Analysis on the Public Land Health Standard for Water Quality: With implementation of BMPs and the use of the proposed protective measures, the proposed action and no action alternative would be unlikely to prevent water quality standards from being met.

Wetlands and Riparian Zones (includes an analysis of Public Land Health Standard 2)

Affected Environment: The RGAP project area is dissected by two major drainages: the perennial Porcupine Creek and the ephemeral Spruce Creek. Both of these drainages flow north and are directly tributary to the Colorado River. Beaver Creek, another perennial drainage, occurs approximately 0.5 mile east of the project area. No mapped Federal Emergency Management Agency (FEMA) floodplains are present within the project area; however each of the streams in the RGAP area has a small floodplain that varies in size depending on local topography and stream low. In addition to Spruce and Porcupine Creeks, other minor unnamed drainages occur throughout the project area. These drainages appear to be mainly ephemeral, flowing only during snowmelt and heavy or protracted precipitation events. Figure 5 illustrates the location of these streams in the RGAP project area.

Very limited riparian and wetland habitats occur in the project area. Neither Porcupine Creek nor Spruce Creek support riparian or wetland habitats, although scattered young narrowleaf cottonwoods (*Populus angustifolia*) and isolated herbaceous hydrophytes were observed along Porcupine Creek. The extremely incised banks (up to 20 feet high) and the flashy nature of this stream appear to have precluded riparian and wetland development.

The only riparian and wetland habitat observed in the project area occurs at a small seep/spring complex just east of proposed pad RG16 (see Figure 5). The riparian vegetation comprises an overstory of quaking aspen (*Populus tremuloides*) with scattered shrubs such as of planeleaf willow (*Salix planifolia*) and an understory of various wetland or riparian graminoids and forbs. The most common herbs include Rocky Mountain rush (*Juncus saximontanus*), smallwing sedge (*Carex microptera*), fowl mannagrass (*Glyceria striata*), field horsetail (*Equisetum arvense*), scouring rush (*Hippochaete hyemalis*), tall chiming bells (*Mertensia ciliata*), Rocky Mountain iris (*Iris missouriensis*), American speedwell (*Veronica americana*), and orange sneezeweed (*Dugaldia hoopesii*). A small pond and narrow one-foot wide stream channel also occur. A wetland delineation was conducted of this area in mid-June of 2006 by Western Ecological Resource in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. This small riparian/wetland complex was determined to be an isolated wetland, and thus would not be under the jurisdiction of the U.S. Army Corps of Engineers (USACE). In December 2006, the USACE concurred with this determination.

No Surface Occupancy (NSO) and Controlled Surface Use (CSU) stipulations are commonly used to protect riparian and wetland zones for new oil and gas leases. Although the leases granted for the RGAP project area do not have such stipulations, EnCana has made efforts to avoid impacting major stream channels where riparian habitat occurs. For example, the proposed action would not include any new road or gas line crossings of Porcupine or Spruce Creeks. The crossing of the wetland/riparian area near proposed pad RG16 is unavoidable due to roadway standards and access grades.

Proposed Action:

Environmental Consequences: The proposed action would result in the permanent loss of approximately 400 square feet of wetland habitat, approximately 600 square feet of riparian habitat, and approximately 50 linear feet of a small (1-foot wide) intermittent stream near proposed pad RG16. These losses would result from construction of a road to the proposed pad.

In addition, a combined total of approximately 300 linear feet along four ephemeral streams without wetlands would be permanently impacted. One of these crossings is pipeline-related and

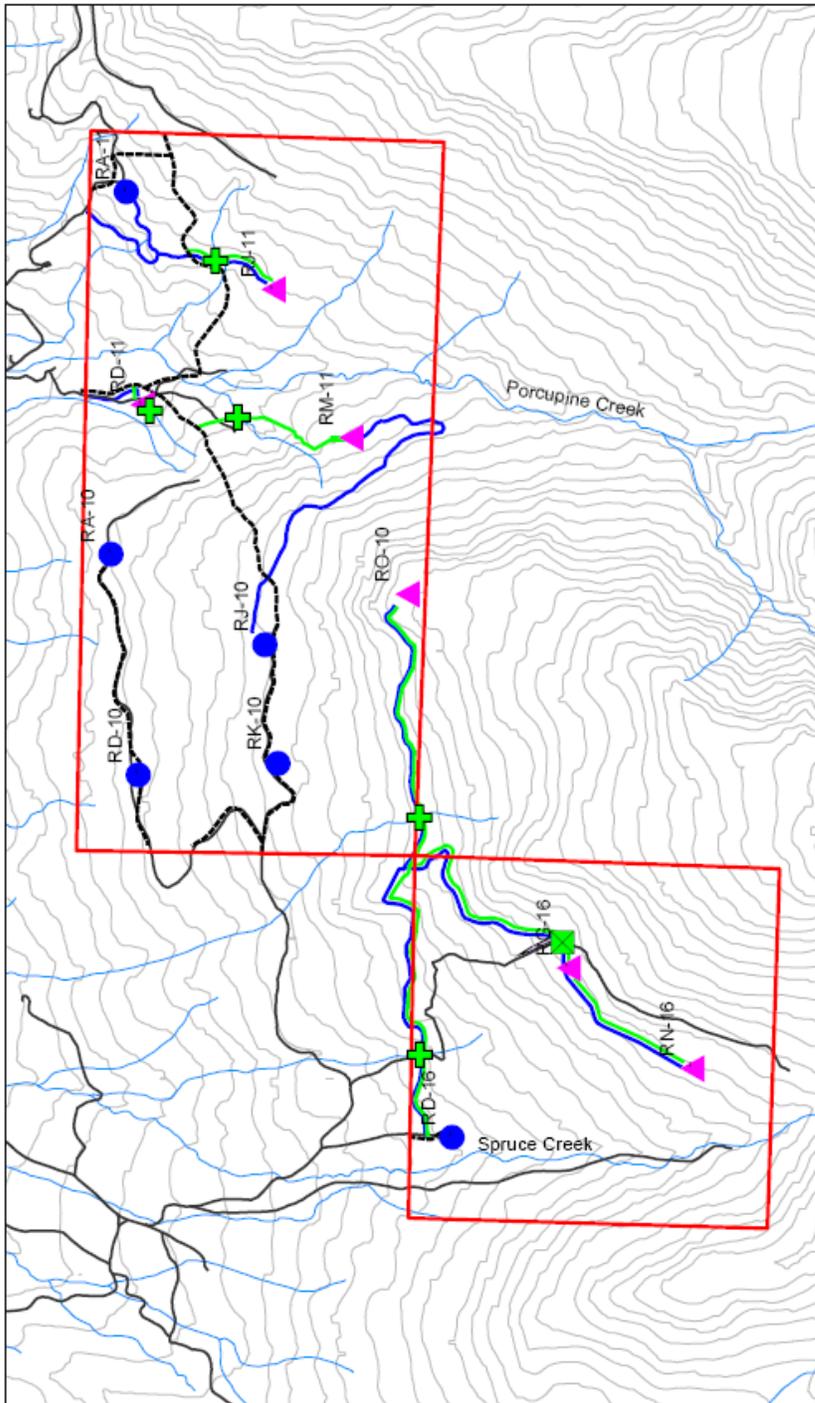


Figure 5. Riparian Habitat, Wetlands, and Streams, Rulison GAP

prepared by:
Western Ecological Resource, Inc.
7111 Walnut Street
Boulder, CO 80302
(303) 449-9009 FAX (303) 449-9038

would be restored. No floodplains would be impacted by the proposed action. Appendix E (RG16 pad – Numbers 4 and 6) lists specific COAs requiring wetland mitigation.

Analysis on the Public Land Health Standard No. 2 for Riparian Systems. A land health assessment was completed in 2004 for the Rifle-West watershed which included the RGAP project area (USDI 2005). Riparian habitats were assessed along two major drainages present on the project area: Spruce Creek and Porcupine Creek. Both Creeks were found to have limited potential to support riparian vegetation and therefore were considered non-riparian and not evaluated in the land health assessment. The small amount of riparian habitat along the seep/spring complex next to proposed RG16 was not evaluated in the 2005 LHA; however it probably would have been considered in proper functioning condition. If all mitigation measures are implemented, the proposed action should not prevent Standard No.2 from being met.

No Action Alternative:

Environmental Consequences: Floodplains and riparian habitat would not be affected by the drilling of 3 additional fee wells on the existing RD10 pad.

Other Affected Resources

In addition to the critical elements, the resources presented in Table 7 were considered for impact analysis relative to the proposed action and no action alternative. Resources that would be affected by the proposed action and no action alternative are discussed below.

Table 7. Other Resources Considered in the Analysis.			
<i>Resource</i>	<i>NA or Not Present</i>	<i>Present and Not Affected</i>	<i>Present and Affected</i>
Access and Transportation			X
Cadastral Survey	X		
Fire/Fuels Management		X	
Forest Management	X		
Geology and Minerals			X
Law Enforcement	X		
Paleontology		X	
Noise			X
Realty Authorizations			X
Recreation			X
Socio-Economics			X
Soils			X
Vegetation			X
Visual Resources			X
Wildlife, Aquatic			X
Wildlife, Terrestrial			X

Access and Transportation

Affected Environment: Primary access to the RGPA area would be from I-70 at the Rifle or Rulison exits. Several county roads provide secondary access through Rifle and the surrounding area, including Garfield County Roads. These include CR 329 (Spruce Creek Road), CR 325 (Porcupine Creek Road), and CR 317 (Beaver Creek Road). Existing county roads are open for

public use, and are considered suitable by the county for use by drilling, construction and operations traffic. Typically, traffic volume on these roads is light.

From the county roads, existing roads provide access to six existing pads in the RGAP area. The majority of these roads cross private lands for which the public has no legal access. In order to support the development of the six new pads, approximately 6 miles of new road is proposed.

Proposed Action:

Environmental Consequences: Under the proposed action, substantial increases in the volume of both heavy and light traffic would occur. The greatest increase would be during the construction, drilling and completion phases of the project. To construct, drill and complete each well, an average of 16 light truck trips and eight heavy truck trips per day would be required. Assuming that wells would take 12 to 15 days to drill and 30 to 45 days to complete, it can be estimated that the development of each well would require between 672 and 960 light truck trips and between 336 and 480 heavy truck trips. If all well proposed are eventually developed, somewhere in the neighborhood of 50,000 light truck trips and 28,000 heavy truck trips would occur over a 2-to-3 - year period. During this time, traffic would shift between the three county roads and between the various RGAP area access roads as the development sequence proceeded.

Once wells are completed, the volume of traffic would decrease dramatically. During the 20-to-30-year operations phase of the project, project-related traffic would be limited to a weekly visit to each well pad for inspection and maintenance. Tanker trucks would remove condensate from the storage tanks on the well pads at rates ranging from twice per day to once per week. Each well may be recompleted once per year, requiring approximately three to five truck trips per day for approximately seven days.

Public access on county roads could be affected. Increased development traffic may cause temporary conflicts with normal traffic, including travel delays and increased vehicle collision rates. Degradation of county roads may occur due to heavy equipment travel and fugitive dust and noise would be created. Within the RGAP area, public access would continue to be limited due to the presence of public land holdings.

Refer to Appendix D, Number 18 for mitigation measures applicable to Transportation resources.

No Action Alternative:

Environmental Consequences: A much smaller volume of traffic would be required to implement the developments associated with the no action alternative. Assuming the development of each well would require the average trips described above, an estimated 2,000 to 3,000 light truck trips and between 1,000 and 1,500 heavy truck trips would be required. Most, if not all, of this traffic would use the Spruce Creek Road (CR 329) and BLM Road 8175 as primary access. Other roads should not be affected by the development. Impacts to public access during the development period would be similar to the proposed action on Spruce Creek Road, although for a much shorter duration.

Geology and Minerals

Affected Environment: The RGAP area is located within the southern Piceance Basin. The Piceance Basin is a broad, asymmetric structural basin at the eastern edge of on the Colorado Plateau in western Colorado. The basin trends southeast to northwest and contains over 20,000

feet of Cambrian through Tertiary strata. It is flanked by the White River uplift in the northeast, and the Gunnison and Uncompahgre uplifts to the south and is separated from the Uinta Basin to the west by the Douglas Creek Arch.

The target of the proposed drilling operations is the Mesaverde Group, which lies unconformably below the Wasatch Formation. The Mesaverde can be over 7,000 feet in thickness within the Piceance Basin, but within the proposed development area is estimated to be approximately 4,000 feet thick. The Mesaverde Group is often called the Mesaverde "Formation" and includes informal subdivisions based on gas productivity characteristics. These include the barren Ohio Creek; the sandstones, limestones, and coals of the Williams Fork Formation; and the underlying marine sandstones and shales of the Iles Formation.

The proposed action would target sandstone layers within the Williams Fork (including the Coal Ridge and unnamed sandstones) and upper Iles Formations (including the Rollins sandstone) between 7,900 feet and 9,600 feet total vertical depth (TVD). The Williams Fork Formation sandstones are considered "tight" because of their low permeability. Individual sandstones are stacked and concentrated into 400-500 foot thick sequences, and distributed throughout a vertical interval of about 3,000 feet. Sand bodies originating from fluvial (i.e., stream) depositional settings typically demonstrate irregular and spatially limited reservoir distributions. Studies of the Rulison Gas Field, immediately north of the project area show that these Williams Fork sandstone packages have limited horizontal extent, based on the lack of pressure communication between existing wells spaced less than 1,000 feet apart (Vargas 2004). Natural gas wells drilled in the Rulison Gas Field penetrate four to six of these sandstone packages (USDOE 2004) on 20-acre bottomhole spacing. These tight sandstone gas reservoirs will require hydraulic fracturing to produce economical quantities of gas.

Proposed Action:

Environmental Consequences: The construction of new roads and well pads associated with the proposed action would result in changes to the local topography. Pad RD11 would cut into unconsolidated Quaternary alluvium of the Porcupine Gulch drainage. Well pad construction at the RN16 location would excavate into unconsolidated Quaternary mudflow and slump deposits that fill the Spruce Creek drainage ravine. Pad RO10 would be cut into Pleistocene terrace deposits. The remainder of the well pad locations would likely cut into the bedrock of the Wasatch Formation (RJ11, RM11, and RG16). These changes to the topographic character of the area would be minor, and cuts would be smoothed, reshaped, and revegetated after completion of drilling operations.

Excavation into the Wasatch Formation on steep slopes could result in slope instability. All or part of well pads RJ11, RM11, RG16 and their associated access roads are located on soil creep deposits. RN16 is located on former landslide material. At these locations, the potential for slumping is considered to be moderate. Some small slumps may also occur in the cuts created for the new access roads, especially where they cross steeply sloped exposures of the Wasatch Formation. However, these movements would likely be localized. The potential for slumping across the balance of the project area is considered nominal.

Implementation of the proposed action could result in natural gas and associated water being produced from the hydrocarbon-producing sands within the Mesaverde Formation. The amount of natural gas that may be potentially produced from the proposed wells cannot be estimated accurately, but in nearby fields reserves have been estimated to approach 2 billion cubic feet (Bcf) per well (Vargas 2006). Initial production rates would be expected to be highest during the

first few years of production and then steadily decline during the remainder of the wells' economic life. Natural gas production from the proposed wells would contribute to the draining of hydrocarbon-bearing reservoirs within the Mesaverde Group in this area.

Casing programs have been designed to specifically prevent hydrocarbon migration from gas-producing strata penetrated by the well bore during drilling, initial production and after completion of the well. Identification of potential fresh-water bearing zones, aquifers, gas producing zones, and under- and over-pressured formations are incorporated into drilling scenarios for the proposed wells. Estimates of what depth these zones will be encountered are used to determine drilling fluids, fluid densities, surface casing depths, and production planning. The proposed casing and cementing program has been designed to protect and isolate all usable water zones, potentially productive zones, lost circulation zones, and abnormally high-pressure zones. Measures for the protection of geologic resources are detailed in Appendix D, (Number 5).

No Action Alternative:

Environmental Consequences: Potential impacts associated with the no action alternative are minimal in relation to those of the proposed action. This is because the developments associated with this alternative are of a much smaller scale. No new access roads or pipelines are proposed and the existing pad requires very little new surface disturbance to accommodate new well development. There is little to no potential for slumping.

Implementation of the casing and cementing program in conformance to COGCC standards should avoid impacts to downhole resources.

Noise

Affected Environment: Current noise levels are typical of a rural area with occasional traffic noise from oil and gas and ranching activities. Some noise is muffled by the pinyon-juniper and mountain brush vegetation common to the RGAP area. Based on this setting, estimated current background noise levels are between 35 and 45 db decibels (dB). These levels are similar to a rural area at night or a recreational (park) area during the day (EPA 1974).

Noise levels reported for various elements of oil and gas development are between 50 dB(A) for the operation of typical compressor station to approximately 68 dB(A) for truck traffic and crane operation (Table 8). These levels are a function of distance; the closer to the source, the greater the noise.

Table 8. Noise Levels Associated with Oil and Gas Production and Development.	
<i>Source</i>	<i>Reported Noise Level</i>
Typical compressor station	50 dB(A) (375 feet from property boundary)
Pumping units	50 dB(A) (325 feet from well pad)
Fuel and water trucks	68 dB(A) (500 feet from source)
Crane for hoisting rigs	68 dB(A) (500 feet from source)
Concrete pump used during drilling	62 dB(A) (500 feet from source)
Average well construction site	65 dB(A) (500 feet from source)
La Plata County (2002)	

Proposed Action:

Environmental Consequences: Implementation of the proposed action would result in increased noise levels particularly during road and well pad construction, well drilling, and completion. Short-term (7 to 14 day) increases in noise levels would characterize each site associated with road and well pad construction. Based on the Inverse Square Law of Noise Propagation (Harris 1991) and an average construction site noise level of 65 dB(A) at 500 feet, construction noise would equal approximately 59 dB(A) at 1,000 feet. At 1,000 feet, noise levels would approximately those of an active commercial area (EPA 1974).

Noise impacts from drilling and completion activities would last approximately 45 to 60 days at each well. Noise would occur continuously, 24 hours per day, during the drilling and completion period. Based on a measured noise level of 68 dB(A) at 500 feet, actions associated with drilling and completion would generate approximately 55 dB(A) at 1,000 feet. This level of noise approximates that associated with light industrial activities (EPA 1974).

Traffic noise levels would also be elevated as a consequence of the proposed action. The greatest increase would be along County and BLM access roads during the drilling and completion phases. Based on the La Plata County data presented in Table 8, approximately 68 dB(A) of noise (at 500 feet) would be created by each fuel and water truck that travels these roads. Less noise would be created by smaller trucks and passenger vehicles such as pickup trucks and sport utility vehicles. Although the duration of increased noise from this source would be short, it would occur repeatedly during the drilling and completion phases.

Noise impacts would decrease during the production phase. Pumping units and compressor noise levels would be approximately 50 dB(A) at 325 to 375 feet and continued small truck traffic would generate somewhat less. These levels would be less than the construction phase, but greater than background noise levels. During maintenance and workovers, noise would increase above noise levels associated with routine well production.

These increased noise levels would have the most impact on the occupants of a nearby residence. The residence is located approximately 0.5 mile from the proposed RD11 pad and the existing RA11 pad site. At this residence, noise levels during drilling and completion would range between 50 and 56 dB(A) and would be approximately 32 dB(A) during production. Noise levels would be considerably less for more distant developments. These levels, while potentially annoying, are not likely to affect the health of the residents.

Refer to Appendix D, (Number 9) for mitigation measures related to noise impacts.

No Action Alternative:

Environmental Consequences: Although noise levels would increase in ways similar to that described for the proposed action, the duration of the increase would be shorter because fewer wells would be developed.

Paleontology

Affected Environment: Surficial geology of the RGAP area consists of the Wasatch Formation of Paleocene age, overlain by gravels and alluvium of Pinedale and Bull Lake age. The Wasatch is a Class 1 formation, with areas known or likely to produce abundant scientifically important fossils vulnerable to surface-disturbing activities. The Wasatch Formation may contain early

horses, rare primates, rhinoceroses, birds, crocodiles, rodents, fish, turtles, freshwater clams, snails, and plants.

Proposed Action:

Environmental Consequences: Fossilized material was not noted during onsite inspection of the project area; therefore, systematic field surveys were not conducted. It is unlikely that the proposed action would impact paleontological resources. However, the standard paleontological conditions of approval would be applied to the APDs (Appendix D, Numbers 11 and 12).

No Action Alternative:

Environmental Consequences: No impacts to paleontological resources would occur because the developments would take place on an existing pad.

Range Management

Affected Environment: The RGAP would include approximately 985 acres of the Porcupine Common #08119 and the Spruce Gulch Common #08121 Allotments (Figure 6). Table 9 summarizes the permitted grazing use of the allotments.

Table 9. Range Management Allotments					
<i>Allotment</i>	<i>Permittee</i>	<i>Livestock Kind & Number</i>	<i>Period of Use Begin Date-End Date</i>	<i>% Public Land</i>	<i>Animal Unit Months (AUMs)</i>
Porcupine Common # 08119	Jack Farris	Cattle 15	05/07 – 09/30	100	72
	Ronald D & Vickie R. Mead	Cattle 10	05/10 – 09/10	100	41
	Joan L. Savage	Cattle 195	05/16 – 06/16	84	167
		Cattle 11	06/16 – 09/30	84	33
		Cattle 70	10/01 – 10/15	84	29
Spruce Gulch Common # 08121	Arnold & Elsie Mackley	Cattle 14	05/15 – 09/30	80	51
	Joan L. Savage	Cattle 196	05/16 – 06/30	38	113
		Cattle 25	10/01 – 10/30	38	9

Proposed Action:

Environmental Consequences: Development of the proposed RGAP would result in a total of 70.7 acres of short-term surface disturbance within the two allotments and a loss of up to 6 Animal Unit Months (AUMs) of available livestock forage (Table 10). This loss would last for approximately three years or until grasses and forbs seeded during interim reclamation became productive. Long-term loss, which would last 20 to-30 years, would then be reduced to approximately 24.2 acres or 3 AUMs.

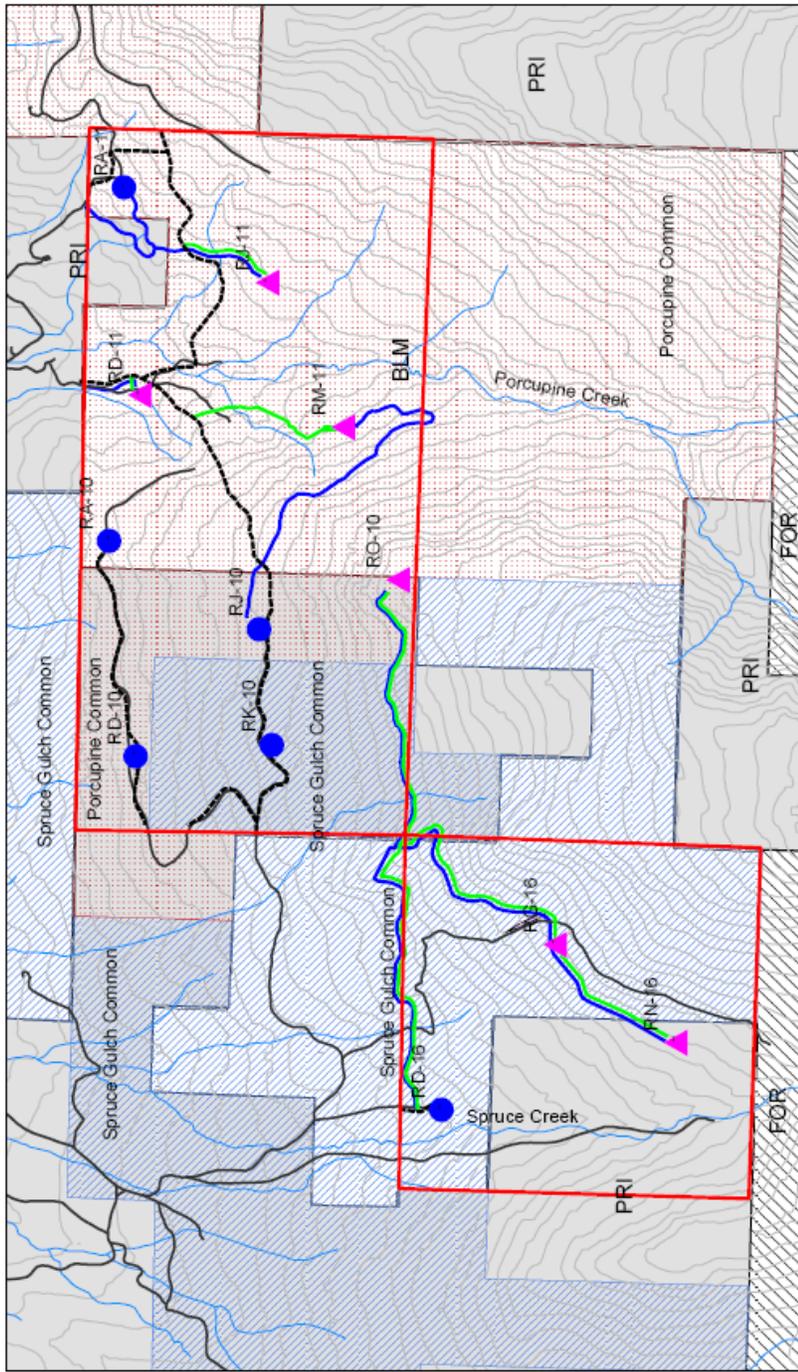


Figure 6. Range Management Allotments Rulison GAP

Prepared by:
 Western Ecological Resources, Inc.
 711 Walnut Street
 Boulder, CO 80302
 (303) 449-9009 FAX (303) 449-9038



1 inch equals 2,000 feet
 Date: March 2007

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Pipeline
 - Proposed Pipeline
 - Existing Well Pads
 - ▲ Proposed Well Pads
 - Streams
 - Range Management Allotment**
 - Porcupine Common(08119)
 - Spruce Gulch Common(08121)
- Land Ownership**
- BLM
 - FOREST
 - PRIVATE

Table 10. Loss of Forage Associated with the Proposed Action.				
<i>Allotment</i>	<i>Acreage in Project Area</i>	<i>Short Term Loss (acres)</i>	<i>Long Term Loss (acres)</i>	<i>Long-term Loss of Forage (%)</i>
Porcupine Common # 08119	985	42.5	15.0	0.9%
Spruce Gulch Common # 08121	637	28.2	9.2	0.6%
TOTAL	1,622	70.7	24.2	1.5%

In addition to the loss of forage, an increase in human activity related to development and maintenance of the developments would cause cattle to avoid certain areas of the allotments. However, livestock may also benefit from improved access. New roads and pipelines would open access to areas of the allotments that are difficult for livestock to access because of thick brush and/or steep slopes. Improvement in livestock distribution would improve forage utilization throughout the allotment.

It is not anticipated that the impacts from implementation of the proposed action would require adjustment of the livestock stocking rate. The level of forage utilization will be monitored on the allotment and if necessary, adjustments in livestock use will be made to protect land health. Appendix D (Number 13) presents standard conditions of approval related to range management resources.

No Action Alternative:

Environmental Consequences: No impacts to range management resources would occur because developments would take place on an existing pad located on private lands.

Realty Authorizations

Affected Environment: EnCana holds road ROW #COC 65900 crossing BLM lands in section 9, T. 7S., R. 94W. The ROW is 40 feet in width and covers two road sections (one segment serving RD16 pad and the other serving access to RA10, RD10, RJ10 and RK10 pad) for a total length of 6,400 feet (5.87 acres). Terms and conditions of the grant include a wildlife winter range timing limitation that precludes construction or drilling activity traffic during the period December 1 to April 30. This right-of-way effectively limits all construction, drilling and completion traffic within RGAP (except for the RA11, RD11 and RJ11 pads) between December 1 and April 30.

Canyon Gas Resources (CGR) holds pipeline Right-of-Way #COC 51003 crossing BLM lands in sections 9, 10 and 11, T. 7S., R. 94W. This pipeline serves as CGR’s main pipeline trunk moving gas from South Parachute and Rulison fields east and north to Rifle, Colorado. EnCana plans to install gathering lines from new pad locations and connect them into the CGR mainline system covered under this ROW.

EnCana must apply for and be granted ROW authorizations for routes (proposed or existing) that are outside or “off” their Federal lease holdings. Proposed and existing routes for which ROW authorizations would be required are indicated in Figure 7. In addition, the development of proposed pads RD11 and RM 11 would also require ROW authorizations, because these Federal surface locations are not located on a Federal lease.

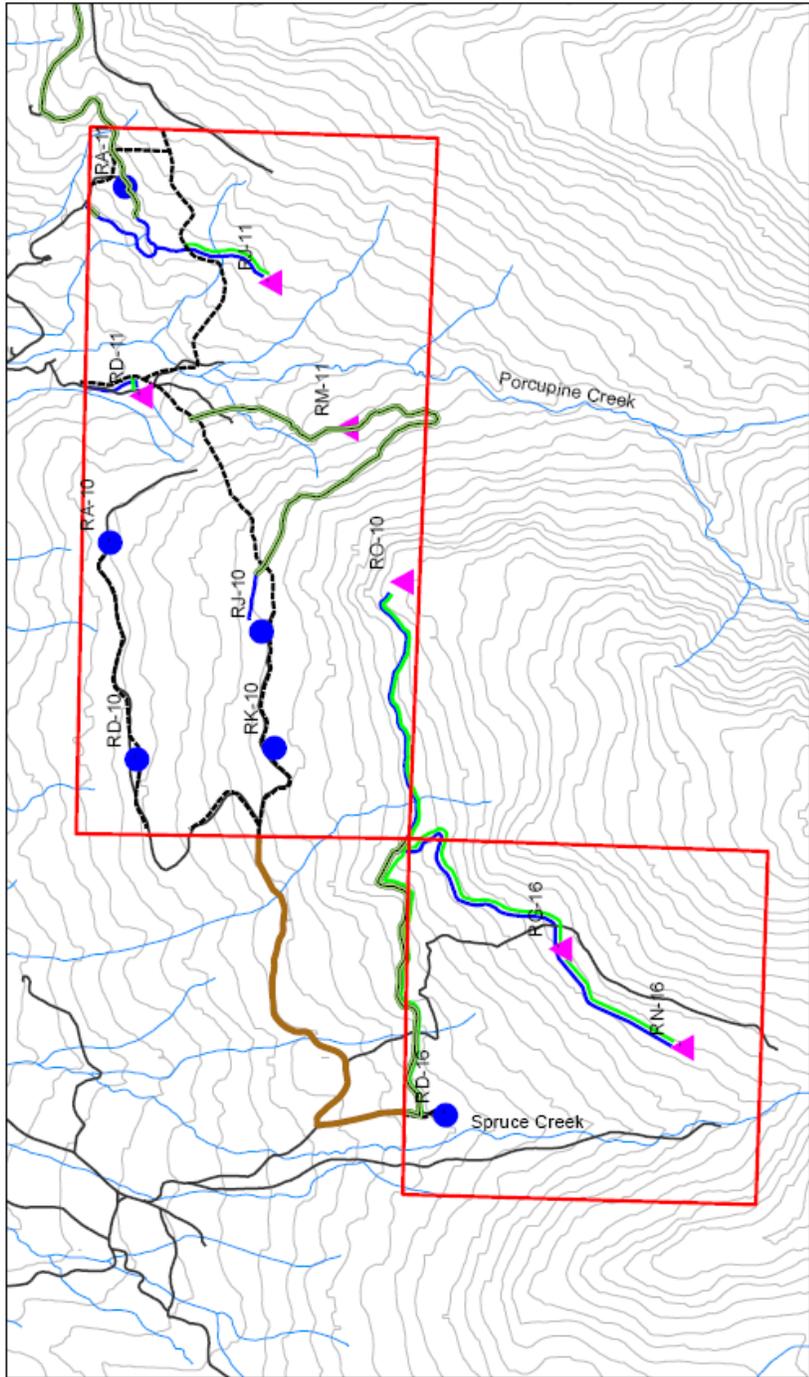


Figure 7. Right-of-Ways
Rulison GAP

prepared by:
Western Ecological Resources, Inc.
711 Walnut Street
Boulder, CO 80302
(303) 445-9009 FAX (303) 445-9038



1 inch equals 2,000 feet
Date: March 2007

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Pipeline
 - Proposed Pipeline
 - Existing Well Pads
 - ▲ Proposed Well Pads
 - Streams
- Right Of Way**
- Existing
 - To Be Authorized
- Please Note: RD-11 & RM-11
Pads would require Right-of-Way
to build pad and drill wells.

Proposed Action:

Environmental Consequences: Under the proposed action, the ROW authorizations would be granted subject to appropriate terms and conditions. These authorizations would provide EnCana legal access for the construction and use of proposed and existing routes. In addition, EnCana would have legal access for the construction and developments of proposed pads RD11 and RM11. Standard reclamation measures (Appendix D, Number 14) would be required for these ROW authorizations.

No Action Alternative:

Environmental Consequences: EnCana currently holds ROW #COC 65900 which provides legal access to the existing RD10 pad. No additional realty authorizations would be required to further develop the pad.

Recreation

Affected Environment: The primary recreational use of the project area is seasonal big game hunting. Hunting is managed and licensed by the Colorado Division of Wildlife (CDOW) and permitted for a 1-month archery season from the end of August to the end of September. Muzzleloader rifle season occurs in September, and rifle season extends from October through November.

The project area is located within a combination of private property and public lands administered by the BLM. Because the area is mostly surrounded by private lands that limit public access, recreational use of the project area by the public is low.

There are no developed recreational facilities such as campgrounds, picnic areas, or improved hiking/biking trails within the project area. Several unpaved roads suitable for four-wheel drive and all-terrain vehicles extend within the project area, but their use is limited primarily to hunters who have been granted access through the private properties. The recreation resource setting character of the BLM-administered portion of the project area remains generally natural and primitive.

The project area is located within the Semi-Primitive Motorized (SPM) recreation opportunity class as designated through the BLM Recreation Opportunity Spectrum (ROS) classification system for recreational lands. The SPM recreation opportunity class is characterized as predominately unmodified natural environment of moderate to large size that provides: 1) some opportunity for isolation from the sights and sounds of man, 2) an opportunity to have a high degree of interaction with the natural environment, 3) an opportunity for moderate challenge and risk and the ability to use outdoor skills, and 4) an explicit opportunity to use motorized equipment.

The RGAP project area is within the Glenwood Springs Extensive Recreation Management Area (ERMA), where recreation is a significant activity but not the principal management focus. Management direction for the ERMA is to “provide visitor information, minimal sanitation facilities and access [and to] manage ERMAs to resolve management issues and for off-road [vehicle] (ORV) use” (USDI 1984).

Proposed Action:

Environmental Consequences: The proposed action would result in increased vehicle traffic, noise, dust and human activity during construction, and continuing to a more limited degree, throughout the operational life of the project. Construction and well-drilling activities would likely displace game species in localized areas within close proximity to these activities, and both hunters and game would be displaced to other locations within and outside of the project area.

Over the 20-30 year operating life of the project, the presence of natural gas wells, production equipment, and other facilities would alter the recreational character of the project area from generally natural to relatively developed. The recreation setting of the project area can be expected to change from Semi-Primitive Motorized (SPM) to Roaded-Natural (RN).

The RN designation is applied to settings where there is: 1) an equal opportunity to affiliate with other users or to be isolated from the sights and sounds of man, 2) an opportunity to have a high degree of interaction with the natural environment, 3) an ability to practice outdoor skills, and 4) opportunities for both non-motorized and motorized recreation. Providing opportunities for moderate challenge and risk and the ability to use outdoor skills is not highly important. The RN setting is characterized by a moderate evidence of the sight and sound of humans. Resource modifications and uses are evident, but they harmonize with the natural environment.

Changes in the physical and social recreation setting would impact the recreational experience of traditional users, especially big game hunters, due to displacement of big game animals. Hunters may be replaced by recreational users seeking different activity opportunities and experiences.

No place are the changes in recreation resource setting conditions more apparent than to the existing special use permit holder, Cache Creek Outfitters. Cache Creek Outfitters conducts big game hunting expeditions within the project area on BLM lands and on the White River National Forest, with 684 service days for big game hunting and 150 days of summer use. The business has one base camp (i.e., Spruce Creek Camp) just west of the project area on BLM lands. They are also permitted for five camps on adjacent National Forest lands. The business will experience negative effects due to changes in the physical and social recreation setting. Specifically, increased truck traffic along BLM Road 8175 (in Section 9) will directly impact hunting activities related to Cache Creek Outfitters' base camp.

The proposed action is unlikely to generate an increase in public recreational use even with the increased motorized access to and through the project area. Use of the area is limited by existing private lands, and all or most access roads created or used by EnCana would be gated at private property boundaries. Appendix D (Number 16) presents standard conditions of approval related to recreation resources.

No Action Alternative:

Environmental Consequences: Due to the relatively small-scale of development, the displacement of big game is not likely to be widespread, and big game hunters would not be substantially affected. The development of three wells from one existing pad is not likely to result in a change in the recreational character of the area. Under this alternative, the area would likely retain its Semi-Primitive Motorized (SPM) recreational class designation.

Socio-Economics

Affected Environment: The RGAP area is located within Garfield County, Colorado. The population of Garfield County has grown by approximately 2.8 percent per year from 2000 to 2005, resulting in an increase from 44,300 to 51,000 residents (U.S. Bureau of the Census 2005). The annual population growth rate is projected to decline gradually through the year 2030, growing to a population of about 97,000 by the year 2030 (Colorado Department of Local Affairs 2003).

In the year 2000, industry groups in Garfield County with the highest percentage of total employment were construction (20.4 percent), tourism (10.7 percent), retail trade (13.7 percent), and education and health (15.4 percent). An estimated 13.3 percent of the population was retired in the year 2000 and did not earn wages. Employment in agriculture, forestry, hunting, and mining accounted for 2.4 percent of total employment. In the year 2001, an estimated 239 persons were employed within the mining industry in Garfield County.

In the year 2005, oil and gas assessed valuation in Garfield County amounted to \$984,417,880 or about 55 percent of total assessed value in the county. Total tax revenues from property taxes and special district levies were \$86,678,430. Based on this assessed value, the top five taxpayers in the county in 2005 were mining companies.

Federal mineral royalties are levied on oil and gas production from Federal mineral leases. For oil and gas production in Garfield County in 2003, total Federal royalties collected amounted to \$125,683,586. Half of those royalties of \$62,841,784 was paid to the State of Colorado. The state's share of the revenue was then distributed to a variety of state and local agencies. Counties where oil and gas were produced received 8 percent of total revenues, local towns in those counties received 5 percent, and local school districts received 5 percent. In 2003, the Garfield County share of Federal mineral lease royalties was \$1,332,000.

Proposed Action:

Environmental Consequences: The proposed action would positively impact the local economies of Garfield County through the creation of additional job opportunities in the oil and gas industry and in supporting trades and services. In addition, local governments in Garfield County would experience an increase in tax and royalty revenues.

Some minor economic loss to private land owners and permitted outfitters and guides may result from the potential displacement of big game and resulting reduction in big game hunting within the project area.

The proposed action could result in negative social impacts including: 1) a change in the recreational character of the area (see **Recreation**), 2) reducing scenic quality (see **Visual Resources**), 3) increased dust levels especially during construction (see **Air Quality**), and 4) increasing traffic (see **Transportation**).

No Action Alternative:

Environmental Consequences: Due to the small-scale of development that would occur under this alternative, there would be little additional job opportunities. Local governments would not benefit from

Federal mineral royalties because the development would occur on private mineral estate from a private surface location.

On the other hand, landowners and permitted outfitters and guides should not be impacted because the displacement of big game should not be widespread. This alternative would cause only nominal change in the recreational and visual character of the area. Because there would be little new surface disturbance and few new wells, dust levels would not increase substantially, and increases in traffic would be localized and short-term.

Soils (includes an analysis of Public Land Health Standard 1)

Affected Environment. Ten different soil associations occur within the project area (Figure 8, USDA 1985). Of these, eight are considered to be fragile soils with severe to very severe erosion potential (Table 11). These soils occur on approximately 1,038 acres or about 55 % of the RGAP area (Figure 9).

In recognition of the potential erosion hazard, Federal Lease COC 56040 contains a Controlled Surface Use (CSU) stipulation designed to protect fragile soils. This stipulation would require EnCana to use a series of BMPs and other special operating constraints for developments that would occur on slopes of 30 % or greater. However, the stipulation only applies to portions of the lease that lie in the eastern half of Section 11, T. 7S., R. 94W (see Table 4). The CSU stipulation does not apply to the balance of the area covered by this lease or EnCana's other lease holdings in the RGAP area.

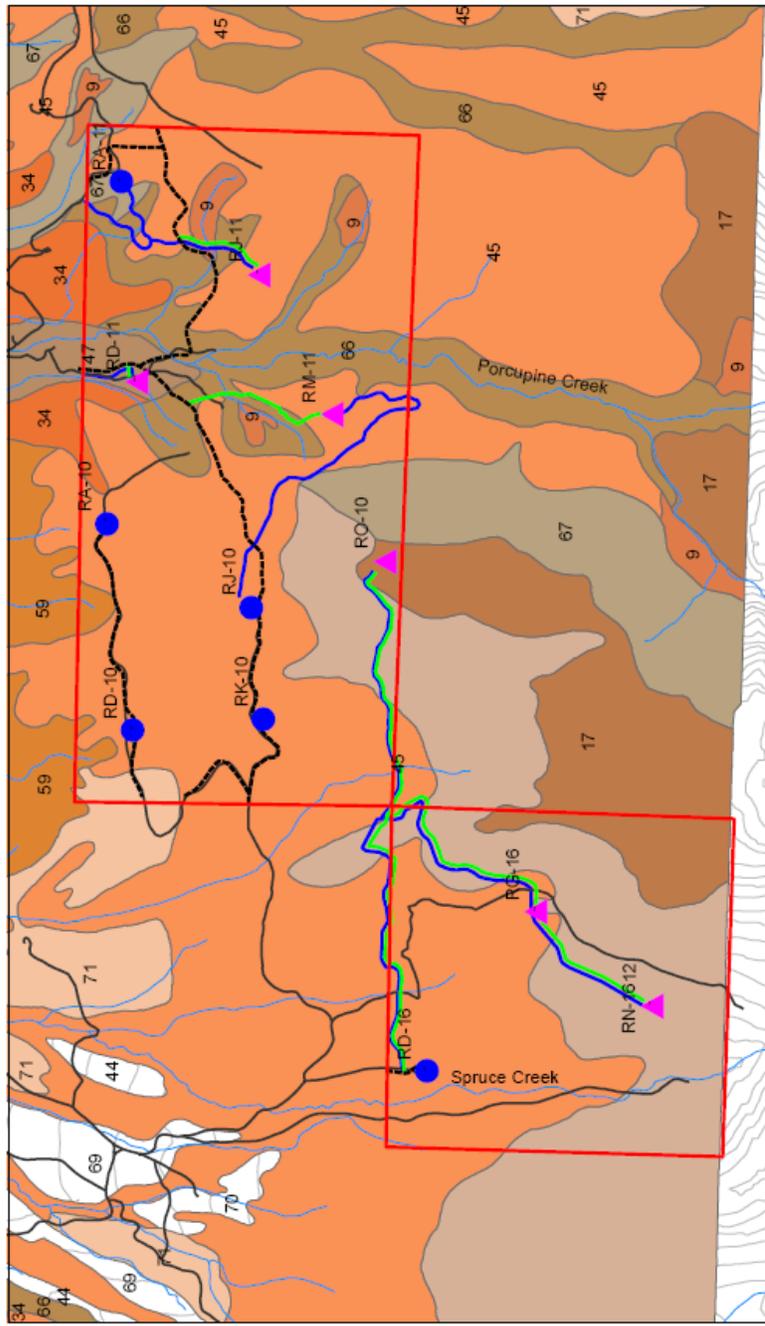
Proposed Action:

Environmental Consequences: As summarized in Table 1, implementation of the proposed action would initially disturb up to 81.5 acres of surface soils. The disturbance would be created by the construction of the well pads (29.8 acres), collocated access roads and gas gathering pipelines (48 acres), and pipelines without roads (2.7 acres). Most of this area would be reclaimed and revegetated upon the completion of construction. The remaining 27.2 acres would remain disturbed for the life (i.e., 20-30 years) of the project.

The most important potential consequence of these disturbances would be an increase in erosion and offsite sedimentation. Potential increases in erosion and sedimentation would be variable across the RGAP area depending on the steepness of the terrain and the erosion potential of the soil. The potential would be greatest where proposed construction activities coincide with steep slopes and fragile soils. Parts of proposed access roads RO10, RG 16, and RN16 would be located on fragile soils on slopes of 30% or greater. The potential for erosion, including slumping and landslides, and sedimentation associated with these access road sections would be substantial.

Less erosion and sedimentation potential would be associated with the construction of the other proposed developments. Although some of these developments would be located on fragile soils, none would be located on slopes of 30% or greater.

In both cases, the greatest risk would occur when the most soil is exposed, especially during period of heavy or protracted precipitation. This would be between the time construction is completed and vegetation is reestablished. The risk would be mitigated, in part, through the implementation of construction methods required under the CSU stipulation attached to Federal lease COC 56040. Similar general surface use and site-specific mitigation measures would be



**Figure 8. Soil Types
Rulison GAP**

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Pipeline
 - Proposed Pipeline
 - Existing Well Pads
 - ▲ Proposed Well Pads
 - Streams
-
- Soil Types**
- 9-Badland(Fragile)
 - 12-Buckton-Inchau Loam(Fragile)
 - 17-Cochetopa Loam(Fragile)
 - 34-Idefonso Stony Loam(Fragile)
 - 45-Morval-Tindell Complex
 - 47-Nihill Channery Loam(Fragile)
 - 59-Potts-Idefonso Complex(Fragile)
 - 66-Torforthents-Camborhids-Rock Outcrop Complex(Fragile)
 - 67-Torforthents-Rock Outcrop Complex
 - 71-Villa Grove-Zoltay Loams



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prepared by:
Western Ecological Resources, Inc.
711 Welton Street
Boulder, CO 80302
(303) 449-9009 FAX (303) 449-9038

Table 11. Soil Associations in the RGAP Area.			
<i>Map Unit Number- Soil Association Name</i>	<i>Soil Description</i>	<i>Slope</i>	<i>Erosion Potential</i>
9 - Badland	Very shallow, poorly drained areas showing no soil characteristics; formed from residuum derived from highly calcareous and gypsiferous shale and bentonite. Surface runoff is rated as very rapid.	10-65%	Very severe
12 - Bucklon-Inchau Loam	Shallow well-drained soils formed in sandstone and shale residuum. Found on ridges and mountainsides. Surface runoff is rated as medium.	25-50%	Severe
17 - Co Chetopa Loam	Deep, well-drained rolling to steep soil found on mountainsides and alluvial fans formed in basaltic alluvium. Surface runoff is rated as slow.	9-50%	Severe
34 - Ildefonso Stony Loam	Deep, well-drained hill to steep soil on mesa breaks, sides of valleys, and alluvial fans; formed in mixed alluvium derived primarily from basalt. Surface runoff is medium.	25-45%	Severe
45 - Morval-Tridell complex	Deep, well-drained soils formed in reworked alluvium derived from basalt and sandstone. Found on alluvial fans and sides of mesas. Surface runoff is rated as medium.	6-25%	Moderate
47 - Nihill Channery Loam	Deep, well-drained moderately sloping to hilly soil on alluvial fans and sides of valleys; formed in alluvium derived from Green River shale and sandstone. Surface runoff is slow.	6-25%	Severe
59 - Potts-Ildefonso Complex	Hilly to very steep soils on alluvial fans and sides of valleys. Combination of two soils. Potts soil (60%) formed in alluvium derived from sandstone, shale, or basalt; the Ildefonso soil (30%) formed in very strongly calcareous, basaltic alluvium and little eolian material. Surface runoff is medium to rapid.	25-45%	Severe
66 - Torriorthents-Camborthids-Rock outcrop complex	Exposed sandstone and shale bedrock, loose stones, and shallow to deep stony loams and clay found on toe slopes and concave open areas on foothills and mountainsides. Runoff is very rapid.	15-70%	Very severe
67 - Torriorthents-Rock outcrop complex	Exposed sandstone and shale bedrock, loose stones, and shallow to deep stony loams and clay found on toe slopes and concave open areas on foothills and mountainsides. Runoff is very rapid.	15-70%	Very severe
71 - Villa Grove-Zoltay loams	Deep, well-drained soils formed in mixed alluvium. Found on alluvial fans and mountainsides. Surface runoff is rated as slow.	15-30%	Slight

attached to the APDs as conditions of approval for those developments located in areas not subject to the stipulation (Appendix D, Number 6).

After successful revegetation, the erosion rate and potential sediment yield would drop to near baseline conditions but would remain at slightly elevated levels due to the presence of new access roads.

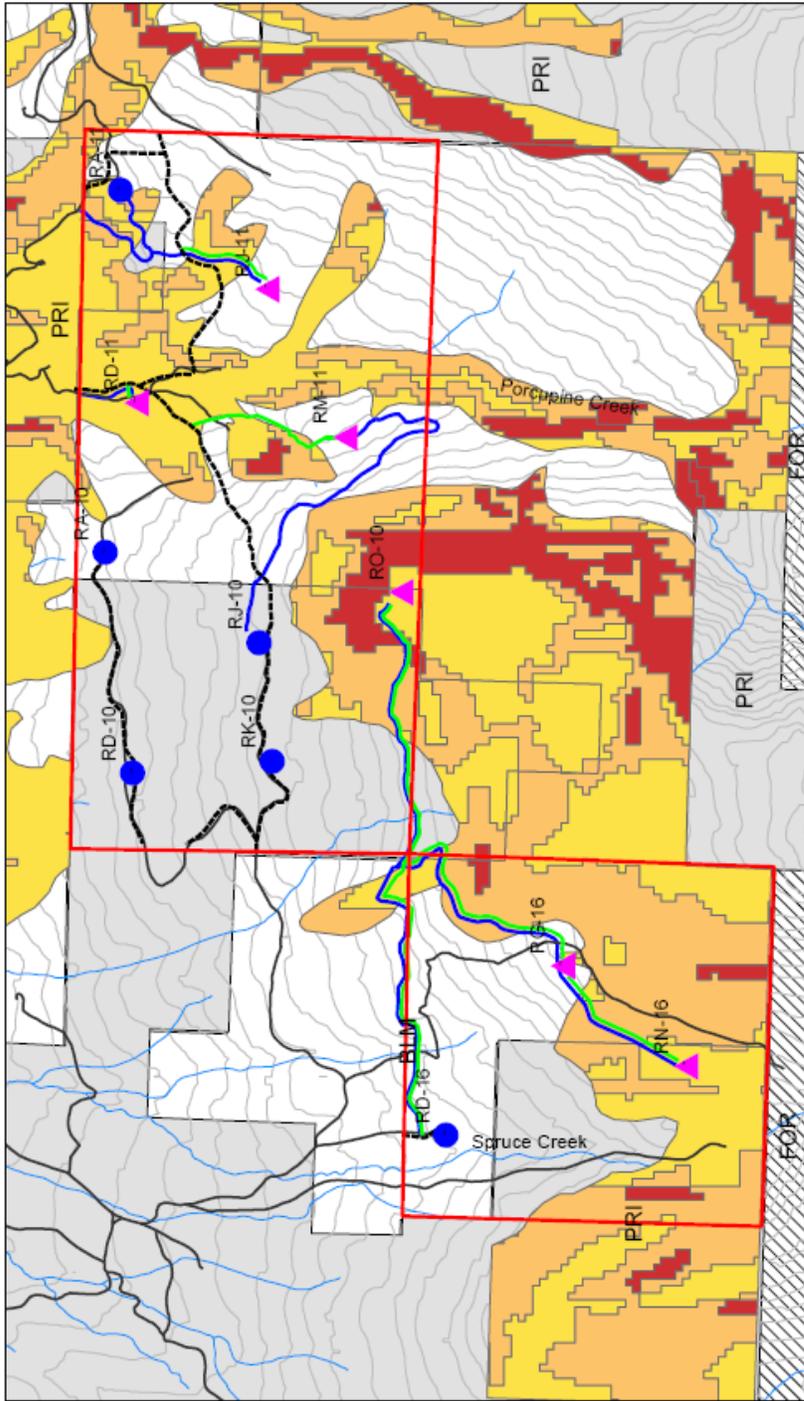


Figure 9. Fragile Soils
Rulison GAP



prepared by:
Westarr Ecological Resources, Inc.
711 Walnut Street
Boulder, CO 80302
(303) 445-9009 FAX (303) 449-9038

No Action Alternative:

Environmental Consequences: Since the no action alternative would be implemented from an existing well pad and would not involve any new disturbance of fragile soils, the impact on soils would be negligible.

Analysis on the Public Land Health Standard for Upland Soils. According to the Rifle-West Watershed land health assessment (USDI 2005), upland soils currently meet Standard 1 within the RGAP area. With timely implementation of the requirements of the CSU stipulation, the application of the applicable conditions of approval, and the timely interim reclamation of disturbed areas, the proposed action would not likely prevent Standard 1 from being met.

Vegetation (includes an analysis of Public Land Health Standard 3)

Affected Environment: The primary vegetation types in the RGAP project area are pinyon-juniper (*Pinus edulis-Juniperus osteosperma*) woodland, Gambel oak (*Quercus gambelii*) shrubland, and big sagebrush (*Artemisia tridentata*) shrubland. Less common types are mesic-mountain shrubland, riparian-wetland habitat (see **Wetlands and Riparian Zones**), aspen forest, and disturbed areas (Figure 10).

Aspen Forest

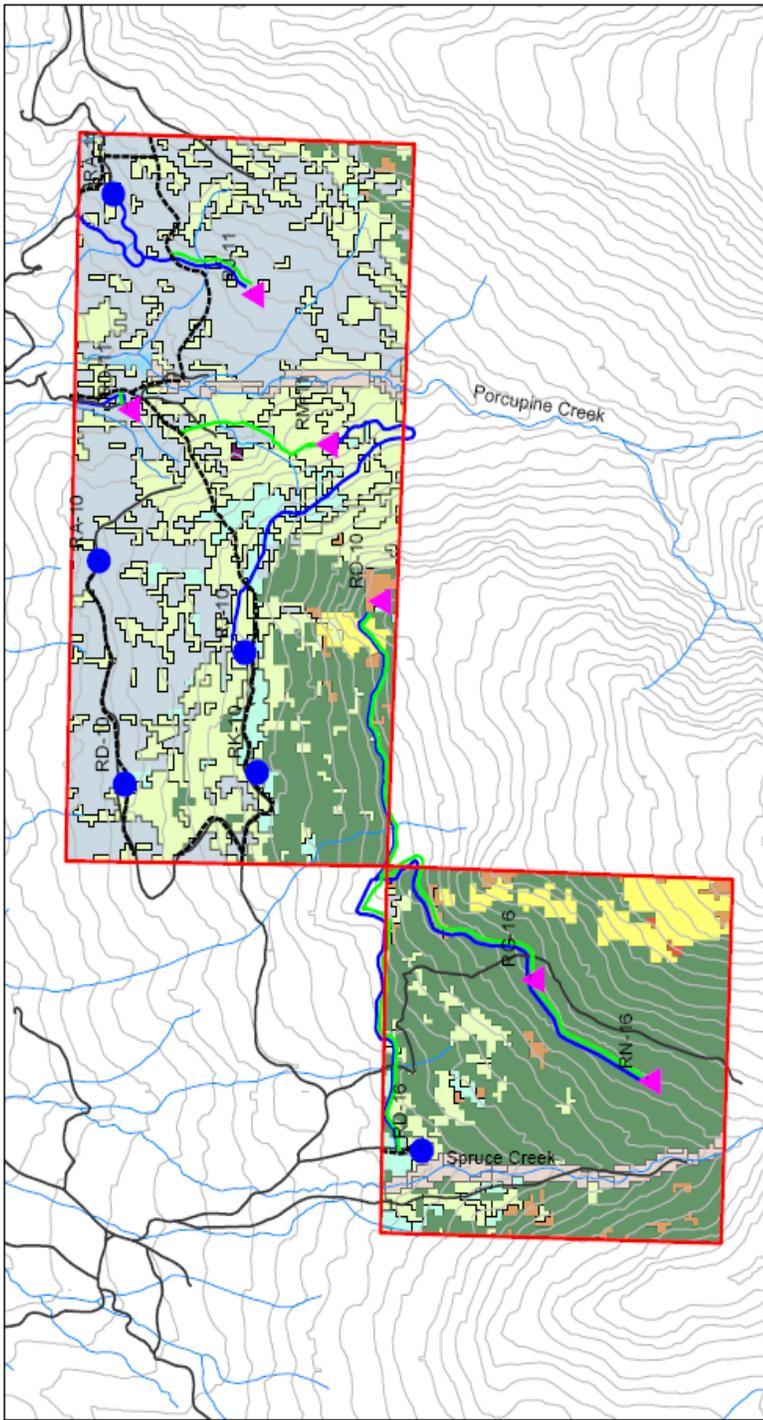
Small stands of quaking aspen ranging from 2 to 5 acres in size occur in several areas within the RGAP area. Aspen generally occur at higher elevations, on north-facing slopes, and along drainage swales. Most of the aspen are located at the small wetland spring/seep near proposed pad RG16 and areas to the southeast. Additional aspen occur along a steep north-facing swale west of proposed pad RO10. The aspen forest generally has an understory of roundleaf snowberry (*Symphoricarpos rotundifolius*) with scattered mountain maple (*Acer glabrum*). Douglas-fir (*Pseudotsuga menziesii*) is also occasionally interspersed among the aspen.

Pinyon-Juniper Woodland

Pinyon-juniper woodlands in the project area generally consist of scattered Utah juniper interspersed with big sagebrush. Pinyon pine is a minor component. Several other shrub species also occur in this community, including snowberry, bitterbrush (*Purshia tridentata*), snakeweed (*Gutierrezia sarothrae*), and serviceberry (*Amelanchier alnifolia*). In general, the sparse herbaceous layer consists of graminoids such as cheatgrass (*Anisantha tectorum*), Kentucky bluegrass (*Poa pratensis*), western wheatgrass (*Pascopyrum smithii*), Indian ricegrass (*Oryzopsis hymenoides*), and squirreltail (*Elymus elymoides*). Forbs include Tracy's thistle (*Cirsium tracyi*), mariposa lily (*Calochortus nuttallii*), western wallflower (*Erysimum capitatum*), tapertip onion (*Allium acuminatum*), yarrow (*Achillea lanulosa*), stemless four-nerve daisy (*Tetraneuris acaulis*), and sharpleaf twinpod (*Physaria acutifolia*). All of these are native species, except for cheatgrass (an invasive, non-native annual species) and Kentucky bluegrass (a widely naturalized non-native perennial species).

Gambel Oak Shrubland

Common associated species include snowberry, mountain mahogany (*Cercocarpus montanus*), and serviceberry, with numerous forbs including tailcup lupine (*Lupinus caudatus*), Rocky Mountain penstemon (*Penstemon strictus*), Watson's penstemon (*Penstemon watsonii*), aspen daisy (*Erigeron speciosus*), running fleabane (*Erigeron flagellaris*), Drummond's rockcress



Legend

- Project Boundary
- Existing Roads/Trails
- Proposed Roads
- Existing Pipeline
- Proposed Pipeline
- Existing Well Pads
- ▲ Proposed Well Pads
- Streams

- Vegetation Types**
- Aspen
 - Aspen/Mesic Mountain Shrub Mix
 - Aspen Mix/Douglas Fir
 - Cottonwood
 - Gambel Oak
 - Mesic Mountain Shrub Mix
 - P-J-Mtn Shrub Mix
 - P-J-Oak Mix

- P-J-Sagebrush Mix
- Pinon-Juniper
- Sagebrush Community
- Sagebrush/Grass Mix
- Sagebrush/Mesic Mtn Shrub Mix
- Sparse P-J/Shrub/Rock Mix
- Spruce/Fir/Aspen Mix
- Other



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Boulder, CO 80302
(303) 445-9009 FAX (303) 449-9038

**Figure 10. Vegetation Types
Rullison GAP**

Note: Vegetation Type Other refers to Non-Riparian Habitats along Spruce and Porcupine Creeks.

(*Boechera drummondii*), Nuttall's larkspur (*Delphinium nuttallianum*), small-leaf pussytoes (*Antennaria parviflora*), lambs-tongue groundsel (*Senecio integerrimus*), longleaf phlox (*Phlox longifolia*), sticky false starwort (*Pseudostellaria jamesii*), and narrowleaf mountain trumpet (*Collomia linearis*). Elk sedge (*Carex geyeri*), a native perennial graminoid, is also common.

Sagebrush Shrubland

Sagebrush shrubland occurs mainly in openings of the pinyon-juniper woodland and contains mixed or pure stands of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and Wyoming sagebrush (*A. t.* ssp. *wyomingensis*). Snowberry and green rabbitbrush (*Chrysothamnus viscidiflorus*) also occur. Common graminoids include Indian ricegrass, squirreltail, western wheatgrass, junegrass (*Koeleria macrantha*), muttongrass (*Poa fendleriana*), bulbous bluegrass (*Poa bulbosa*), and Kentucky bluegrass. Common forbs include tapertip onion, running fleabane, mariposa lily, lobe-leaf groundsel (*Packera multilobata*), tailcup lupine, death camas (*Toxicoscordion venenosum*), coppermallow (*Sphaeralcea coccinea*), balsamroot (*Balsamorhiza sagittata*), and wholeleaf Indian paintbrush (*Castilleja integra*). Brittle prickly pear (*Opuntia fragilis*), a cactus, also occurs. *Mesic-Mountain Shrubland*

One small area of mesic-mountain shrubland was observed in the project area. This area consists of open stands of Gambel oak mixed with snowberry, mountain mahogany, serviceberry, and a few scattered Douglas fir. Stands of sagebrush also occur. Common herbaceous species include elk sedge, Kentucky bluegrass, and pussytoes. Osterhout's penstemon (*Penstemon osterhoutii*), which resembles Harrington's penstemon (a BLM sensitive species), was also observed.

Disturbed Vegetation

Disturbed vegetation occurs along the existing Canyon Gas pipeline. This area is dominated by aggressive non-native species, including agricultural grasses such as smooth brome (*Bromus inermis*) and crested wheatgrass (*Agropyron cristatum*). Invasive non-native forbs include two-lobe speedwell (*Pocilla biloba*), stickseed (*Lappula squarrosa*), cocklebur (*Xanthium strumarium*), prickly lettuce (*Lactuca serriola*), and yellow and white sweetclovers (*Melilotus officinale*, *M. albus*). Noxious weeds, consisting of houndstongue (*Cynoglossum officinale*), cheatgrass, musk and plumeless thistles (*Carduus nutans* ssp. *macrolepis*, *C. acanthoides*), and Canada thistle (*Cirsium arvense*), are also common. The few native species present include western wheatgrass, a native species common in the project area, and sticky gumweed (*Grindelia squarrosa*).

Environmental Consequences: Construction of the proposed pads, pipelines, and access roads would result in both direct and indirect effects on vegetation. Direct effects would include short- and long-term loss of vegetation and long-term modification of community structure and composition. Indirect effects could include increased potential for noxious weed invasion, increased soil erosion and sedimentation, reduced wildlife habitat quantity or quality, and changes in fire regime.

The proposed action would result in the loss of approximately 81.5 acres of vegetation, mainly Gambel oak shrublands, sagebrush shrublands, and pinyon-juniper woodlands (Table 12). Small amounts of riparian-wetland habitat and aspen forest would also be lost. Of the 81.5 acres of physical disturbance, approximately 27.2 acres would not be reclaimed during the life of the wells. With implementation of standard conditions of approval identified in Appendix D (Numbers 14 and 20), desirable forbs and grasses on the unused portions of the pads, roads, and pipelines could be established within 2 to 3 years. However, because of periodic workovers and

the potential for additional well bores in the future, it is likely that vegetation would remain in an early seral stage for the life of the wells.

This would result in an increase in the proportion of herbaceous (i.e., non-woody) species in the areas of disturbance. Although Gambel oak and sagebrush shrublands would regenerate over time, this process could take several decades, depending on the growth and persistence of seeded species and the intensity of grazing by livestock or wildlife. Pinyon-juniper woodlands could take hundreds of years to return to predisturbance conditions.

Table 11. Acres of Disturbance by Vegetation Type.		
	<i>Acres of Disturbance (short-term)</i>	<i>Acres of Disturbance (long-term)</i>
Proposed Well Pads		
Gambel Oak	11.5	3.0
Mesic-Mountain Shrubland	4.7	1.5
PJ/Sagebrush Mix	14.6	4.5
Subtotal	30.8	9.0
Roads (including co-located pipelines)		
Aspen Mix	1.4	0.4
Gambel Oak	22.7	7.2
Mesic-Mountain Shrub Mix	1.8	0.6
Pinyon-Juniper (PJ)	7.0	2.8
PJ/Mesic-Mountain Shrub Mix	4.6	2.2
PJ/Oak Mix	2.6	1.3
PJ/Sagebrush Mix	5.6	2.6
Sagebrush Community	1.1	0.5
Sagebrush/Mesic-Mountain Shrub Mix	1.2	0.6
Subtotal	48.0	18.2
Pipeline (not located with road)		
Pinyon-Juniper (PJ)	0.8	0.0
PJ/Sagebrush Mix	1.6	0.0
Sagebrush Community	0.3	0.0
Subtotal	2.7	0.0
TOTAL	81.5	27.2

No Action Alternative:

Environmental Consequences: The no action alternative would result in 1 acre of additional vegetation loss, and thus, would have negligible impacts on vegetation within the project area. Because the existing pad RD 10 is located on private surface and would be used to develop private wells, the BLM would not have jurisdiction to enforce reclamation practices aimed at

reestablishing ecologically desirable vegetation. Reclamation standards would be guided by the COGCC and the desires of the surface landowner.

Analysis of the Public Land Health Standard for plant and animal communities (partial, see also **Wildlife, Aquatic and Wildlife, Terrestrial**): Three sites in the project area were evaluated during the Rifle –West watershed land health assessment (USDI 2005). One site was located in the Spruce Gulch allotment and two were situated in the Porcupine Creek allotment. Although all three sites were meeting the standard, problems were identified. These include decadent stands of sagebrush, with poor recruitment and encroaching juniper and widespread invasion of cheatgrass with a corresponding loss of other functional groups such as native perennial grasses and forbs. Surface disturbance associated with the proposed action has the potential to encourage expansion and dominance of the site by cheatgrass and other invasive weeds. Appendix D includes provisions to revegetate the disturbances with native species (Number 14) and to control noxious weeds (Number 7). If successfully revegetated, the proposed action should not contribute to the failure of the areas to meet Standard 3.

Under the no action alternative, the effect on Standard 3 is not clear because of the inability of BLM to mandate use of an ecologically desirable native seed mix on the private surface.

Visual Resources

Affected Environment: The proposed action would take place on both public and private lands within areas classified by the BLM as Visual Resource Management (VRM) Classes III and IV, as identified in the Glenwood Springs Resource Management Plan and amendments (USDI 1984). Visual resource management objectives do not apply to non-BLM lands, but visual concerns may be addressed on split estate where federal minerals occur. VRM classes shown for non-public lands are an indication of the visual values for those lands, and those values are only protected at the landowner's discretion. The management of VRM classes, landscape character and scenic quality on private and public lands and split estate and visual impacts associated with well pad development and operation are discussed in the Oil & Gas Leasing and Development FSEIS (USDI 1999a: 3-41 – 3-45, 4-49 – 4-54).

The majority of the project area is classified by the BLM as a Class IV visual resource management area (BLM 1984; Figure 11). The following pads are located in this class: RD11, RG16, RM11, RN16, and RJ1. The management of visual resources in Class IV areas allows major modifications of the existing character of the landscape. In these areas, alterations may dominate the view and may be the major focus of viewer attention. However, attempts have been made to minimize impacts in Class IV through careful location, minimizing disturbance, and repeating basic landscape elements.

The proposed RO10 well pad and a small portion of its access road are the only components of the RGAP located in a VRM Class III area (see Figure 11). Both the proposed road and majority of the well pad are located on privately owned surface on which the Federal government holds mineral rights (BLM Lease #COC-46032). In contrast to Class IV objectives, management in Class III areas allows for a moderate level of change to the characteristic landscape. The objective of this class is to partially retain the existing character of the landscape. In these areas, alterations may attract attention but should not dominate the view. Changes in the landscape in Class III areas should repeat the basic elements found in natural features of the landscape.

At the present time, the RGAP project area is dominated visually by native plant communities, with some modifications to the natural environment due to human

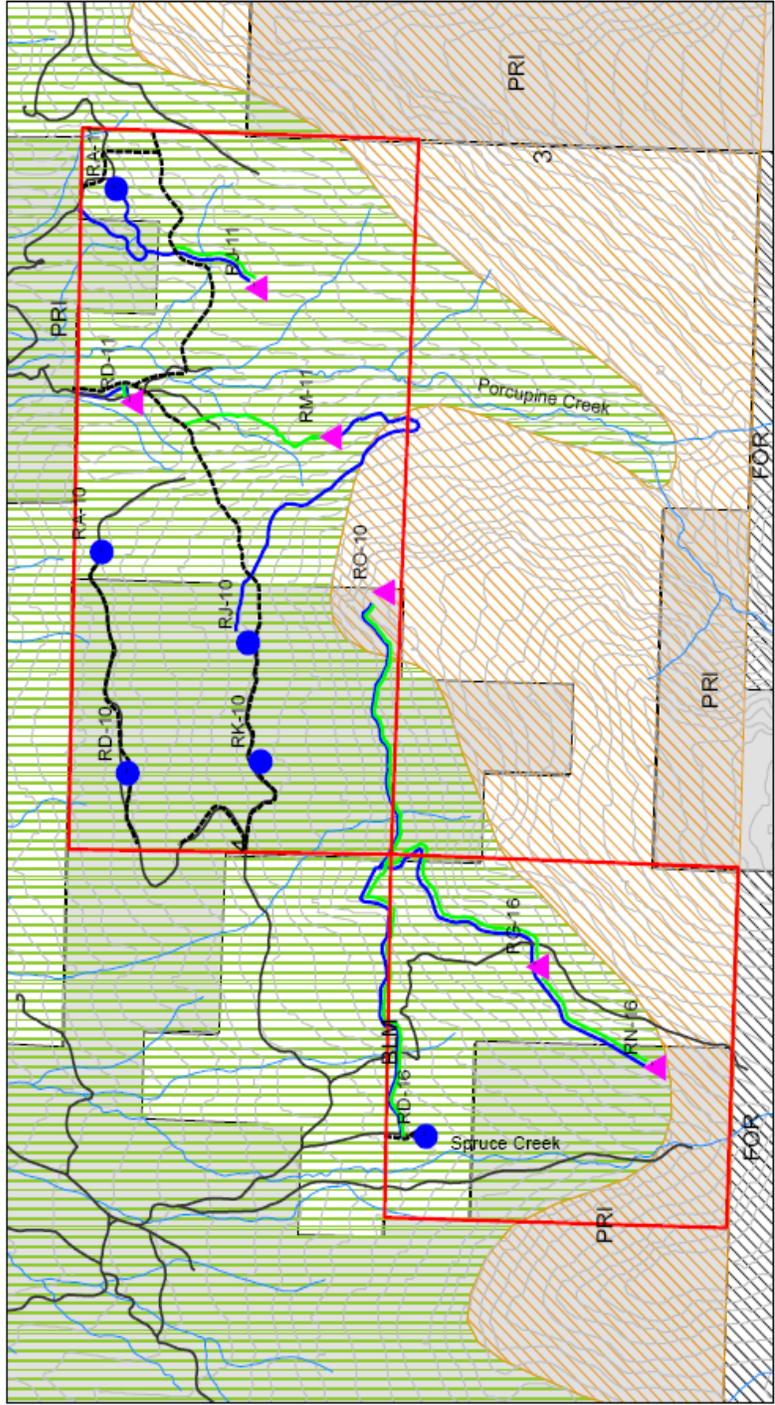


Figure 11. VRM Classes within the RGAP Area Rulison GAP

prepared by:
 Western Ecological Resources, Inc.
 711 Walnut Street
 Boulder, CO 80302
 (303) 445-9009 FAX (303) 449-9038



1 inch equals 2,000 feet
 Date: March 2007

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Pipeline
 - Proposed Pipeline
 - Existing Well Pads
 - Proposed Well Pads
 - Streams
- Visual Resource Management**
- Class 3
 - Class 4
- Land Ownership**
- BLM
 - FOREST
 - PRIVATE

activities. These modifications include a high-voltage electrical transmission line, multiple two-track roads, fences and gates for livestock management, historic structures, one occupied permanent residence, and oil and gas production facilities (e.g., pads, wellheads, separator/dehydration tanks, product storage tanks, pipelines, and access roads) scattered throughout the area. At the present time, modifications in the RGAP project area generally satisfy the Class III and IV objectives.

The BLM utilizes the Visual Resource Management (VRM) system to manage and protect visual/scenic resources. In the region including the RGAP, BLM's visual resource management emphasis has been generally to protect the scenery visible from roads, residences, and areas with high sensitivity. This impact analysis is based on the views from selected Key Observation Points (KOPs). KOPs used for the RGAP visual analysis were Interstate 70, Spruce Creek (CR 329), Porcupine Creek (CR 325) and Beaver Creek (CR 317) Roads.

Proposed Action:

Environmental Consequences: Short-term visual impacts from construction, drilling, and completion activities would occur on all new pads, as well as on existing pads with proposed new wells. The existing landscape would be changed by the introduction of new elements of line, color, form, and texture. New pads and other surface facilities, new roads, and new pipelines would increase the presence of drilling rigs, heavy equipment (e.g., dozers, graders, etc.), and vehicular traffic, with an associated increase in dust, light pollution, and well flaring.

Construction would occur over a 2-3 year period. At a particular location, activity would occur 24 hours per day for the 30-60 day drilling and completion phases. Consequently, the drill rig, other large equipment, lights, and well flaring would be visible in the night sky for up to two months at each well location.

Because of the distance from the I-70 corridor, short-term construction and drilling-related visual impacts would be barely visible in the background. An exception would be pad RO10 because of its location on a dominant ridgeline. Additionally, construction and drilling activities would be visible in the middle ground along CR 329 and CR 325. Construction and drilling activities would not be visible from the towns of Rifle, Silt, or New Castle due to distance and intervening topographic barriers.

Long-term impacts of the proposed action would consist of reduced visual character within portions of the landscape where new pad facilities, pipelines, and roads cannot be screened from sight. The visibility of new areas of surface disturbance and production equipment would increase the existing visual contrasts associated with human modifications already present in the RGAP area. Interim reclamation (see Appendix D, Number 14), site specific mitigation (Appendix E) as well as the use of natural colors (Shale Green (Munsell 5Y4/2)) on production equipment, would largely mitigate long-term impacts (Appendix D, Number 21).

The proposed RO10 well pad and a small portion of its access road--located in Gambel oak woodland and sagebrush shrubland--are the only components of the RGAP in a Class III area. Both the proposed road and most of the pad are on private surface with underlying Federal minerals. Construction of the proposed RO10 access road and pad would alter the existing viewshed; these features could dominate the view because they would be located higher on the slope than existing visual impacts, with little screening by native vegetation. The basic design elements of form, line, color, and texture would differ substantially from the existing landscape during the construction and drilling. Specific mitigation measures designed to minimize the visual impact of this pad is presented in Appendix E. Following the implementation of these

measures and completion of interim reclamation, the RO10 pad would be expected to satisfy the Class III objectives. However, portions of the reclaimed access road on private land would remain visible.

The remaining pads (RD11, RG16, RM11, RN16, and RJ11) and associated access roads would be located within areas designated as VRM Class IV and would not be visible from CR329, CR317, or I-70. One proposed pad, RG16, would be an exception because of its prominent location in the Spruce Creek Valley. Site specific mitigation for the RG16 pad, are presented in Appendix E. With the application of the mitigation, Class IV objectives would be met

No Action Alternative:

Environmental Consequences: Under the no action alternative, three wells would be developed from one existing pad, RD10. This pad is located in a Class IV area and would not be visible from CR329, CR317, or I-70. While the drill rig may be visible and development activity may be perceptible at night, the effect on visual resources would be negligible due to the small numbers of wells proposed for development.

Wildlife, Aquatic (includes an analysis on of Public Land Health Standard 3)

Affected Environment: The RGAP area encompasses portions of Porcupine and Spruce Creeks. Porcupine Creek is perennial, but due to limited water and natural geological conditions, it does not support fish species. Porcupine Creek is incised and known to carry a large detritus load. Spruce Creek is ephemeral and thus does not support fish species. The Colorado River, approximately 2.5 miles north of the project area, supports numerous native and non-native fish species and a variety of aquatic macroinvertebrates.

Proposed Action:

Environmental Consequences: Since Porcupine and Spruce Creeks do not support fishes, the proposed action would not affect any fish species in these streams. However, during extreme precipitation events erosion and increased sedimentation has the potential to impact fishes that inhabit the Colorado River.

The small amount of sediment anticipated to ultimately reach the Colorado River from this source should have minimal impact on fisheries, because it would likely be well within the background levels for the Colorado River. Minor increases in sediment associated with the proposed action would be undetectable.

No Action Alternative:

Environmental Consequences: The no action alternative would not have an impact on fish because of the small scale of development and the lack of local fish populations.

Analysis on the Public Land Health Standard for Aquatic Wildlife. In the Rifle-West watershed land health assessment (BLLM 2005), the BLM determined that Standard 3 was being achieved, although the Porcupine and Spruce Gulch Common allotments were identified as problem areas. Porcupine and Spruce Creek do not currently support fisheries and have limited fisheries potential. The limited potential is a result of highly seasonal flows, irrigation diversions, and heavy sedimentation caused by flashy runoff, local geologic conditions, and proximity to existing roads, pads, and pipelines. The report stated that as natural gas production and development

continues to increase, it will be increasingly difficult to maintain Standard 3 for aquatic wildlife. Although the impacts associated with proposed action and no action alternative are not considered substantial, they have the potential, at least in a minimal way, to further move the area away from meeting Standard 3.

Wildlife, Terrestrial (includes an analysis on Public Land Health Standard 3)

Affected Environment: The primary vegetation types in the project area are pinyon-juniper woodlands, Gambel oak shrublands, and sagebrush shrublands. Less common are riparian-wetland habitats, small stands of aspen, and disturbed areas. The RGAP area provides cover, sources of food, and breeding habitat for a variety of wildlife. Big game species observed within the RGAP area that are important to Colorado's economy include the mule deer (*Odocoileus hemionus*) and Rocky Mountain elk (*Cervus elaphus nelsoni*). Other big game species likely to inhabit the RGAP area are the mountain lion (*Felis concolor*) and black bear (*Ursus americanus*). Approximately 1,600 acres of elk winter range are located within the RGAP area, while the entire RGAP area is identified as deer winter range (Figure 12).

The Colorado Division of Wildlife (CDOW) is responsible for managing wildlife populations in the state and manages big game within specific Data Analysis Units (DAUs). Each DAU comprises smaller, more manageable units known as Game Management Units (GMUs). The RGAP lies within deer DAU D-12, GMU 42 and elk DAU E-14, GMU 42. Population estimates of these species are reviewed periodically to determine management objectives based on the carrying capacity of existing habitat. From this assessment, a determination of the number of individuals of each species within each DAU is established. In 2005, DAU D-12 was considered to be 11-20% under the population long-term objective (LTO) of 29,500 individuals. The projected 2005 population for DAU D-12 was 26,340 individuals; the harvest objective was 1,600 individuals (CDOW 2006). Elk numbers in DAU E-14 and throughout Colorado are above the statewide LTO.

Federal Leases COC 46032 and COC 46034 have Timing Limitations (TLs) for the protection of seasonally important wildlife habitats during the period January 16 to April 29 in portions of Section 10 (S½NW¼, SW¼) and all of Section 16. More importantly, BLM right-of-way COC 65900 through portions of Section 9 has a TL for the protection of big game winter habitat during the period December 1 to April 30. During this time, access for development purposes is not allowed in all of Sections 10 and 16 and within the southwest quarter of Section 11 (RM11 road and pad).

The only big game winter habitat not protected by a TL during the development phase is in the northern half and southeast quarter of Section 11. This area includes one existing pad (RA11) and two proposed pads (RD11 and RJ11). Because this area provides important habitat for mule deer and elk, and to minimize impacts associated with winter drilling to the extent possible, a 60-day TL is recommended between January 15 and March 15. Timing Limitations are applicable only to construction, drilling, and completion activities and do not apply to the operations and maintenance of producing wells.

Proposed Action:

Environmental Consequences: Impacts to big game include habitat loss, displacement into less suitable habitat, and increased physiological stress. These impacts are more significant during critical seasons such as spring when calving and fawning or during winter.

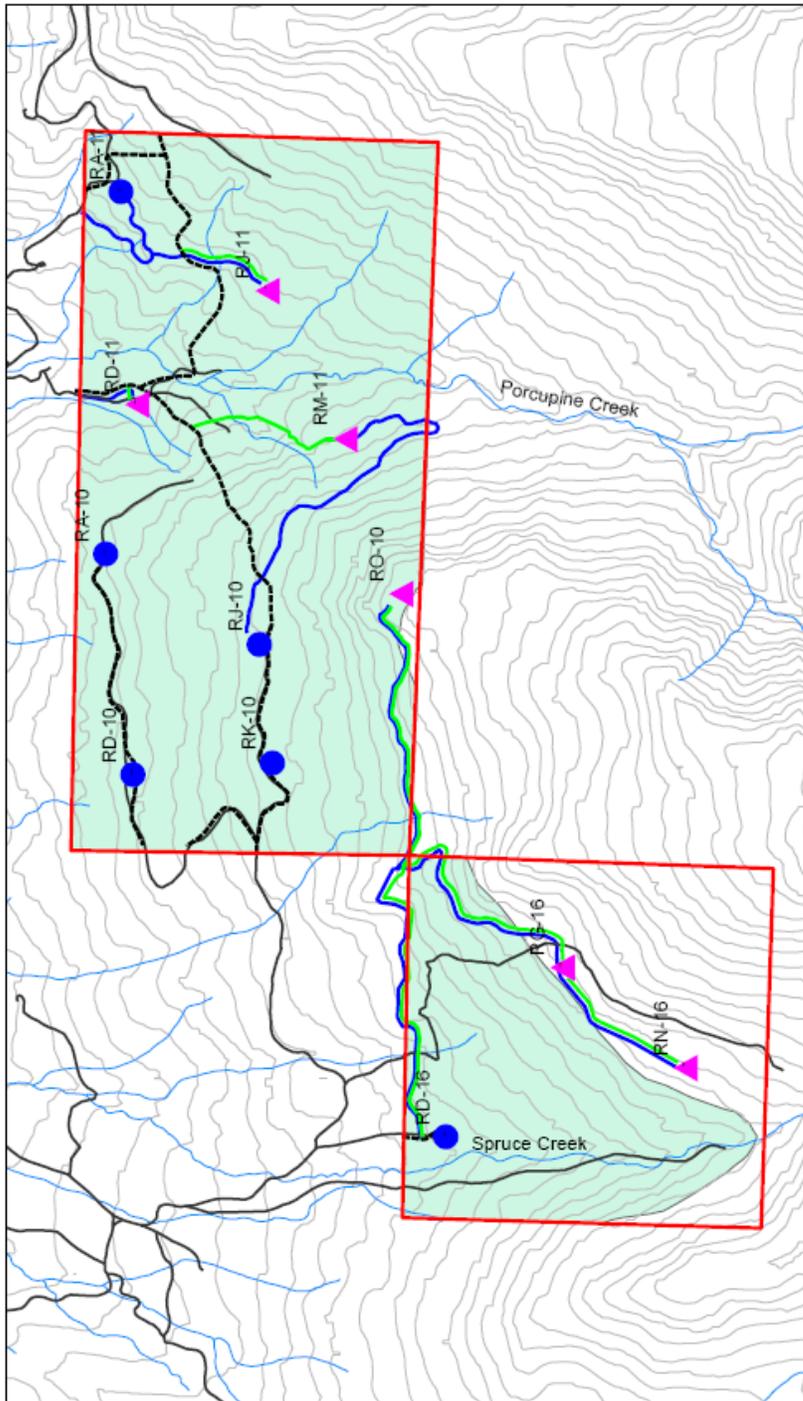


Figure 12. Elk Winter Range
Rulison GAP

- Legend**
- Project Boundary
 - Existing Roads/Trails
 - Proposed Roads
 - Existing Pipeline
 - Proposed Pipeline
 - Existing Well Pads
 - ▲ Proposed Well Pads
 - Streams
 - Elk Winter Range

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Westarr Ecological Resources, Inc.
711 Walnut Street
Boulder, CO 80302
(303) 445-9009 FAX (303) 449-9038

The proposed action would result in the initial loss or fragmentation of 81.5 acres of wildlife habitat in the RGAP (Table 1). Following reclamation of pads, pipelines, and access roads, permanent direct habitat loss would be reduced to 27.2 acres.

Additional indirect habitat loss may occur if increased human activity associated with infrastructure causes mule deer to be displaced or alter their habitat use patterns. These disturbances may cause mule deer to use habitats of lower quality during periods when habitats of higher quality are essential for maintaining a zero energy balance (energy intake equals energy expended). Similar effects could be expected for elk.

Using a 0.125-mile buffer for proposed and existing pads and associated infrastructure, approximately 1,193 acres of big game winter range would be indirectly affected by the proposed action. Some level of avoidance by big game could be expected in areas indirectly affected. Because of site fidelity of female deer, movement to other locations may further weaken these individuals due to additional stress, potentially causing mortality or affecting birthrates.

Winter range adjacent to the RGAP could be indirectly affected and decline in quality as a result of increased use by displaced animals, thereby decreasing the overall carrying capacity of the area (Bartmann et al. 1992; White and Bartmann 1998). Forcing more animals onto remaining areas available for use could increase the spread of disease within the population. In addition, concurrent gas development in surrounding areas may be reducing areas available to big game on a population level, resulting in no suitable habitat for displaced animals.

The required winter TL would limit impacts related to construction, drilling, and completion activities on 75 percent of the project area but would not apply to wells in the production phase at four existing pads in Section 10 and one each in Sections 16 and 11. In these areas, disturbance is a regular event that consists of truck traffic and human presence for routine operations and maintenance. Some level of avoidance is expected to occur while personnel are present, but habituation may lessen this impact. Effects to wildlife are expected to be greater during construction, drilling, and completion than during production and maintenance due to the higher levels of noise and human activity (see **Noise**). Refer to Appendix D, Number 19 for specific mitigation related to Terrestrial Wildlife and various site-specific conditions of approval in Appendix E listing timing limitations applicable to certain well pads.

Noxious weeds can further reduce the amount of available habitat and are already present within the RGAP, particularly in areas near existing pads, roads, and pipelines. The likelihood of noxious weeds spreading increases as more ground is disturbed. Mitigation measures would minimize the impact noxious weeds have on wildlife habitat in the RGAP (Appendix D, Number 10).

No Action Alternative:

Environmental Consequences: The three new private wells to be developed from one existing pad would result in little new habitat loss (i.e., 1 acre) and negligible fragmentation. However, development would cause a temporary increase in activity at the pad and along the access pad. This activity could cause furtive species to temporarily avoid the areas of increased activity. Overall, however, the relatively short duration and intensity of oil and gas operations under the no action alternative would result in much lower impacts to terrestrial wildlife relative to the proposed action.

Under this alternative, the winter big game TL associated with ROW grant COC 65900 would continue to prohibit construction or drilling traffic on CR 350 during the December 1 to April 30 period. Since this route would provide the only practical access to the existing pad, construction and drilling activities would not occur during this time.

Threshold Analysis for Mitigation of Impacts to Wildlife and Wildlife Habitat. The current Glenwood Spring Resource Area Land Use Plan (USDI 1999a) requires operators to implement measures to reduce impacts to winter range if developments reach a predetermined level:

“Within high value or crucial big game winter range, the operator is required to implement specific measures to reduce impacts of oil and gas operations on wildlife and wildlife habitat....Measures to reduce impacts would generally be considered when well density exceeds four wells per 640 acres, or when road density exceeds three miles of road per 640 acres (USDI 1999a:16).”

The RGAP would not exceed the threshold analysis level. The road and well density threshold analysis completed for the six new surface locations, associated access roads, pipelines, and existing development within the boundaries of the RGAP show a total of 12 well pads within the RGAP. The total well pad density within the RGAP would be one pad per 160 acres and road density is approximately 2.5 miles per 640. Both are below the mitigation threshold.

Analysis on the Public Land Health Standard for Animal Communities (partial, see also **Vegetation and Wildlife, Aquatic**): The Rifle-West Land Health Assessment Report (USDI 2005) determined that salt desert shrub and sagebrush range sites within the Spruce Gulch and Porcupine Common allotments did not meet the criteria for a Reference Area. Most of the area within the RGAP would meet the standards for a Reference Area as it is largely unaltered by development or noxious weeds. Large portions of the watershed either are not meeting or trending away from meeting Standard 3 for some high profile terrestrial wildlife species, most notably mule deer. The proposed action would further trend the area away from meeting the standard due to direct loss of habitat and habitat fragmentation. These actions could result in the deterioration of conditions essential to animal communities.

SUMMARY OF CUMULATIVE IMPACTS

The Draft and Final Roan Plateau Resource Management Plan Amendment & Environmental Impact Statements (USDI 2004, 2006) collectively analyzed six alternatives for oil and gas development in the Roan Plateau planning area. The assessment included an analysis of impacts of past, present, and reasonable foreseeable future actions, including predicted future oil and gas development, on both public and private lands. Since the Final Roan Plateau RMP Amendment and EIS presents a recent analysis of cumulative impacts in an region adjacent to the RGAP area, it is incorporated by reference.

Until relatively recently, modifications of the RGAP region have been characteristic of agricultural and ranching lands, with localized industrial impacts associated with the railroad and I-70 highway corridors and the Anvil Points mine. More recently, these changes are cumulative to the growth of residential and commercial uses, utility corridors, oil and gas developments, and other rural industrial uses. These increasing activity levels have accelerated the accumulation of impacts in the area. These impacts have included: 1) direct habitat losses, 2) habitat fragmentation and losses in habitat effectiveness, 3) elevated potential for runoff, erosion, and sedimentation, 4) expansion of noxious weeds and other invasive species, and 5) increased noise and traffic and reductions in the scenic quality of the area (USDI 2006: 4-1– 4-129).

Although none of the cumulative impacts described in the Final Roan Plateau RMP Amendment and EIS were characterized as significant, and while new technologies and regulatory requirements have reduced the impacts of some land uses, it is nonetheless clear that past, present, and reasonably foreseeable future actions has had and would continue to have adverse affects on various elements of the human environment. The anticipated impact levels for existing and future actions range from negligible to locally major, and primarily negative, for specific resources. The primary reasons for this assessment are twofold: (1) the rate of development, particularly oil and gas development, is increasing in the RGAP area, resulting in an accelerated accumulation of individually nominal effects; and (2) the majority of residential and commercial expansion, as well as oil and gas development, have occurred, and is likely to continue to occur, on private holdings where mitigation measures designed to protect and conserve resources are not in effect.

It is clear that the proposed action would contribute to the collective impact. Additional ground disturbance would occur, additional habitat would be lost, noise and traffic would increase, and additional oil-and gas-related developments would be visible. Therefore, the impacts of the proposed action would move the cumulative impact incrementally closer to a threshold of significance for some resources. However, the contribution to the accumulated effects would be minor because the scale of the proposed development is relatively small, multiple wells would be developed from single pads, and mitigation measures represented by the lease stipulations for big game and fragile soils protection and the conditions of approval identified in Appendices D and E are mandated for implementation.

FUTURE IMPLEMENTATION ACTIONS USING STATUTORY CATEGORICAL EXCLUSIONS

Section 390 of the Energy Policy Act of 2005 established statutory categorical exclusions (SCEs) under the National Environmental Policy Act (NEPA) that apply to five categories of oil and gas exploration and development on Federal oil and gas leases. The purpose of these SCEs is to streamline the approval process for relatively minor actions in areas where environmental analysis had previously been conducted.

The SCEs apply to five categories of action:

- Individual surface disturbance of less than 5 acres so long as the total surface disturbance on the lease is not greater than 150 acres and site-specific analysis in a document pursuant to NEPA has been previously conducted,
- Drilling an oil or gas location or well pad at a site at which drilling has occurred within 5 years prior to the date of spudding the well,
- Drilling an oil or gas well within a developed field for which an approved land use plan or any environmental document prepared pursuant to NEPA analyzed drilling as a reasonably foreseeable activity, as long as such plan or document was approved within 5 years prior to the date of spudding the well,
- Placement of a pipeline in an approved right-of-way corridor, so long as the corridor was approved within 5 years prior to the date of placement of the pipeline,
- Maintenance of a minor activity, other than any construction or major renovation of a building or facility.

In reviewing an Application for Permit to Drill (APD), Surface Use Plan of Operations, or pipeline application involving a proposed activity that fits into one of the five categories, the appropriate SCE would be applied, and no further NEPA analysis would be required. However, a structured, interdisciplinary review and approval process, including onsite examinations of all proposed well and road locations and the application of appropriate mitigation and Best Management Practices (BMPs), would apply.

The use of these SCEs would allow EnCana to seek expedited approval of future actions that constitute minor alterations of the proposed RGAP (e.g., changes in pad configuration or location, minor changes in access routes, changes in the number of wells or pads, alterations in pipeline length or location, etc.). However, new implementation actions beyond the scope and intent of the SCEs would require additional environmental analysis prior to approval.

AGENCIES CONSULTED

The following organizations were consulted during the development of this EA:

- EnCana Oil & Gas (USA) Inc.
- Garfield County Board of Commissioners
- Colorado Division of Wildlife
- Colorado Mule Deer Association
- Northern Ute Tribe
- Southern Ute Tribe
- Ute Mountain Ute Tribe
- U.S. Army Corps of Engineers
- Wasatch Surveying

LIST OF PREPARERS AND INTERDISCIPLINARY REVIEW

This EA was prepared by an interdisciplinary team of consulting resource specialists serving as a third-party NEPA contractor to the BLM. Jerry Powell of Wildlife Specialties, LLC, was the primary contractor; collaborating individuals with other firms are noted in Table 13. Resource management direction and final EA review was provided by BLM resource specialists as noted in Table 14.

<i>Resource Parameter/Area of Responsibility</i>	<i>Responsible Person</i>
Project Management	David Johnson (Western Ecological Resource, Inc.) / Jerry Powell
Socio-Economics, Transportation, Recreation	Jane Boand (David Evans and Assoc. Inc.)
Cultural Resources	Metcalf Archaeological Consultants, Inc.
Wastes, Hazardous or Solid	Millah Nikkel (Goodbe and Assocs. Inc)
Vegetation, Wetlands & Riparian Zones, Range Management, Invasive Non-Native Species, Special Status Species (plants), Soils	Rea Orthner (Western Ecological Resources, Inc.)
Air Quality, Cultural Resources, Environmental Justice, Migratory Birds, Water Quality, Noise, Paleontology, Realty Authorizations, Visual Resources, Wildlife Aquatic & Terrestrial,	Jerry Powell (Wildlife Specialties, LLC)
Geology and Minerals	Jill Schlaefer (Carter Burgess Inc.)
Editing	Susan Cornett (Western Ecological Resources)

Table 14. List of BLM Interdisciplinary Reviewers	
<i>Resource Parameter/Area of Responsibility</i>	<i>Responsible IDT Member</i>
CRITICAL ELEMENTS	
Air Quality	Jeff O'Connell
Cultural Resources	Cheryl Harrison
Environmental Justice	Jim Byers
Invasive Non-Native Species	Beth Brenneman
Migratory Birds	Jeff Cook
Native American Religious Concerns	Cheryl Harrison
Special Status Species	Jeff Cook (wildlife), Beth Brenneman (plants)
Wastes, Hazardous or Solid	Marty O'Mara
Water Quality, Surface and Ground	Jeff O'Connell
Wetlands and Riparian Zones	Jeff O'Connell
NON-CRITICAL ELEMENTS	
Access and Transportation	Jim Byers
Geology and Minerals	Fred Conrath
Noise	Jim Byers
Paleontology	Fred Conrath
Range Management	Isaac Pittman
Realty Authorizations	Jim Byers/DJ Beaupeurt
Recreation	Brian Hopkins
Socio-economics	Brian Hopkins
Soils	Jeff O'Connell
Vegetation	Beth Brenneman
Visual Resources	Kay Hopkins
Wildlife, Aquatic	Jeff Cook
Wildlife, Terrestrial	Jeff Cook

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APPENDIX A
PUBLIC COMMENTS

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A Public Notice addressing the RGAP Proposed Action was published in the Glenwood Post Independent on February 3, 10, and 17, 2006 and in the Rifle Citizen Telegram on January 26, February 2, 9 and 17, 2006. Additionally, a letter containing the public notice information was mailed directly to multiple state and federal agencies, adjacent landowners, Special Recreation Permit holder, Garfield County and the Colorado Division of Wildlife (CDOW). The 30-day public comment period ended on February 20, 2006.

In response to the solicitation for comment identified in the Public Notice, BLM received comments from the CDOW, the Colorado Mule Deer Association, and the Garfield County Board of County Commissioners. The written comments are summarized below.

Colorado Division of Wildlife

In their letter to the BLM, the Colorado Division of Wildlife provided the following comments based on their review of EnCana's GAP proposal, which did not include impact identification or mitigation:

- In the EA it must clearly state that reseeding will include a 5% shrub component and 10% forb component and monitoring of reseeded areas will ensure success;
Response: Table 19 identifies the seed mix for the RGAP. Shrubs comprise 21% of the plant component; forbs are 36% of the plant component.
- Any prescriptions such as CSUs and NSOs have been completely omitted from the document;
Response: Table 4 provides information on lease stipulations and notices applicable to the Proposed Action.
- Well site information needs to be cross-referenced across the various tables and appendices;
Response: Comment noted.
- Stipulations on wildlife timing appear to be shorter than what is normally required;
Response: Wildlife timing limitations are for the standard time period applied by the BLM.
- GAP does not evaluate the development with enough detail to examine the true cumulative impacts;
Response: The GAP proposal did not evaluate or quantify impacts as this EA has.
- Within the document, common COAs such as timing restrictions, remote sensing, and restriction of vehicular traffic are not mentioned;
Response: The GAP proposal did not identify COAs applicable to the Proposed Action as this EA has.
- The requirements and standards set forth in the FSEIS have been omitted, selectively applied, or changed in a manner that does not reflect the intent of the FSEIS;
Response: This EA adheres to the requirements and standards set forth in the FSEIS.
- No mention of application of the COA that the FSEIS states would be applied to existing leases to protect wintering big game;
Response: Please refer to mitigation measures identified in Wildlife, Terrestrial section of EA.
- Impacts can not easily be identified without at least acknowledging environmental consequences on surrounding federal lands and thus suggesting what mitigation measure would be applied to offset or minimize conflicts to wildlife and range standards;

Response: Please refer to mitigation measures identified in Wildlife, Terrestrial section of EA.

- Referenced roads are believed to be trails, changing these to roads will have serious impacts on hunting and recreation;

Response: Please refer to Recreation section of EA.

- Concerns with Standards for Public Land Health are not adequately recognized;

Response: Discussions of mitigation and reclamation practices that would be implemented as part of the Proposed Action to facilitate conformance with Public Land Health standards are presented within individual resource sections and Standards for Public Land Health.

- New road construction will negatively impact wildlife through associated human disturbance and habitat degradation;

Response: Please refer to mitigation measures identified in Wildlife, Terrestrial section of EA.

- Pits should be fenced and netted and escape ramps available for wildlife; and

Response: Please refer to mitigation measures identified in Wildlife, Terrestrial section of EA.

- In order for wildlife mitigation to be effective, the components of the GAP need to be woven into a comprehensive and understandable document that can be consistently applied.

Response: Comment noted.

Colorado Mule Deer Association

In their letter to the BLM the Colorado Mule Deer Association provided the following comments:

- Consolidation of well pads with better use of directional drilling;

Response: A total of 68 wells are proposed from 6 new well pad locations and 6 existing well pads within the RGAP; see section 1.1.1 – Development (Construction/Drilling/Completion).

- Provide disclosure on the future use of areas within the RGAP where no wells are currently proposed;

Response: Because of the use of directional drilling, no areas other than those proposed are anticipated to be necessary in the future.

- Allow only one drill rig at any time, but allow for year-round work using this one rig;

Response: Comment noted.

- No moving of the rig to new locations between 1/1 and 4/30 annually; unless it is a mild winter;

Response: Comment noted.

- Construct all pads during the summer months;

Response: Pad construction will occur in accordance with applicable lease stipulations/notices or COAs.

- Reseed all cuts/fills immediately using native species;

Response: Please refer to Vegetation section of EA for vegetation mitigation.

- Revegetation of all existing well pads, if revegetation is not successful within two (2) years then no new pad construction can occur till revegetation is successful;

Response: Comment noted.

- Mandatory use of BMPs;

Response: EnCana and the BLM have standard BMPs that are mandatory for specific actions.

- Control of existing and new noxious weeds within the RGAP;

Response: Please refer to Invasive, Non-Native species section of EA.

- Stipulations on compliance with the Clean Water Act and the Storm Water Regulation;

Response: Comment noted.

- Adherence to the COGCC 2005 noise levels a stipulation of approval;

Response: Comment noted.

- No use of roads when muddy.

Response: Comment noted.

Garfield County Board of County Commissioners

In their letter to the BLM (dated March 28, 2006), the Garfield County Board of County Commissioners provided comments that generally revolved around transportation impacts on County Road system. EnCana is currently negotiating an agreement with Garfield County that will address the commissioners concerns.

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APPENDIX B

13-POINT SURFACE USE PLAN

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13-Point Surface Use Plan

1. EXISTING ROADS

- A. The proposed wellsite is staked and reference stakes are present as shown on attached Topo maps.
- B. Access Roads – refer to Topo maps “A” and “B.”
- C. Access Roads within a one-mile radius – refer to Topo map “B.”
- D. The existing roads will be maintained in the same or better condition as existed prior to the commencement of operations and said maintenance will continue until final abandonment and reclamation of the well location. Excessive rutting or other surface disturbance will be avoided. Operations will be suspended temporarily during adverse weather conditions if excessive rutting is occurring when access routes are wet, soft, or partially frozen.

2. PLANNED ACCESS ROAD

All proposed access roads are shown on Topo map “B.”

- A. Width maximum – 30 feet overall right-of-way with an 18-foot road running surface, crowned and ditched and/or sloped and dipped.
- B. Construction standard – the access road will be constructed to the same standards as previously accepted in this area.

The road will be constructed to meet the standards of the anticipated traffic flow and all weather requirements. Construction will include ditching, draining, crowning and capping or sloping and dipping the roadbed as necessary to provide a well-constructed and safe road.

Prior to construction/upgrading the roadway shall be cleared of any snow cover and allowed to dry completely.

Traveling off of the 30-foot right-of-way will not be allowed.

Road drainage crossings shall be of the typical dry creek drainage crossing type. Crossings shall be neither designed so they will not cause siltation or the accumulation of debris in the drainage crossing nor shall the drainages be blocked by the roadbed. Diverting water off at frequent intervals by means of cutouts shall prevent erosion of the drainage ditches by runoff water.

Upgrading shall not be allowed during muddy conditions. Should mud holes develop, they will be filled in and detours around them avoided.

- C. Maximum grade – the average grade will be 10% or less, wherever possible. The 10% grade will only be exceeded in areas where physical terrain or unusual circumstances require it.
- D. Drainage design – the access road will be crowned and ditched or sloped and dipped, and water turnouts installed as necessary to provide proper drainage along the access road route.
- E. Turnouts will be constructed along the access route as necessary or required to allow for the safe passage of traffic.
- F. Culverts – none will be required unless otherwise specified during the onsite inspection.
- G. Surface materials – surfacing materials will consist of native soil. If any additional surfacing materials are required they will be purchased from a local contractor having a permitted source of materials in the area. None are anticipated at this time.
- H. Gates, cattle guards or fence cuts – none required unless specified during the onsite inspection.
- I. Road maintenance – during both the drilling and production phases of operations, the road surface and shoulders will be kept in a safe and legal condition and will be maintained in

accordance with the original construction standards. The access road right-of-way will be kept free of trash during operations.

J. The proposed access road has been centerline flagged.

K. Dust will be controlled on the roads and locations during construction and drilling by periodic watering of the roads and locations.

3. LOCATION OF EXISTING WELLS WITHIN A ONE MILE RADIUS

Please refer to Topo Map "C."

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

A. At each drill location, surface disturbance will be kept to a minimum. Each drill pad will be leveled using cut and fill construction techniques as noted in the attached survey.

B. Should drilling result in established commercial production the following will be shown:

1. Proposed location and attendant lines, by flagging, if off well pad.
2. Dimensions of facilities.
3. Construction methods and materials.
4. Protective measures and devices to protect livestock and wildlife.
5. All buried pipelines will be buried to a depth of 4 feet from ground surface to top of pipe.
6. Construction width of the right-of-way/pipeline route shall be restricted to 60 feet of disturbance.
7. Pipeline location warning signs shall be installed within 90 days after construction is completed.
8. EnCana shall condition pipeline right-of-ways in a manner to preclude vehicular travel upon said rights-of-way, except for access to pipeline drips and valves.
9. Pipeline right-of-way will be requested on the APD for working surface during construction, rehabilitated surface after construction is complete, actual length of pipeline and size of the pipeline for the pad. In the event production is established this well will be tied-in to an existing pipeline as shown in Topo map "D". The area used to contain the proposed production facilities will be built using native materials. If these materials are not acceptable, arrangements will be made to acquire appropriate materials from private sources.
10. A dike will be constructed completely around any production facilities which contain fluids (i.e. production tanks, produced water tanks, etc.). These dikes will be constructed of compacted subsoil, be impervious, hold 110% of the capacity of the largest tank, and be independent of the back cut.
11. All permanent (onsite for six months or longer) above-the-ground constructed or installed, including pumping units, will be painted a flat non-reflective, earthtone color to match one of the standard environmental colors as determined by the five State Rocky Mountain Interagency committee. All production facilities will be painted within six months of installation. Facilities that are required to comply with Occupation Health and Safety Act Rules and Regulations will be excluded from this painting requirement.
12. The production (emergency) pit will be 8 feet in diameter and 8 feet deep. It will be lined with corrugated steel with a steel mesh cover.
13. If different production facilities are required, a sundry notice will be submitted.

C. EnCana Oil & Gas (USA) Inc. shall protect all survey monuments, witness corners, reference monuments and bearing trees in the affected areas against disturbance during construction, operation, maintenance and termination of the facilities authorized herein.

EnCana Oil & Gas (USA) Inc. shall immediately notify the AO in the event that any corners, monuments or markers are disturbed or are anticipated to be disturbed. If any monuments, corner

or accessories are destroyed, obliterated or damaged during construction, operation or maintenance, EnCana shall secure the services of a Registered Land Surveyor to restore the disturbed monuments, corner or accessories, at the same location, using surveying procedures found in the Manual of surveying Instructions for the Survey of the Public Lands of the United States, latest edition. EnCana shall ensure that the Registered Land Surveyor properly records the survey in compliance with the Colorado Revised Statutes 38-53-101 through 38-53-112 (1973) and shall send a copy to the AO.

- D. During drilling and subsequent operations, all equipment and vehicles will be confined to the access road right-of-way and any additional areas as specified in the approved Application for Permit to Drill.
- E. Reclamation of disturbed areas no longer needed for operation will be accomplished by grading, leveling, and seeding as recommended by the Bureau of Land Management.

EnCana Oil & Gas (USA) Inc. will be responsible for road maintenance from the beginning to completion of operations.

5. LOCATION AND TYPE OF WATER SUPPLY

- A. Water to be used for the drilling of these wells will be hauled by truck over the roads described in item #1 and item #2, from the nearest water supply. Water volume used in drilling operation is dependent upon the depth of the well and any losses that might occur during drilling.

6. SOURCE OF CONSTRUCTION MATERIALS

- A. All access roads crossing Federal land are described under Item #2, and shown on Map "A." All construction material for these location sites and access roads shall be borrowed material accumulated during the construction of the location sites and access roads. No additional construction material from other sources is anticipated at this time. If in the future it is required, the appropriate actions will be taken to acquire it from private sources.
- B. All trees on the locations, access road, and proposed pipeline routes shall be disposed of by one of the following methods:
 - 1. Trees shall be cut with a maximum stump height of six inches (6") and cut to 4-foot lengths and stacked off location. Trees will not be dozed off the location or access road, except on private surface where trees may be dozed. Trees may also be dozed on pipeline routes and then pulled back onto right-of-way as part of final reclamation.
 - 2. Limbs may be scattered off location, access road or along the pipeline, but not dozed off.

Rootballs shall be buried or placed off location, access road, or pipeline route to be scattered back over the disturbed area as part of the final reclamation.

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7. METHODS OF HANDLING WASTE MATERIALS

- A. Cutting will be deposited in the reserve/blooiie pit.
- B. Drilling fluids including salts and chemicals will be contained in the reserve/blooiie pit. Upon termination of drilling and completion operations, the liquid contents of the reserve pit will be removed and disposed of at an approved waste disposal facility within ninety (90) days after termination of drilling and completion activities.

In the event that adverse weather conditions prevent removal of the fluids from the reserve pit within this time period, an extension may be granted by the AO upon receipt of a written request from EnCana Oil & Gas (USA) Inc. The reserve pit will be constructed so as not to leak, break or allow discharge.

- C. Produced fluids – liquid hydrocarbons produced during completion operations will be placed in test tanks on the location. Produced wastewater will be confined to a lined pit (reserve pit) or storage tank for a period not to exceed ninety (90) days after initial production. During the permanent disposal method and location, along with the required water analysis shall be submitted for the AO’s approval. Failure to file an application within the time frame allowed will be considered an incidence of noncompliance.
- D. Sewage- self-contained, chemical toilets will be provided for human waste disposal. Upon completion of operations, or as needed, the toilet holding tanks will be pumped and the contents thereof disposed of in the nearest, approved, sewage disposal facility.
- E. Garbage and other waste material – garbage, trash and other waste materials will be collected in a portable, self-contained and fully – enclosed trash cage during drilling and completion operations. Upon completion of operations (or as needed) the accumulated trash will be disposed of at an authorized sanitary landfill. No trash will be burned on location or placed in the reserve pit.
- F. Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up and removed from the well location. No adverse materials will be left on the location. Any open pits will be maintained until such time as the pits are backfilled.
- G. The reserve and/or production pit will be constructed on the existing location and will not be located in natural drainages where a flood hazard exists or surface runoff will destroy or damage the pit walls. All pits will be constructed so as not to leak, break, or allow the discharge of liquids there from.
- H. Any spills of oil, gas, salt water or other potentially hazardous substances will be reported immediately to the BLM, and other responsible parties, and will be mitigated immediately, as appropriate, through clean up or removal to an approved disposal site.

8. ANCILLARY FACILITIES

Self-contained travel-type trailers may be used on site during drilling operations. Standard drilling operation equipment to be on location will include: drilling rig with associated equipment; living facilities for company representative, tool pusher, mud logger, directional driller; toilet facilities and trash containers.

Facilities other than those described in this surface use plan to support drilling operations will be submitted to the AO via a sundry notice (form 3160-5) for approval prior to commencing operations.

WELLSITE LAYOUT

- A. The attached location plat specifies the drill site layout as staked. Cross sections have been drafted to visualize the planned cuts and fills across the location. An average minimum of six (6) inches of topsoil will be stripped from the location (including the areas of cut, fill and/or subsoil storage) and stockpiled for future reclamation of the well site. The stockpiled soil will be seeded within 48 of completion of the pad.
- B. A production schematic showing the proposed production facility layout is attached.
- C. The reserve pit and blooie pit will be constructed as a combination pit capable of holding approximately four times the TD hole volume. The pits were combined, as these are gas wells and there will be no danger of the accumulation of hydrocarbons that could result in a potential safety hazard. The blooie pit might be used for testing, but only after the drilling is completed and the drilling equipment and personnel are off the well site location. In the event that drilling fluid (mud) will have to be used then this pit will also serve as the reserve pit. The reserve pit will be lined to prevent seepage.

This requirement may be waived by the Bureau of Land Management upon receipt of additional information from EnCana Oil & Gas (USA) Inc. concerning the location of fresh water aquifers and potential flow rates, chemical analyses of waters from the aquifers, and information

concerning both the mechanics and nature of the air mist drilling system including any additives used therein.

- D. Prior to the commencement of drilling operations, the reserve pit will be fenced on three (3) sides using three strands of barbed wire according to the following minimum standards:
1. Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.
 2. Standard steel, wood, or pipe posts shall be used between the corner braces. The maximum distance between any two (2) posts shall be no greater than sixteen (16) feet.
 3. All wire shall be stretched using a stretching device before it is attached to the corner posts.

The fourth side of the reserve pit will be fenced immediately upon removal of the drilling rig and the fencing will be maintained until the pit is backfilled.

- E. Any hydrocarbons on the pit will be removed from the pit as soon as possible after drilling operations are completed.
- F. Operator will notify the AO at least three (3) working days prior to construction of the well pad and/or related facilities and within two (2) working days after completion of the well pad.

9. PLANS FOR RECLAMATION OF THE SURFACE:

The BLM will be contacted prior to commencement of any reclamation operations.

A. Production

1. Immediately upon well completion, the well location and surrounding areas(s) will be cleared of all debris, materials, trash and junk not required for production.
2. Immediately upon well completion, any hydrocarbons in the pit shall be removed in accordance with 43CFR 3162.7-1.
3. Before any dirt work to restore the location takes place, the reserve pit will be completely dry and all cans, barrels, pipe, etc. will be removed. Other waste and spoil materials will be disposed of immediately upon completion of drilling and workover activities.
4. The reserve pit and that portion of the location and access road not needed for production facility/operations will be reclaimed within ninety (90) days from the date of well completion, weather permitting.
5. If the well is a producer, EnCana will upgrade and maintain access roads as necessary to prevent soil erosion, and accommodate year round traffic. Areas unnecessary to operations will have areas reshaped. Topsoil will be redistributed and disked. All areas outside the work area will be reseeded according to the Bureau of Land Management recommendations for seed mixture.
6. If the well is abandoned or a dry hole, EnCana will restore the access road and location to approximately the original contours. During reclamation of the site, fill material will be pushed into cuts and up over the backslope. No depressions will be left that will trap water or form ponds. Topsoil will be distributed evenly over the location and seeded according to the recommended seed mixture. The access road and location shall be ripped or disked prior to seeding. Perennial vegetation must be established. Additional work shall be required in case of seeding failures, etc.

Seedbed will be prepared by disking then roller packing following the natural contours. Seed will be drilled on contours at a depth no greater than 0.5 inch. In areas that cannot be drilled, seed will be broadcast at double the seeding rate and harrowed into soil. Certified seed will be used whenever available.

Fall seeding will be completed after September 1, and prior to prolonged ground frost. To be effective, spring seeding will be completed after the frost has left the ground and prior to May 15.

7. Upon completion of backfilling, leveling and recontouring, the stockpiled topsoil will be evenly spread over the reclaimed areas(s). Prior to reseeding, all disturbed surfaces will be scarified and left with a rough surface. No depressions will be left that would trap water and form ponds. All disturbed surfaces will be reseeded with a seed mixture to be recommended by the BLM.

Seed will be drilled on the contour to approximately a depth of one-half (1/2) inch. All seeding will be conducted after September 1 and prior to ground frost. Spring seeding will be done after the frost leaves the ground and no later than May 15. If the seeding is unsuccessful, EnCana may be required to make subsequent seedings.

B. Dry Hole/Abandoned Locations

1. On lands administered by the BLM, abandoned well sites, roads or other disturbed areas will be restored to near their original condition.
This procedure will include:
 - a. Reestablishing irrigation systems where applicable,
 - b. Reestablishing soil conditions in irrigated field in such a way as to ensure cultivation and harvesting of crops and,
 - c. Ensuring revegetation of the disturbed areas to the specification of the BLM at the time of abandonment.
2. All disturbed surfaces will be recontoured to the approximate natural contours and reseeded according to BLM specifications. Reclamation of the well pad and access road will be performed as soon as practical after final abandonment and reseeding operations will be performed in the fall or spring following completion of reclamation operations.

10. SURFACE OWNERSHIP

Surface ownership may be either Fee or Federal and is noted on the APD.

11. OTHER INFORMATION

- a. A Class III Cultural Resource Inventory of the proposed drill sites, access roads and other facilities on Federal lands will be conducted and a report filed with the appropriate BLM office.
- b. If archaeological, historical or vertebrate fossil materials are discovered during the course of any construction activities, EnCana will suspend all operations that further disturb such materials and immediately contact the appropriate BLM office. Operations in the area of discovery will not resume until written authorization to proceed has been issued by the BLM AO.
- c. EnCana will be fully responsible for the actions of their subcontractors. A copy of the approved APD and Conditions of Approval will be on location during drilling and completion operations.
- d. Any construction activity in the areas shall be done with awareness that many natural gas pipelines are buried. Some are apparent as to location; some have grown over with weeds and brush. It is suggested that the contractor contact the operators in the area to locate all lines before digging.

12. REPRESENTATIVES AND CERTIFICATION

- A. Representative:
RuthAnn Morss
EnCana Oil & Gas (USA) Inc.
370 17th Street, Suite 1700
Denver, CO 80202
(720) 876-5060

All lease and/or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, Onshore Oil and Gas Orders, the approved Plan of Operations, and any applicable Notice to Lessees.

The Operator will be fully responsible for the actions of its subcontractors. A complete copy of the approved Application for Permit to Drill will be furnished to the field representatives to ensure compliance and shall be on location during all construction and drilling operations.

- B. Representative Certification:

I hereby certify that I, or persons under my supervision, have inspected the proposed drill site and access route, and I am familiar with the conditions that currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct and the work associated with the operations proposed herein will be performed by the Operator, its contractors, and subcontractors conformity with this plan and the terms and conditions under which is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.



RuthAnn Morss
EnCana Oil & Gas (USA) Inc.
(720) 876-5060
January 20, 2006

Operator-Submitted Standard Mitigation Measures for all GAP Wells

Reclamation and Design/Construction:

All surface disturbances would be recontoured and revegetated according to an approved reclamation plan. Reclamation would be considered successful when the objectives described in the GSFO Reclamation Policy are achieved. Revegetation will be considered successful if it meets the objectives set forth in the Conditions of Approval identified in Appendix E of the DSEIS. All disturbed areas not necessary for drilling and producing operations will undergo reclamation activities after completing dirt work and construction operations. The revegetation of the disturbed surfaces is necessary in order to control erosion and help prevent invasions of noxious and undesirable weeds, establish self-perpetuating species compatible and capable of supporting the pre disturbance land use. To summarize the objectives in Appendix E of the DSEIS, revegetation will be considered successful when the following objectives are met:

Immediate short term: Establishment of desirable perennial vegetation by end of the second growing season, capable of renewing itself.

Acceptable establishment: Acceptable level of desirable vegetation by the end of the fifth growing season.

Long-term establishment: Level of revegetation approximates the original, pre-disturbance condition in terms of canopy cover and species composition

Additionally, the following measures below summarize additional reclamation objectives in Appendix D of the FSEIS. They include:

Recontouring: The unused disturbed areas that surround the well and along the road will be recontoured to blend as nearly possible with the natural topography.

Erosion Control: All erosion controlled (water infiltrates, no gullying, head cutting, or slumping, and rills are less than 3 inches deep).

Topsoil stripped: Stripped to minimum of 6 inches and stockpiled no deeper than 3 feet.

Enhance productivity of growth medium: Treatment will be included in reclamation report to be submitted to the AO. The requirement can be exempted if the soils test is conducted and the soil sufficient nutrient and organic mater capable of supporting the seeded species.

Other: Use of water bars, lateral furrows, weed free straw bails or fabric silt fence (to be used at the toe of the fill slopes), or other measures approved by the AO will be necessary to protect against rilling and erosion.

The surface location will be constructed as presented and modified by the surveyor, Operator, and BLM representatives during the onsite. Any significant additional alterations to this design will need to be presented to and approved by the AO prior to construction.

In instances when vegetation is removed in order to construct the pad, this cut vegetation, or slash, shall be spread at the toe of the fill slope and across the top of the cut slope in order to control soil

erosion and to decrease the visual impact from the vegetation break and straight lines normally created by a surface location.

All disturbed areas not necessary for drilling and producing operations will undergo the following reclamation standards after completing dirtwork and operations. Specifically, if the well is a producer, the surface area of the drill pad not needed for facilities or operations and unused portions of the road will be reclaimed to the standards below. If the well is not a producer and is plugged in, the following standards will also apply to final reclamation.

The reclamation contractor shall utilize a seed drill capable of correctly planting the various types of seeds included in the specified seed mixes. Specially modified drills will be necessary to ensure that all seeds, regardless of size, are planted at the appropriate depth. Multiple seed boxes for different types of seed will be necessary. Agitators, picker wheels, and larger seed tubes will be necessary in at least one box to correctly handle and plant fluffy seed (e.g., galleta).

For seed planted using broadcast methods (e.g., sagebrush), raking or harrowing immediately before and after seeding will be necessary to ensure adequate seed/soil contact. For best success, broadcast seeding of sagebrush in strips, rather than across the entire disturbed area, is recommended. Broadcasting shall occur after drill seeding but before any mulching with straw or other material. Broadcast seeding shall not occur on windy days.

All reclamation equipment shall be cleaned prior to use in the GAP area to eliminate the potential for spread of noxious weeds or other undesirable non-native species. All leftover seed from prior reclamation jobs will be removed from seeding equipment.

A. Revegetation: The short-term objective of revegetation is to establish vegetation for the control of erosion and to help prevent invasion of noxious and undesirable weeds. The long-term objective is to establish a self-perpetuating set of plant associations compatible with and capable of supporting the predisturbance land use.

The rate of application of the seed mix listed in the Surface Use Plan is listed in pounds of pure live seed (PLS)/acre. The seed will be certified and there will be no primary or secondary noxious weeds in the seed mixture. The operator shall notify the AO 24 hours prior to seeding and shall provide evidence of certification of the above seed mix to the AO.

All compacted portions of the pad, road, and pipeline route will be ripped to a depth of 18 inches unless in solid rock. Prior to seeding, stockpiled topsoil (stripped surface material) will be spread to a uniform depth that will allow the establishment of desirable vegetation. All unused disturbed areas will be seeded within 24 hours after completing dirt work unless a change is requested by the operator and approved by the AO. If the seed bed has begun to crust over or seal, the seed bed will be prepared by disking or some other mechanical means sufficient to allow penetration of the seed into the soil. In addition, the broadcast seed should be covered by using a harrow, drag bar, or chain.

B. Recontouring: The unused disturbed areas surrounding the well location and along the road will be recontoured to blend as nearly possible with the natural topography. Final grading of back-filled and cut slopes will be done to prevent erosion and encourage establishment of vegetation.

These Reclamation Mitigation Measures are subject to all disturbances including pipelines and roads. If it is determined by the AO that the above reclamation standards are not being met, the operator will

be required to submit a plan to correct the problem. Approval of the plan may require special reclamation practices such as mulching, the method and time of planting, the use of different plant species, soil analysis to determine the need for fertilizer, fertilizing, seed-bed preparation, contour furrowing, watering, terracing, water barring, and the replacement of topsoil.

Areas being reclaimed will be fenced to exclude livestock for the first two growing seasons or until the seeded species have established. The type of fencing will be approved by the AO.

Reserve pit fluids will be back filled within one year of construction or to the end of the succeeding summer (August 31) to allow for evaporation of fluids, unless an alternative method of disposal is approved. The back filling of the reserve pit will be done in such a manner that the mud and associated solids will be confined to the pit and not squeezed out and incorporated in the surface materials. There will be a minimum of 3 feet of cover (overburden) on the pit. When work is complete, the pit area will support the weight of heavy equipment without sinking.

A minimum of 2 feet of free board will be maintained in the reserve pit, between the maximum fluid level and the top of the berm. These pits will be designed to exclude all surface runoff.

All pits, cellars, rat holes and other bore holes unnecessary for further lease operations, excluding the reserve pit, will be backfilled immediately after the drilling rig is released to conform to surrounding terrain. Pits, cellars and/or boreholes that remain on location must be fenced as specified for the reserve pit.

Compaction and construction of the berms surrounding the tank batteries will be designed to prevent lateral movement of fluids through the utilized materials, prior to storage of fluids. The berms must be constructed to contain at a minimum 110 percent of the storage capacity of the largest tank within the berm. All loading lines will be placed inside the berm.

Invasive, Non-Native Species

Prior to construction, an Integrated Weed Management Plan (IWMP) shall be developed by EnCana in consultation with the BLM for the entire GAP area. This IWMP shall be implemented throughout the development, production, and abandonment phases of the proposed project.

Noxious weeds listed by the State of Colorado as a "Top Ten" priority noxious weed shall be eradicated from all well pads, roads, and other facilities associated with the GAP using any appropriate methods as approved by the AO.

Other noxious weeds listed by the State of Colorado shall be contained to locations where they currently exist and the extent of these infestations shall not be allowed to expand. Any new or expanded infestations of these species shall be treated using methods approved by the AO.

Noxious weeds which may be introduced due to soil disturbance and reclamation will be treated by methods to be approved by the AO. The Pesticide Use Permit shall be on record with the BLM for treatment of noxious weeds.

The use of non-native species in reclamation shall be minimized. The salt desert scrub seed mix contains one non-native legume (sainfoin) because there are no suitable native species that are adapted to this vegetation community and that will provide the same level of reclamation success and wildlife forage as this species. No other non-native species shall be used in reclamation seed mixes unless approved in advance by the AO.

Wildlife:

EnCana will implement policies designed to control poaching and littering and will notify all employees (contract and company) that conviction of a major game violation within the GAP area could result in disciplinary action. Contractors will be informed that any poaching or littering within the area could result in dismissal. If poaching violations were discovered in the area, EnCana will notify the CDOW immediately.

Hunting and dogs will not be allowed within the area during working hours by EnCana employees or their contractors. EnCana will implement a firearms policy.

Main access roads will be signed to restrict vehicular use to oil and gas personnel only. Individual access points may be gated where warranted as a last resort. Use will be limited to necessary business and essential activities during the winter period (December 1 to April 30). This measure may help to prevent displacement of mule deer from their wintering habitat as well as the rare occurrence of vehicle-related wildlife mortality. Signs indicating closed and dead end roads will be placed if warranted

All roads on and adjacent to the area that are required for the proposed project will be appropriately constructed, improved, maintained, and signed to minimize potential wildlife/vehicle collisions and facilitate mule deer movement through the area. To minimize wildlife mortality due to vehicle collisions, EnCana will post signs depicting appropriate speed limits at major access points within the project area.

If injured mule deer are observed in the area, EnCana personnel will contact the CDOW. Under no circumstances will injured wildlife be approached or handled.

EnCana has committed to equipping all of the proposed wells with telemetry equipment. This will help to minimize indirect impacts to wildlife. Visits to the consolidated facilities will be limited to an as-needed basis averaging once per week or less versus once per day for traditional well maintenance methods.

Unless it is determined that livestock grazing will not be detrimental to reclamation, well pads will be fenced for the life of the well.

Noise disturbance will be minimized by keeping all internal combustion engines adequately muffled and maintained.

Removal or disturbance of vegetation will be kept to a minimum through planning and construction site management (e.g., by utilizing previously disturbed areas, using existing ROWs and easements, designating limited equipment/materials storage yards and staging areas, etc.).

Active raptor nests shall be protected through application of the appropriate species-specific buffer during the breeding season, until young have fledged or the nest is otherwise no longer active, as determined by a qualified wildlife biologist. For species known or expected to occur in the GAP area, these buffers and time periods, as recommended by CDOW, are as follows:

- Golden eagle: ½ mile between February 1 and July 15
- Peregrine falcon: ½ mile between March 15 and July 31
- Prairie falcon: ½ mile between March 15 and July 31
- Red-tailed hawk: ½ mile between March 1 and July 15

Threatened, Endangered, and Sensitive Species:

Any discoveries of previously unknown bald eagle nesting or roosting sites would be addressed by application of the appropriate stipulations and additional consultation with the USFWS prior to the commencement of development activities.

Biological inventories (surveys) for the sensitive plant species will be conducted in potential new disturbance areas not covered in the Orchard Unit GAP EA.

Historic, Archaeological and Paleontological:

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic, archaeological, paleontological, or sites with scientific value or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the AO.

Education

All persons in the area who are associated with this project must be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including artifacts, the person or persons will be subject to prosecution.

Discovery

Pursuant to 43 CFR 10.4(g), the BLM AO must be notified, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), activities must stop in the vicinity of the discovery and the discovery must be protected for 30 days or until notified to proceed by the AO.

If in connection with operations under this contract the project proponent, its contractors, subcontractors, or the employees of any of them, discovers, encounters, or becomes aware of any objects or sites of cultural or paleontological value or scientific interest, such as historic or prehistoric ruins, graves or grave markers, fossils, or artifacts, the proponent shall immediately suspend all operations in the vicinity of the cultural or paleontological resource and shall notify the BLM AO of the findings (16 USC 470h-3, 36 CFR 800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the AO. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the AO from a federal agency insofar as practicable. When not practicable, the holder shall bear the cost of the services of a non-federal professional.

Within five working days the AO will inform the operator as to:

- Whether the materials appear eligible for the National Register of Historic Places;
- The mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and
- A time frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

The proponent may relocate activities to avoid the expense of mitigation and/or the delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed material are recorded and stabilized. Otherwise, the proponent will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will be allowed to resume construction.

Antiquities, historic, prehistoric ruins, paleontological or objects of scientific interest that are outside of the authorization boundaries but directly associated with impacted resources will also be included in this evaluation and/or mitigation.

Antiquities, historic, prehistoric ruins, paleontological or objects of scientific interest, identified or unidentified, that are outside of the authorization and not associated with the resource within the authorization will also be protected. Impacts that occur to such resources that are related to the authorization activities will be mitigated at the proponent's cost.

Visual Resources/Aesthetics

After development and construction, all production facilities will be painted with a flat, non-reflective, earth-tone color to blend with the surrounding environment. The color will be approved by the AO and will be included in the COAs for individual wells as part of the approval process for Applications for Permit to Drill (APDs).

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APPENDIX C
10-POINT DRILLING PLAN

10-Point Drilling Plan

All lease and/or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations (43CFR3100), Onshore Oil and Gas Orders No. 1 and No. 2 and the approved Plan of Operations. The Operator is fully responsible for the actions of its subcontractors. A copy of the Conditions of Approval will be furnished to the field representatives to ensure compliance.

EnCana Oil & Gas (USA) Inc. will be operating under its **Nationwide Bond # RLB0004733.**

1. **ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)**

	SURFACE
WASATCH	
WASATCH MARKER	3000 ft – 4000 ft
OHIO CREEK (TOP Kmv)	5000 ft – 6000 ft
WILLIAMS FORK	5700 ft – 6600 ft
TOP GAS (PAY)	6700 ft – 7600 ft
COAL RIDGE (PAY)	7900 ft – 8850 ft
ROLLINS	8650 ft – 9600 ft
TD	8750 ft – 9700 ft

Formation and depths will be submitted with the site specific APD.

2. **ESTIMATED TOPS OF POSSIBLE WATER, OIL, GAS OR MINERALS**

The estimated depths at which possible water, oil, gas or minerals will be encountered are as follows:

<u>Substance</u>	<u>Formation</u>	<u>Depth (TVD)</u>
Gas	Top Gas (pay)	6700 – 7600 ft TVD
Gas	Coal Ridge (pay)	7900 – 8850 ft TVD
Gas/Water	Rollins	8650 – 9600 ft TVD

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.

The surface casing shall be cemented back to surface either during the primary cement job or by remedial cementing.

3. **OPERATOR'S SPECIFICATIONS FOR PRESSURE CONTROL EQUIPMENT**

- a. Minimum working pressure on rams and BOPE will be 3,000 psi.
- b. Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- c. Both high and low pressure tests of the BOPE will be conducted.
- d. The Annular BOP will be pressure tested to a minimum of 50% of its rated working pressure.
- e. Blind and Pipe Rams/BOP will be tested to a minimum of 100% of rated working pressure (against a test plug).
- f. Surface casing will be tested from surface to TD (float collar) at 1,000 psi surface pressure (prior to drilling out the float collar).
- g. All other casing will be pressure tested to 0.22 psi/ft or 1,500 psi, whichever is greater, but not to exceed 70% of the internal yield.
- h. BOP testing procedures and testing frequency will conform to Onshore Order No. 2.

- i. BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all presenters.
- j. The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k. The choke line shall be 3-inch minimum and contain two choke line valves (3-inch minimum).
- l. The choke and manifold shall contain two adjustable chokes.
- m. Hand wheels shall be installed on all ram presenters,
- n. Safety valves and wrenches (with subs for all drill string connections) shall be available on the rig floor at all times.
- o. Inside BOP or float sub shall also be available on the rig floor at all times.
- p. Upper kelly cock valve (with handle) shall be available at all times.

Proposed BOP and Choke Manifold arrangements are attached.

4. PROPOSED CASING AND CEMENTING PROGRAM

SUMMARY: The following casing design will consider the deepest reasonable drilling scenario in the GAP region. After GAP approval, a simple one page document summarizing all pertinent well information will be included for each drilling permit application. An example "One Page" document is attached.

Surface Casing and Cement Design:

The following surface casing and cementing design is set up for "minimum case scenario." The lightest casing weight/grade will be used for this master drilling plan.

Due to current oilfield cement supply shortages in the US, the cement program for the surface casing will reflect a suitable, "lighter" single slurry (13.5 ppg TXI). If supply conditions ease, a more desirable "heavier" single slurry (15.8 ppg Class G) will be used when possible.

Production Casing and Cement Design:

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.

***Cementing Volume Design Clarification:**

Surface Casing @ 1500 ft:

*Single slurry cement designed to cover the entire section with 100% excess.

Production Casing

*Designed to 200 ft above top of Mesaverde formation. Volume assumes 7-7/8 in. gauge hole diameter plus 30%.

*If open hole logs are run, cement volumes will be determined from the caliper plus 10% excess.

Casing	Depth	Hole Size	Size	Weight	Grade	Cement Volume
Conductor	0-40 ft	+/- 24 in	16 in	0.25 in. Wall	X42	+/- 5 yds ready mix (to surface)
Surface	Surface to 1500 ft	12¼ in	8 5/8 in	32#	J-55, STC All New	± 990 sks TXI 13.5 ppg 1.26 ft ³ /sx
Production Design	0 to 4000 ft 4000 to 9700 ft	7-7/8 in	4½ in	11.6# 11.6#	P-110, LTC I-80, LTC All New	Lead: ± 300 sx TXI 12.0 ppg 1.79 ft ³ /sx Tail: ± 500 sks TXI 13.5 ppg 1.26 ft ³ /sx

Casing Design Considerations/Safety Factors:

- A. **Surface casing @ 1500 ft TVD; 8-5/8 in. 32# J-55 STC**
 Purpose: Protect shallow fresh water and contain MASP to TD
 Maximum anticipated mud weight at surface casing depth: = 9.0 ppg
 Maximum anticipated mud weight at TD: = 11.0 ppg
 Maximum anticipated equivalent formation pressure at TD: = 10.0 ppg

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000 lb)	Collapse	Burst	Tension
8-5/8 in	32	J/K-55	STC	2530	3930	372	1.00	1.10	1.40

Collapse Design:

Evacuated 8-5/8" 32# J-55 casing with 9.0 ppg drilling fluid density:
 Load = $9.0 \times 0.052 \times 1500$ ft = 702 psig
 Rating = = 2530
 S.F. = 3.6

Burst Design: Assume kick with partially evacuated hole and an influx gradient of 0.22 psi/ft.

8-5/8" 32# J-55
 MASP (Load) = $9700 \text{ ft} \times (0.52 - 0.22)$ psi/ft = 2910 psig
 Rating: = 3930 psig
 S.F. = 1.3

Tensile Design: Designed on Air Weight * Buoyancy + overpull margin

8-5/8 in. 32# J-55
 Rating: = 372,000 lbs
 Load: $1500 \text{ ft} \times 32\# \times 0.862 + 100,000$ lbs (OPM) = 141,399 lbs
 S.F. = 2.6

- B. **Production Casing @ 9700 ft TVD; 4-1/2 in. 11.6# P-110/I-80, LTC**
 Maximum Anticipated Mud Weight at Total Depth = 11.0 ppg
 Maximum Anticipated Equivalent Formation Pressure at Total Depth = 10.0 ppg
 Maximum Surface Treating Pressure for Fracturing Operations = 7500 psig
 Assumed Gas Gradient for Production Operations = 0.115 psi/ft

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000 lb)	Collapse	Burst	Tension
4-1/2 in.	11.6	P-110	LTC	7580	10690	279	1.00	1.10	1.40
4-1/2 in.	11.6	I-80	LTC	6350	7780	201	1.00	1.10	1.20

Collapse Design: Designed on evacuated casing properties with 11.0 ppg drilling fluid density with no internal back-up.

Design Point #1: 4-1/2 in. 11.6# P-110 from 0 to 4000 ft
 Load = $11.0 * 0.052 * 4000$ ft = 2288 psig
 Rating = 7580 psig
 S.F. = 3.3

Design Point #2: 4-1/2 in. 11.6# I-80 from 4000 to 9700 ft (TD)
 Load = $11.0 * .052 * 9700$ ft = 5548 psig
 Rating = 6350 psig
 S.F. = 1.1

Burst Design: Assume maximum surface shut-in pressure during production, and maximum surface treating pressure during fracture stimulation operations.

Design Consideration #1: Maximum Surface Shut-In Pressure

Design Point #1: 4-1/2" 11.6# P-110 from 0 to 4000 ft
 MASSIP (Load) = $9700 * (0.52 - 0.115)$ psi/ft = 3928 psig
 Rating = 10690 psig
 S.F. = 2.7

Design Point #2: 4-1/2" 11.6# I-80 from 4000 to 9700 ft (TD)
 Load @ 4000 ft: $9700 * .52 - (9700 - 4000) * 0.115$ = 4388 psig
 Rating = 7780 psig
 S.F. = 1.7

Design Consideration #2: Maximum Surface Treating Pressure During Frac Operations

Design Point #1: 4-1/2" 11.6# P-110 from 0 to 4000 ft
 MATP: = 7500 psig
 Rating: = 10690 psig
 S.F. = 1.4

Design Point #2: 4-1/2" 11.6# I-80 4000 – 9700 ft (TD)
 Load: Frac grad – FW frac fluid:
 $(0.75 - 0.433)$ psi/ft * 9700 ft = 3074 psig
 Rating: = 7780 psig
 S.F. = 2.5

Tensile Design: Designed on Air Weight * Buoyancy + overpull margin

Design Point #1: 4-1/2 in. 11.6# P-110 LTC at surface
 Load = (9700 ft*11.6 lb/ft*0.832)+ 100,000 lbs (OPM) = 193,616 lbs
 Rating = 279,000 lbs
 S.F. = 1.4

Design Point #2: 4-1/2 in. 11.6# I-80 LTC @ 4000 ft
 Load = (9700 – 4000 ft) 11.6*0.832 + 100,000 lbs (OPM) = 155,011 lbs
 Rating = 201,000 lbs
 S.F. = 1.2

6. DIRECTIONAL DRILLING PROGRAM

If the well is vertical, it will be stated as such, or implied by the Surface Hole Location (SHL) and Bottom Hole Location (BHL) location having the same legal footage calls. Otherwise, language will be included to describe the basic well design, footage calls for the SHL, BHL, section, township, range for SHL and BHL, respectively.

Example (Directional Well):

The proposed directional program for this wellbore is attached. An “S” shape directional design will be used to reach a target bottom hole location of 660’ FNL and 660’ FEL of Sec 16 T7S R94W. Directional plans are attached.

7. PROPOSED DRILLING FLUIDS PROGRAM

DEPTH	MUD TYPE	DENSITY lbs/gal	VISCOSTIY (sec/qt)	FLUID LOSS (cc)
Surface - BSC	Fresh Water Gel	8.4 – 9.0	28 – 35	NC
BSC – TD	LSND	8.8 – 11.0	35 – 45	5 - 15 cc

Mud flow and volume will be monitored both visually and with electronic pit volume totalizers.

8. TESTING, CORING AND LOGGING

- a. Drill Stem Testing – None anticipated
- b. Coring – As dictated by geology
- c. Mud Logging – Optional
- d. Logging – See Below:

Open Hole
 PEX
 (Optional-at operator’s discretion)

Logging Interval
 AIT-GR-Neutron/Litho-Density
 From TD to surface casing.

Cased Hole
 CBL/CCL/GR/VDL
 RST

As needed for perforating control
 In lieu of PEX.

Logging Statement: It is the Operator’s intent to run one open hole log per pad drilled on both surface and production holes, unless the hole conditions warrant otherwise. In such cases of

unstable hole conditions, Operator will seek a waiver on open hole logging from the BLM authorized office.

9. ABNORMAL PRESSURES OR TEMPERATURES; POTENTIAL HAZARDS

This area is known to be underpressured. Lost circulation has been experienced in offset wells. Barite and a selection of 'sized' lost circulation materials will be kept on location during drilling operations.

The maximum anticipated bottom hole pressure is $9700 \text{ ft} \times 0.52 \text{ psi/ft} = 5044 \text{ psi}$

The maximum anticipated surface pressure is $9700 \text{ ft} \times (0.54 - 0.22) \text{ psi/ft} = 2910 \text{ psi}$

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS

Surface and bottomhole location ownership will be specified. Unless otherwise dictated or surface location necessitates, the locations will be constructed with a standard open pit system.

The drilling operation is anticipated to require ± 19 days on each well. Completion operations are anticipated to begin within 15 days of finishing the drilling portion of the last well drilled on the pad. Completion operations require approximately 30 days.

APPENDIX D

STANDARD CONDITIONS OF APPROVAL

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Standard Conditions of Approval (COAs)

1. Administrative Notification:

At least 48 hours prior to construction, the operator shall notify the BLM representative of construction startup plans.

2. Air Quality:

The operator is responsible for applying dust abatement measures as needed or directed by the Authorized Officer to reduce the emissions of fugitive dust from access roads. The level and type of treatment (watering or application of various dust agents, surfactants and road surfacing material) may be changed in intensity and must be approved by the Authorized Officer. Dust control is needed to prevent heavy plumes of dust from road use that create safety problems and disperses heavy amounts of particulate matter on adjacent vegetation.

Speed control measures on all project-related unpaved roads would also be implemented to reduce vehicle fugitive dust.

3. Cultural Resource/Native American:

Class III cultural resource inventories will be required on any and all new wells, access roads, pipelines and other ground disturbing activities not covered in this plan that require a federal permit or authorization to conduct the action. Additional action specific mitigation may be required – including but not limited to moving the location, archeological monitoring, testing, or data recovery

Strict adherence to the confidentiality of information concerning the nature and location of archaeological resources will be required of Operator and their subcontractors (Archaeological Resource Protection Act 16 U.S.C. 470hh).

The Native American Graves Protection and Repatriation Act (NAGPRA), requires that if inadvertent discovery of Native American Remains or Objects occurs, activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice made to the BLM Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)).

Colorado State Statutes (CRS 24-80-401 and CRS 24-80-1301) for Historic, Prehistoric, and Archaeological Resources, and for Unmarked Human Graves will have to be adhered to by Operator and their subcontractors on private lands. These State statutes require that the federal Authorizing Officer be notified immediately of any historic or prehistoric finds or human grave. The find must be protected until the Authorizing Officer indicates that the action may proceed.

4. Cultural Resource Education/Discovery:

All persons in the area who are associated with this project must be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons will be subject to prosecution.

Pursuant to 43CFR10.4(g), the BLM authorized officer must be notified, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43CFR10.4 (c) and (d), activities must stop in the vicinity of the discovery and the discovery must be protected for 30 days or until notified to proceed by the authorized officer.

If in connection with operations under this contract the project proponent, his contractors, subcontractors, or the employees of any of them, discovers, encounters or becomes aware of any objects or sites of cultural or paleontological value or scientific interest such as historic or prehistoric ruins, graves or grave markers, fossils, or artifacts, the proponent shall immediately suspend all operations in the vicinity of the cultural or paleontological resource and shall notify the BLM authorized officer of the findings (16 U.S.C. 470h-3, 36CFR800.112). Operations may resume at the discovery site upon receipt of written instructions and authorization by the authorized officer. Approval to proceed will be based upon evaluation of the resource. Evaluation shall be by a qualified professional selected by the authorized officer from a federal agency insofar as practicable. When not practicable, the holder shall bear the cost of the services of a non-federal professional.

Within five working days the authorized officer will inform the holder as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the holder will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
- a time frame for the authorized officer to complete an expedited review under 36 CFR 800.11, or any agreements in lieu thereof, to confirm through the State Historic Preservation Officer that the findings of the authorized officer are correct and the mitigation is appropriate.

The proponent may relocate activities to avoid the expense of mitigation and/or the delays associated with this process, as long as the new area has been appropriately cleared of resources and the exposed materials are recorded and stabilized. Otherwise, the proponent will be responsible for mitigation costs. The authorized officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the proponent will then be allowed to resume construction.

Antiquities, historic, prehistoric ruins, or objects of scientific interest that are outside of the authorization boundaries but directly associated with the impacted resource will also be included in this evaluation and/or mitigation.

Antiquities, historic, prehistoric ruins, or objects of scientific interest, identified or unidentified, that are outside of the authorization and not associated with the resource within the authorization will also be protected. Impacts that occur to such resources, which are related to the authorizations activities, will be mitigated at the proponent's cost including Native American consultation cost.

In situations where federal action is required for wells directionally drilled into federal minerals from fee surface overlying fee minerals, BLM's responsibilities under Section 106 of the National Historic Preservation Act [(NHPA) 16 U.S.C. 470] as amended and Section 36 CFR 800.4 will be followed.

5. Geology:

Mitigation measures for protection of geologic resources are detailed in the Down Hole Standard Conditions of Approval listed in Appendix E. These measures include specific procedures for drilling, cementing, and completing the proposed wells to ensure that gas does not migrate into usable water-bearing zones or contaminate other geologic formations. The RGAP also describes methods for minimizing the potential for slope instability and erosion, and for interim and final reclamation of disturbed surfaces.

6. Groundwater / Soils:

All roads in the RGAP will be crowned and ditched to allow water to flow off the road surface to reduce volume and velocity as per current BLM Gold Book standards.

As per BLM Gold Book Standards, gravel or other surfacing is required for steep grades, highly erosive soils, clay soils, and/or where all-weather access is needed.

Relief ditches or corrugated metal pipes will be installed at regular intervals as per current BLM Gold Book standards (25 year 6 hour and 24 hour storm events) to direct drainage off of the road grade and into vegetated areas, where it would infiltrate into the ground and sediment would settle out on the surface.

All culverts that have currently failed or culverts not aligned in the natural drainage of the channel will be replaced and aligned with the natural channel of the drainage with a gradient that maintains the natural drainage velocity to decrease sedimentation and erosion. Destroyed, damaged or inoperable culverts will be removed from the RGAP area and disposed of by Operator.

Culverts will be inspected annually to ensure they are functioning properly and promptly maintained (e.g. remove any debris causing blockage) and/or replaced when necessary.

Ditches will be allowed to vegetate and/or would include large rocks or stones to slow the velocity of drainage and allow sediment to settle out.

Where drainage ditches are installed to direct runoff away from the road on steeper grades, water bars or hay bale dikes will be installed nearly perpendicular to the flow direction of the ditch to reduce runoff velocity and settle out particulates as per current BLM Gold Book standards.

Operator's road construction plans will identify specific locations of drainage features and proposed BMPs for approval by the BLM prior to construction.

After the completion of drilling operations, the producing formation will be logged and production casing run and cemented in accordance with the drilling program approved in the APD.

Operator will consult with the Army Corps of Engineers (for Section 404 permits) and with the State of Colorado Water Quality Control Division (for stormwater permits) prior to commencing construction activities within the RGAP. Written documentation of this action will be provided to the BLM to ensure that appropriate permits have been obtained or are not required by the authorizing agency.

Operator will implement aggressive reclamation and revegetation of disturbed areas not needed for operational activities. These measures will help prevent erosion and sedimentation to drainages. In addition Operator will implement multiple BMPs including the following:

New access roads would be crowned and ditched to allow water to flow off the road surface to reduce volume and velocity.

Relief ditches or corrugated metal pipes would be installed at regular intervals to direct drainage off of the road grade and into vegetated areas, where it would infiltrate into the ground and/or sediment would settle out on the surface.

Ditches would be allowed to vegetate and/or would include large rocks or stones to slow the velocity of drainage and allow sediment to settle out.

Where drainage ditches are installed to direct runoff away from the road on steeper grades, water bars or hay bale dikes would be installed nearly perpendicular to the flow direction of the ditch to reduce runoff velocity and settle out.

Straw cover would be placed on excess material piles to help limit heavy dust emissions into the air during weather-created wind events.

Operator's road construction plans will identify specific locations of drainage features and BMPs for approval by the BLM prior to construction.

Any shallow groundwater zones encountered during drilling of the proposed wells would be properly protected and the presence of these zones reported to the BLM and COGCC.

After the completion of drilling operations, the producing formation would be logged and production casing run and cemented in accordance with the drilling program approved in the APD.

In order to isolate the Mesa Verde -Wasatch contact, production casing on Federal wells will have a cement top a minimum of 200 feet above the top of Mesa Verde formation.

In accordance with Operator's standard policy, all pits will utilize impermeable liners to contain drilling fluids. Following completion activities, pit liners would be removed at the respective landowner's request.

For pads where a reserve pit is planned, Operator would construct a lined reserve pit to receive the drill cuttings from the wellbore (mainly shale, sand, and miscellaneous rock minerals) and to contain drilling fluids carried over with the cuttings. No hazardous substances would be placed in this pit.

Frac pits to contain water used in completion process will be planned for each new pad location in GAP. Frac pits will also be lined. Compliance with Onshore Order #1 would determine the timing and closure of frac pits. In instances where well drilling would occur in more than 1 drilling season on a pad, the frac pit will be drained dry prior to winter shutdown period or expiration of 90 day period, whichever occurs first. The liner in drained frac pits will be retained until frac pit use is completed.

7. Invasive Non-Native Species:

Operator would implement an intensive reclamation and weed control program beginning the first growing season after well completion. As presented in the Noxious and Invasive Weed Management Plan, all disturbed areas not needed for immediate operation of the wells will be seeded with a mixture of native grasses and shrubs. Site specific seed mixes designed to reclaim the sites and deter establishment of noxious weeds are presented in the vegetation section. The seed shall be certified free of primary or secondary noxious weeds. The operator shall adhere to the specified seed mix and will continue with reclamation activities, including additional reseeding if necessary, until BLM's interim reclamation objectives are achieved.

The operator shall monitor for the presence of any Colorado-listed noxious weeds twice annually during the growing season until final reclamation of the pad is complete. The operator shall promptly treat and control any noxious weeds. A Pesticide Use Proposal must be approved by BLM prior to the use of herbicides.

Given that cheatgrass is common in portions of the project area, it may not be possible to totally eliminate this invasive species from the reclaimed area. In the case of cheatgrass, interim reclamation will be considered acceptable if cheatgrass and other undesirable vegetation are less than five percent cover, if the adjacent vegetation is less than 50 percent undesirables. Cheatgrass will be less than 50 percent cover, if the adjacent vegetation is more than 50 percent undesirables (1999 GSRA Oil and Gas FSEIS).

8. Migratory Birds and Raptors:

In order to protect nesting raptors, a raptor survey shall be conducted 10 days prior to any new development related activities commencing between February 1 and August 15. All potential nesting habitat within 0.25 mile of these developments shall be surveyed. Regardless of the results, a survey report shall be submitted to the BLM Glenwood Springs Energy Office wildlife biologist prior to any development activity at the site. If an active raptor nest is located within 0.25 mile of the proposed activity, a 60-day timing limitation beginning the date the nest was found may be applied. This restriction will not apply to any raptor nests that become active following initiation of construction or drilling operations. In the event of an active raptor nest within 0.25 mile of the pad, the operator is advised to ensure compliance with the Migratory Bird Treaty Act by contacting Creed Clayton, U.S. Fish and Wildlife Service (USFWS), Glenwood Springs Energy Office at 970-947-5219 or at john_c_clayton@blm.gov and Jeff Cook, BLM, Glenwood Springs Energy Office at 970-947-5231 or at jeffrey_cook@blm.gov.

The operator shall comply with the Migratory Bird Treaty Act with respect to “take” of migratory bird species. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Accordingly, the operator shall prevent use by migratory birds of reserve pits, produced water pits, and evaporation pits. Areas used to store such fluids during and after completion activities may pose a risk to migratory waterfowl, shorebirds, wading birds, and raptors, and other birds. Several established methods to prevent bird access are known to be effective. These include but are not limited to netting, bird-balls, and other methods that prevent bird access and use. Regardless of the method employed, it shall be implemented within 24 hours after completion activities have begun. All lethal and non-lethal events that involve migratory birds shall be reported to the Natural Resource Specialist immediately upon their discovery.

9. Noise:

During drilling and completion, the operator will angle the exhaust muffler stacks on the power units or generators away from private homes. The operator will encourage commuting of construction and drilling crews to mitigate vehicle noise impacts. Operator will use telemetry equipment at all gas well meters to reduce pumper-truck traffic within the RGAP area.

10. Paleontological Resource Education/Discovery:

All persons associated with operations under this authorization must be informed that any objects or sites of paleontological or scientific value, such as vertebrate or scientifically important invertebrate fossils, shall not be damaged, destroyed, removed, moved or disturbed. If in connection with operations under this authorization any of the above resources are encountered the proponent shall immediately suspend all activities in the immediate vicinity of the discovery that might further disturb such materials and notify the BLM authorized officer of the findings. The discovery must be protected until notified to proceed by the authorized officer.

As feasible, the proponent shall suspend ground-disturbing activities at the discovery site and immediately notify the BLM authorized officer of any finds. The BLM authorized officer will, as soon as feasible, have a BLM-permitted paleontologist check out the find and record and collect it if warranted. If ground-disturbing activities cannot be immediately suspended, the proponent shall work around or set the discovery aside in a safe place to be accessed by the BLM-permitted paleontologist.

12. Paleontological Resource Monitoring:

If significant fossils resources are encountered, construction activities would be halted and the BLM notified of the occurrence immediately. A qualified paleontologist would then visit the site and make site-specific recommendations for impact avoidance. Operations in the area of the discovery would not resume until authorization to proceed has been received from the BLM Authorized Officer.

13. Range Management:

Range improvements (fences, gates, reservoirs, pipelines, etc.) will be avoided during development of natural gas resources to the maximum extent possible. If range improvements are damaged during exploration and development, the operator will be responsible for repairing or replacing the damaged range improvements.

If a new or improved access road bisects an existing livestock fence, steel frame gate(s) or a cattleguard with associated bypass gate shall be installed across the roadway to control grazing livestock.

14. Reclamation Plan.

Refer to Appendix I (Surface Reclamation) of the 1998 Draft Supplemental EIS (DSEIS) for specific reclamation goals, objectives, timelines, measures, and monitoring methods. These guidelines should be followed in completing the reclamation of disturbed surfaces on well pads, access roads, and pipelines. The four Reclamation Categories defined in Appendix I of the 1998 DSEIS should be used to assess the progress of reclamation monitoring.

- a. Seedbed Preparation. Initial seedbed preparation shall consist of backfilling, leveling, and ripping all areas to be seeded to a minimum depth of 18 inches with a furrow spacing of 2 feet, followed by recontouring the surface and then spreading the stockpiled topsoil evenly. Prior to seeding, the seedbed shall be scarified and left with a rough surface. No depressions shall be left that would trap water and form ponds. Final seedbed preparation shall consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding.
- b. Seed Application. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation. A seed mix designed by BLM to meet interim reclamation standards shall be used. Revegetating the area will help prevent erosion and establishment of weeds and provide food and cover for wildlife. The following seed mix shall be used on all disturbed surfaces within the RGAP project area:

Scientific Name	Variety	Common Name	Seeding Rate PLS lbs/acre	Percent of Seed Mix
Shrubs				
<i>Artemisia tridentata ssp. vaseyana</i>		Mountain big sagebrush	0.1	13%
<i>Atriplex canescens</i>		Fourwing saltbush	2.5	7%
			2.6	20%
Perennial Graminoids				
<i>Elymus elymoides</i>	native	Bottlebrush squirreltail	2.0	19%
<i>Elymus trachycaulus ssp. trachycaulus</i>	San Luis	Slender wheatgrass	2.5	20%
<i>Koeleria macrantha</i>	native	Junegrass	0.05	6%
<i>Pascopyrum smithii</i>	Arriba	Western wheatgrass	2.6	15%
<i>Poa secunda</i>	native	Sandberg bluegrass	0.2	9%
			7.35	69%
Perennial Forbs				
<i>Achillea lanulosa</i>		Yarrow	0.05	7%
<i>Vicia americana</i>		American vetch	2.6	4%
			2.65	11%
TOTAL			12.6	100%

The application rate shown in the table is based on 46 pure live seeds (PLS) per square foot, drill-seeded to a depth of 0.25 to 0.5 inch, which is the method that shall be used where feasible. In areas that cannot be drill-seeded, the mix shall be broadcast-seeded at twice the application rate shown in the table and covered 0.25 to 0.5 inch deep with a harrow or drag bar.

The seed shall be certified free of noxious weeds. All seed to be applied to public land must have a valid seed test, within one year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab shall show no more than 0.5 percent by weight of "other weed" seeds; and the seed lot shall contain no "noxious, prohibited, or restricted weed" seeds according to the All States Noxious Test. Seed may contain up to 2.0 percent of "other crop" seed by weight which includes the seed of other agronomic crops and native plants; however, a lower percent of other crop seed is recommended. Seed tags or other official documentation shall be supplied to the Glenwood Springs BLM Energy Office Ecologist at least 14 days prior to the date of proposed seeding for acceptance. Seed which does not meet the above criteria shall not be applied to public lands.

Fall seeding shall be conducted after September 1 and prior to ground frost. Spring seeding shall be conducted after the frost leaves the ground and no later than May 15. If the seeding is unsuccessful, the operator shall make subsequent seedings until the reclamation objectives identified in Appendix I (Surface Reclamation) of the 1998 DSEIS are met.

Note: Because cheatgrass is already abundant in the project vicinity, it may not be feasible to completely eliminate this invasive species from the project area. Therefore, if the area adjacent to the project site contains less than a 50-percent cover of cheatgrass, interim reclamation will be considered acceptable when the cover of cheatgrass on the project site does not exceed 5 percent. If the area adjacent to the project site contains more than a 50-percent cover of cheatgrass, interim reclamation will be considered acceptable when the cover of cheatgrass on the project site does not exceed 50 percent.

- c. Erosion Control. Cut-and-fill slopes shall be protected against erosion with the use of water bars, lateral furrows, or other measures approved by the Authorized Officer. Weed-free straw bales, straw "wattles," straw matting, or a well-anchored fabric silt fence shall be used on cuts and fill slopes and along drainages to protect against soil erosion. Additional BMPs shall be employed as necessary to ensure reduced offsite erosion and to protect drainages from sediment.
- d. Site Protection. The pad shall be fenced to BLM standards to exclude livestock grazing for the first two growing seasons or until seeded species become firmly established, whichever comes later. The seeded species will be considered firmly established when at least 50 percent of the new plants are producing seed. The Authorized Officer will approve the type of fencing.
- e. Monitoring. The operator shall conduct annual monitoring surveys of reclaimed areas and shall submit an annual monitoring report to the Authorized Officer by December 31 of each year. The monitoring program shall use the four Reclamation Categories defined in Appendix I of the 1998 DSEIS to assess progress toward reclamation objectives. The annual report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appear unlikely to be achieved, the report shall identify appropriate corrective actions. Upon review and approval of the report by BLM, the operator shall be responsible for implementing the corrective actions or other measures specified by the Authorized Officer.

15. Deadline for Interim Reclamation:

Operator will be allowed to construct well pad to the maximum expected pad size necessary to drill and complete the number of wells proposed for this location. If, after 1 year from spudding the initial well, or 1 year after spudding any successive well(s), the operator will be required to implement and complete

standard interim reclamation practices as identified under Reclamation section in these surface Conditions of Approval OR submit proposed best management practices to be approved by the Authorized Officer that would be implemented on the “open” pad to control storm water drainage, weed control, wildlife protection measures, dust abatement plan and/or visual resource management.

16. Recreation:

To promote safety for hunters and project workers alike during hunting season, warning signs should be posted along access roads serving active construction and drilling sites to warn hunters of the presence of workers and associated vehicle traffic in the area.

17. Special Status Species:

Any discoveries of previously unknown bald eagle nesting or roosting sites would be addressed by application of the appropriate stipulations and consultation with the USFWS prior to commencement of development activities.

Biological inventories (surveys) for sensitive plant species will be conducted in potential new disturbance areas not covered in the RGAP EA.

Mitigation of impacts to special status plants would include (1) relocating gas activities and facilities to minimize direct impacts; (2) requiring Operator to seed the well pads with native species, including species that provide direct competition with cheatgrass, such as bottlebrush squirreltail, and/or Sandberg bluegrass; (3) ensuring that seeding occurs at the appropriate time of year to optimize the potential for seeding success; and (4) requiring Operator to control all noxious weeds within the disturbed areas.

18. Transportation/ Road Maintenance:

Commuting construction and drilling crews would be encouraged to car pool to reduce the number of vehicle trips on local area roads and associated wear and tear.

All road construction and maintenance activities will adhere to standards identified in Gold Book.

The operator would encourage commuting construction and drilling crews to comply with posted speed limits on public roads and limit driving speeds to 20 mph on more primitive access roads to reduce the potential for vehicle collisions. By complying with posted speed limit along County Roads, traffic-related noise would also be reduced at nearby residences

19. Terrestrial Wildlife:

For road right-of-way (# COC-65900), the following big game winter timing limitation would be enforced: Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: “Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months.”

Remote monitoring will be conducted during the winter months to minimize site visits to pad locations and reduce traffic impacts to wintering big game wildlife. In addition, scheduled winter visits (those other than for emergency purposes), should be scheduled between 10 a.m. and 3 p.m. to further minimize disturbance to wintering big game wildlife.

20. Vegetation:

Where road, pipeline or pad construction requires the removal of pinyon pine trees between late March to early November, the trees will be disposed of within 24 hours of disturbance in the following manner to avoid attracting pinyon *Ips* beetles into live standing trees and mitigate effects of ongoing *Ips* beetle infestation in the local area: (1) broken down with earthmoving equipment and buried in excess material pile or at toe of fill slopes; (2) cut down, sectioned and chipped with hydro-ax equipment capable of chipping large pinyon trees; or (3) cut and remove trees from BLM land and hauled to Colorado State Forest Service-approved disposal site.

21. Visual Resources:

To help mitigate the contrast of bare, recontoured slopes, reclamation will include measures to feather cleared lines of vegetation, and to save and redistribute cleared trees, debris, and rock over reshaped cut and fill slopes.

To reduce the view of production facilities from visibility corridors and private residences, facilities will not be placed in visually exposed locations (i.e., they will be located against backdrops or cut side of pad) and will be placed to allow the maximum reshaping of cut and fill slopes. Furthermore, all above ground facilities will be painted Shale Green (Munsell 5Y4/2) to blend with the existing landscape.

Trees and vegetation would be left along the edges of the pads whenever feasible. Berms may need to be constructed on the fill portion on leading edges of pads with substantial cuts and fills.

22. Wastes, Hazardous or Solid:

EnCana and its contractors would be required to collect and properly dispose of any solid wastes generated by this project. Any release (leaks or spills) of hazardous substances in excess of the reportable quantity, as established by 40 CFR, Part 117, would be reported as required by the CERCLA of 1980, as amended. If the release of a hazardous substance in a reportable quantity would occur, a copy of a report would be furnished to the BLM and all other appropriate federal and state agencies. In addition, all releases to soil or water of 10 gallons or more of any substance would be immediately reported verbally to the BLM and COGCC compliance officers and proof of cleanup provided for the project record. This mitigation would be applied at all stages of the project including drilling, completion, operation, and abandonment of the wells.

Protection of sensitive environments in the drilling area would be accomplished through the use of a liner in the reserve pit and the construction or installation of secondary containment facilities. All cuttings, drilling fluids and chemicals are to be contained in the lined pit. Any hydrocarbons in the reserve pit would be removed as soon as possible and processed or disposed of at a permitted offsite facility, and excess liquids in the reserve pit evaporated. The cuttings would then be buried in place. Backfilling of the pit would be performed in a manner to confine the mud in the pit and avoid incorporating the mud with surface soils.

No chromate additives would be used in the mud system without prior BLM approval. No hazardous substances specifically listed by EPA as a hazardous waste or demonstrating a characteristic of hazardous waste will be used in drilling, testing, or completion operations.

Tank batteries for the storage of produced water and condensate would be placed in secondary containment to prevent migration offsite. These may consist of either corrugated steel surrounds, earthen berms, or both. In the event of an accidental release, produced water and condensate would be confined for clean-up in the containment area and would not migrate to surrounding soils and water.

Under the proposed drilling plan, fuel and lubricants would be temporarily stored in transportable containment trailers or tanks on the proposed well pads. EnCana would implement a Spill Prevention, Control, and Countermeasure (SPCC) Plan to minimize potential impacts from unintentional releases. The SPCC Plan would include accidental discharge reporting procedures, spill response, and cleanup measures. All potentially hazardous materials and substances would be handled in an appropriate manner that minimizes the risk of accidental contamination of soil and water resources.

23. Water Quality, Surface and Ground:

Operator will implement aggressive reclamation and revegetation of disturbed areas not needed for operational activities. In addition operator will implement multiple BMPs including the following: New access roads will be crowned and ditched to allow water to flow off the road surface to reduce volume and velocity. Relief ditches will be installed at regular intervals to direct drainage off of the road grade and into vegetated areas, where it would infiltrate into the ground and/or sediment would settle out on the surface.

Ditches will be allowed to vegetate and/or will include large rocks or stones to slow the velocity of drainage and allow sediment to settle out. Where drainage ditches are installed to direct runoff away from the road on steeper grades, water bars or hay bale dikes will be installed nearly perpendicular to the flow direction of the ditch to reduce runoff velocity and settle out. Operator's road construction plans will identify specific locations of drainage features and BMPs for approval by the BLM prior to construction.

Any shallow groundwater zones encountered during drilling of the proposed wells would be properly protected and the presence of these zones reported to the BLM and COGCC. All usable water zones encountered (those with TDS less than 10,000 mg/L) must be isolated and protected, whether they are shallow or deep. Isolation of shallow zones would be accomplished by setting and cementing surface casing from a depth of at least 50 feet below the deepest water zone to the ground surface. Deeper water-bearing zones would be cemented off as required in the Master APD. For these zones, cementing would be used from 50 feet above to 50 feet below each water-bearing zone.

After the completion of drilling operations, the producing formation would be logged and production casing run and cemented in accordance with the drilling program approved in the APD.

The operator will consult with the State of Colorado Water Quality Control Division (contact Matt Czahor at: 303-692-3575 or matthew.czahor@state.co.us) regarding Stormwater Discharge Permits prior to commencing construction activities. All construction activities that disturb one acre or greater require a Stormwater Discharge Permit. Written documentation to the BLM Authorized Officer is required within 30 days of the APD approval date to indicate that appropriate permits have been obtained. Written documentation may be a copy of the Stormwater Discharge Permit or an official verification letter from the State Water Quality Control Division to the operator that includes the Permit Certification Number. For further information contact Jeff O'Connell, Hydrologist of the Glenwood Springs Energy Office at 970-947-5215 or jeffrey_o'connell@blm.gov. Appropriate documents may be sent via electronic mail, faxed (970-947-5267), or mailed to Jeff O'Connell at the Glenwood Springs Energy Office.

The operator will consult with the US Army Corps of Engineers (contact Sue Nall at: 970-243-1199 x16 or susan.nall@usace.army.mil) to obtain approval prior to discharging fill material into waters of the US in accordance with Section 404 of the Clean Water Act. Waters of the US are defined in 33 CFR Section 328.3. Written documentation to the BLM Authorized Officer is required within 30 days of the APD approval date to indicate that the US Army Corps of Engineers has been notified prior to construction or that 404 Permits have been obtained or are not required by the permitting agency. Written documentation may be a copy of the Pre-Construction Notification (PCN) Form or an official verification letter from the

US Army Corps of Engineers to the operator stating that a permit has been issued or is not required for the activities in question. For further information contact Jeff O'Connell, Hydrologist of the Glenwood Springs Energy Office at 970-947-5215 or jeffrey_o'connell@blm.gov. Appropriate documents may be sent via electronic mail, faxed (970-947-5267), or mailed to Jeff O'Connell at the Glenwood Springs Energy Office.

In accordance with Operator's standard policy, all reserve pits will utilize impermeable liners to contain drilling fluids. Following completion activities, pit liners would be removed at the respective landowner's request. At the discretion of Operator and in cooperation with the respective landowner, closed-loop drilling systems may be used on well pads within 100 feet of intermittent drainages.

A minimum of 2 feet of freeboard shall be maintained in the reserve pit. Freeboard is measured from the highest level of drilling fluids and cuttings in the reserve pit to the lowest surface elevation of ground at the reserve pit perimeter. All vehicles would be refueled at least 100 feet from stream channels.

In accordance with Operator's standard policy, erosion protection and silt retention techniques including construction of silt catchment dams, installation of culverts or drainage dips, placement of surface rock on approaches to stream crossings, placement of surface rock, straw bales, and/or matting will be used along proposed road reaches within 100-feet of stream channels.

Within areas less than 100 feet from intermittent drainages, an adequate vegetative buffer, artificial buffers (e.g., straw bales, matting, etc.), or filter strip will be maintained between the road and the drainage to filter runoff from the road before it reaches the creek, wherever possible.

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APPENDIX E

SITE-SPECIFIC AND DOWNHOLE CONDITIONS OF APPROVAL

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Existing RA10 Pad

New wells: **Federal 10-8** **Federal 10-8A**
 Federal Savage 10-7 **Federal Savage 11-4**

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.

2. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S, R94W, thereby affecting the operator’s ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: “Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months.”

3. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

Existing RA11 Pad & Road Realignment from RA11 to RO2 Pad

New wells: **Federal 11-1D**

Federal 11-7A

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The 60-day Condition of Approval for Big Game Habitat identified in Appendix D-1 in the GSRA Oil & Gas Final SEIS (approved March 24, 1999) will be invoked. This COA states: "To protect crucial big game winter range on leases without timing restrictions, construction and drilling activities are prohibited from January 15 through March 15." The rationale for invoking this COA is based on field review and the updated Colorado Division of Wildlife Big Game Winter Habitat mapping which clearly identifies the well location and access road within these crucial winter ranges.
3. Realignment of road switchback bearing south off RA11 pad will be conducted in manner that allows for future drilling and production of wells on RA11 pad. Collocation of RA11 facilities will be reviewed to allow for "working" room on RA11 pad.

When road switchback realignment from RA 11 pad to RO2 pad is constructed, thereby eliminating the need for existing excessively steep "beaverslide" road segment, the existing steep road segment will be recontoured, reclaimed and closed to motor vehicle traffic by resloping, establishing deep water bars, and using existing large boulders and tree slash from construction of road switchback alignment. The existing steep road segment will continue to serve as pipeline corridor. Any upgrades to this pipeline corridor will be completed prior to or in concert with the construction of the road switchback from RA 11 pad to RO2 pad.

4. No sidecasting will be allowed during road or pipeline construction on sideslopes in excess of 40 %.
5. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

Existing RD10 Pad

New wells: **Savage Cooper 10-3D**
Savage Cooper 10-4C

Savage Cooper 10-4B

1. Should federal bottomholes be drilled from the RD10 pad in the future, operator would be required to submit signed self-certification statement from surface owner, and COA#2 would be enforced below. The 3 fee wells listed represent the No Action Alternative and there would be no federal authority for these fee wells other than the operator abiding by the Terms and Conditions of Road Right-of-way #COC65900.
2. Standard Conditions of Approval outlined in Appendix B of the Rulison GAP will apply and remain in full force and effect.
3. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S, R94W, thereby affecting the operator's ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: "Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months."

New RD11 Pad

New wells: Federal Savage 11-3 Federal Savage 11-5
 Federal Savage 11-5A Federal Savage 11-6
 Federal Savage 11-6A

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The 60 day Condition of Approval for Big Game Habitat identified in Appendix D-1 in the GSRA Oil & Gas Final SEIS (approved March 24, 1999) will be invoked. This COA states: "To protect crucial big game winter range on leases without timing restrictions, construction and drilling activities are prohibited from January 15 through March 15." The rationale for invoking this COA is based on field review and the updated Colorado Division of Wildlife Big Game Winter Habitat mapping which clearly identifies the well location and access road within these crucial winter ranges.
3. Operator will apply for BLM right-of-way to occupy the federal surface RD11 pad for all surface-disturbing activities serving that well including, road improvements, pipeline connection, pad construction and facility locations.
4. The draw that runs to the pad north from the Canyon Gas Resources pipeline has a bed and bank between 2 and 3 feet in width and would likely be classified as a Water of the US by the USACOE. This draw will be rerouted using a rock-lined ditch using BMP storm water measures around the SE edge of RD11 pad to avoid runoff impacts to the pad surface and/or fill slopes. If necessary, operator will install minimum 24" diameter culvert to feed the rock-lined ditch drainage under the existing road at SE pad corner.
5. Expand the RD11 pad about 30 feet along the north and east edges using excess material to provide additional pad surface to safely accommodate the drilling/completion work planned for this location. During pad construction the NW pad corner will be sufficiently rounded or cut off to avoid depositing any fill material into the existing draw that runs west to north. Move topsoil pile from SW pad corner to the north side of pad between Corners 1 and 3.
6. By expanding the pad along its eastern edge, the existing pad access road will be rerouted 30-40 feet east of edge of pad so that realigned road passes to east of existing Canyon Gas Resources' pipeline riser. Operator coordination with CGR will be required regarding this riser, and measures will be taken based on that coordination, to safely protect the pipeline riser from truck traffic and pad operations. Rerouted road will be constructed to allow passage of motor vehicles to east and south of pad back onto the existing road alignment.
7. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

Existing RD16 Pad

New wells: **Federal 16-3** **Federal 16-4** **Federal 16-5**
 Federal 16-5A **Federal 16-6A**

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The Timing Limitation for Lease #COC-46034 specifies that no exploration, drilling and other development will be allowed between January 16 through April 29, in order to protect important seasonal wildlife habitat (including big game). This limitation does not apply to maintenance and operation of producing wells.
3. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator’s ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: “Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months.”
4. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

New RG16 Pad (Page 1 of 2)

New wells: **Federal 16-1** **Federal 16-2** **Federal 16-7**
 Federal 16-7A **Federal 16-8** **Federal 16-8A**
 Federal 16-9 **Federal 16-9A** **Federal 16-10**
 Federal 16-10A **Federal 16-16A**

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The Timing Limitation for Lease #COC-46034 specifies that no exploration, drilling and other development will be allowed between January 16 through April 29, in order to protect important seasonal wildlife habitat (including big game). This limitation does not apply to maintenance and operation of producing wells.
3. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator’s ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: “Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months.”
4. Move excess material pile shown on Sheet 3 of 10 (dated 7/20/05) from its location south of access road to the north side of road to blend with excess pile located north of Corner 3 and west of existing streamcourse. Measures will be taken to protect the entire streamcourse east of pad as it runs along east-side of pad with use of storm water practices, silt fencing, wattles, etc.
5. To help mitigate visual impact of pad and its supporting facilities, production pack(s) (separators) and storage tank(s) will be placed in a manner to shield them view - with production pack(s) to be located near pad’s edge at Corner 4 and storage tank(s) set near pad’s edge at Corner 10 so the facilities are generally aligned in linear fashion along the access road passing through the pad to RN16 pad. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.
6. Move topsoil pile to the SW corner of the pad (between Corner 9 and 10) as shown on sheet 3 of 10. Cut-off or round Corner 5 to avoid wetlands and streamcourse.
7. Buried pipeline(s) will be installed in road right-of-way to minimize impacts to road cuts. Timing of pipeline installation is critical in completing this work with minimal impact to road cuts and fills.
8. No sidelaying of excavated material will be allowed during road or pipeline construction on sideslopes in excess of 40 %.
9. During the interim reclamation phase of the well pad, allow road access through the pad to nearby RN16 location, while minimizing the finished reclaim width of pad to a maximum distance of 100 feet either side of the banks of wellheads.
10. Operator will construct a foot/horseback trail, with BLM approval of trail location and construction standard, around the RG16 pad to continue to provide recreation use opportunities along the existing trail.

New RG16 Pad (Page 2 of 2)

11. Because of visual sensitivity of this pad location from short- and long-term viewsheds, it is recommended that the planned wells scheduled for this pad be drilled during no more than 2 drilling seasons.

Existing RJ10 Pad

New wells: Federal 10-9A
Savage Federal 10-10B Savage Federal 10-15A

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.

2. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator's ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: "Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months."

3. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

New RJ11 Pad

New wells:	Federal 11-9	Federal 11-9A	Federal 11-10
	Federal 11-10A	Federal 11-15	Federal 11-15A
	Federal 11-16	Federal 11-16A	Savage Federal 11-11

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The Controlled Surface Use stipulation (CSU) on Lease #COC-56040 requires performance objectives and standards to protect fragile soils.
3. The 60 day Condition of Approval for Big Game Habitat identified in Appendix D-1 in the GSRA Oil & Gas Final SEIS (approved March 24, 1999) will be invoked. This COA states: "To protect crucial big game winter range on leases without timing restrictions, construction and drilling activities are prohibited from January 15 through March 15." The rationale for invoking this COA is based on field review and the updated Colorado Division of Wildlife Big Game Winter Habitat mapping which clearly identifies the well location and access road within these crucial winter ranges.
4. Operator will apply for BLM road and pipeline rights-of-way across portions of Section 1 and 12 that are "off-lease" but serve federal and fee wells planned on RJ11 pad.
5. Use the 3697 CY of excess material planned from pad construction to expand the well pad surface 30 feet along the entire western and southern edges to provide larger pad surface to safely accommodate planned drilling/completion operations.
6. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.
7. No sidelaying of excavated material will be allowed during road or pipeline construction on sideslopes in excess of 40 %.

Existing RK10 Pad

New wells: **Savage Federal 10-5C** **Savage Federal 10-6D**
 Savage Federal 10-12 **Savage Federal 10-13A**
 Savage Federal 10-14 **Savage Federal 10-14A**

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The Timing Limitation on Lease #COC-46032 specifies that no exploration, drilling and other development will be allowed between January 16 through April 29, in order to protect important seasonal wildlife habitat (including big game). This limitation does not apply to maintenance and operation of producing wells.
3. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator's ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: "Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months."
4. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.

New RM11 Pad (Page 1 of 2)

New wells: **Federal Savage 11-11A**
Federal Savage 11-12A
Federal Savage 11-13A
Federal Savage 11-14A

Federal Savage 11-12
Federal Savage 11-13
Federal Savage 11-14

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. Operator will apply for BLM right-of-way to occupy the federal surface RD11 pad for all surface-disturbing activities serving that well including, road improvements, pipeline connection, pad construction and facility locations.
3. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator's ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: "Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months."
4. Install buried pipeline with a maximum 50' disturbance width along proposed corridor for connection to Canyon Gas Resources pipeline system west of RD11 pad. Prior to surface-disturbing activities on the RM11 gathering line, a pre-construction field meeting will be conducted (notify BLM 48 hours prior to meeting) and the edge of disturbance will be staked and flagged. During reclamation of RM11 gathering line, deep water bars will be established cross-slope with heavy equipment and tree slash and large boulders will be placed on the disturbed areas so as to inhibit future use motor vehicles including ATVs.
5. Install storage tank(s) on pad near Corner 3 and access road entrance to pad and production pack(s) a maximum distance of 100 feet from edge of wellheads and Corner 1. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.
6. Use the 8553 CY of excess material planned from pad construction to expand the well pad surface 30 feet along it's entire eastern edge to provide larger pad surface to safely accommodate planned drilling/completion operations. Round Corners 2 and 9 to minimize disturbance footprint of pad. Avoid placing any excavated material in existing draw north of pad between Corner 7 and 9. Relocate and windrow topsoil pile above cut slope along western edge of pad between Corners 4 and 7.
7. Reroute a portion of the proposed access road from RJ10 to RM11 pad to eliminate all impacts to *Penstemon harringtonii* subpopulations B1 and B2. Impacts to *Penstemon harringtonii* subpopulations B3 and B4 will also be reduced by slightly moving the proposed road south to traverse through the Gambel oak shrublands instead of the open sagebrush habitats preferred by the penstemon. To mitigate for any plant losses, seed of Harrington's penstemon would be collected and hand broadcast and raked into disturbed areas adjacent to the access road and proposed pad by a contractor familiar with this species.

New RM11 Pad (Page 2 of 2)

8. No sidecasting of excavated material will be allowed during road or pipeline construction on sideslopes in excess of 40 %.

New RN16 Pad

New wells: **Federal 16-11** **Federal 16-11A** **Federal 16-12**
 Federal 16-12A **Federal 16-13** **Federal 16-13A**
 Federal 16-14 **Federal 16-14A** **Federal 16-15**
 Federal 16-15A

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. The Timing Limitation for Lease #COC-46034 specifies that no exploration, drilling and other development will be allowed between January 16 through April 29, in order to protect important seasonal wildlife habitat (including big game). This limitation does not apply to maintenance and operation of producing wells.
3. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator’s ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: “Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months.”
4. Since access road will bisect range allotment fence just east of RN16 pad, steel frame gate or cattleguard will be installed to control grazing livestock from trespassing onto private land/BLM. Furthermore, the excess material and topsoil piles will be placed in manner so the existing livestock fence east of pad is not impacted.
5. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.
6. No sidecasting of excavated material will be allowed during road or pipeline construction on sideslopes in excess of 40 %.

New RO10 Pad

New wells: Federal 10-9D Federal 10-16 Savage Federal 10-15

1. Standard Conditions of Approval outlined in Appendix D of the Rulison GAP will apply and remain in full force and effect.
2. Terms and conditions for BLM road right-of-way (#COC-65900) describing a 5 month winter timing limitation (12/1 – 4/30) have been placed on the existing road which traverses through Section 9, T7S R94W, thereby affecting the operator's ability to conduct construction, drilling or completion work within Sections 10 and 16 and SW¼ of Section 11 (related to RM11 pad and road). The terms and conditions state:

Due to wildlife winter range, no construction traffic or drilling activity traffic will be allowed on the subject right-of-way during the period of December 1 to April 30. TL has exception as noted: "Under mild winter condition, the last 60 days of the seasonal limitation period may be suspended after consultation with the CDOW. Severity of the winter will be determined on the basis of snow depth, snow crusting, daily mean temperatures, and whether animals were concentrated on the winter range during the winter months."
3. Operator will apply for BLM road and pipeline rights-of-way across portions of Sections 9 and 16 that are "off-lease" but serve federal and fee wells planned on RO10 pad.
4. Install storage tank near Corner 8 and access road entrance onto pad. Production pack will be installed at a maximum distance of 100 feet from edge of wellheads and Corner 1. As a general rule, unless otherwise approved by BLM Authorized Officer, the production pack(s) and storage tanks(s) will not be set more than 100 feet from the nearest wellhead to satisfy COGCC regulation.
5. Buried pipeline(s) will be installed in road right-of-way to minimize impacts to road cuts. Timing of pipeline installation is critical in completing this work with minimal impact to road cuts and fills.
6. No sidelaying of excavated material will be allowed during road or pipeline construction on sideslopes in excess of 40 %
7. To minimize visual impacts of the pad from the valley floor, round off Corners 2 and 9. Because of visual sensitivity of this pad location from long-term viewsheds, it is recommended that the planned wells scheduled for this pad be drilled during 1 drilling season.
8. Shift pad RO10 30 to 50 feet to the south and 20 feet to the west. This would result in an 80% to 90% decrease in the number of Harrington's penstemon plants impacted at subpopulation A3. Alternatively, the excess material pile currently proposed on the southeast corner of the pad shall be reconfigured so that the northern and eastern edges of fill could be reduced. Finally, the northern and eastern edges of the pad shall be fenced (e.g. orange construction fencing) to protect remaining individuals of Harrington's penstemon plants to ensure that no accidental losses occur. To mitigate for any plant losses, seed of Harrington's penstemon would be collected and hand broadcast and raked into disturbed areas adjacent to the access road and proposed pad by a contractor familiar with this species.
- 9 Existing livestock fence running generally north-south through the pad site will be removed and reconstructed along the eastern edge of pad footprint. This fence can also serve as protective barrier for penstemon plant population identified in Item #7.

Downhole – Standard Conditions of Approval

NOTIFICATION REQUIREMENTS

Location Construction	-	at least forty-eight (48) hours prior to construction of location and access roads.
Spud Notice	-	at least twenty-four (24) hours prior to spudding the well.
Casing String and Cementing	-	at least twenty-four (24) hours prior to running casing and cementing all casing strings.
BOP and Related Equipment Tests	-	at least twenty-four (24) hours prior to initiating pressure tests.
First Production Notice-		within five (5) business days after new well begins, or production resumes after well has been off production for more than ninety (90) days.
Reclamation		At least (24) hours prior to reshaping the well pad.

For more specific details on notification requirements, please check the Conditions of Approval for Notice to Drill and Surface Use Program.

REGULATORY REMINDERS

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.

All lease and/or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations (43 CFR 3100), Onshore Oil and Gas Orders, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors.

A copy of the approved application for permit to drill (APD), including the conditions of approval and accompanying surface use plan will be furnished to the field representative by the operator to insure compliance and will be available to authorized personnel at the drill site whenever active construction or drilling operations are underway.

Fire restrictions may be in effect when location is being constructed and/or when well is being drilled. Contact the appropriate Surface Management Agency for information.

A. DRILLING PROGRAM

All operations, unless otherwise specifically approved in the APD, must be conducted in accordance with Onshore Oil and Gas Order No. 2.

1. Estimated Depth at Which Oil, Gas, Water, or Other Mineral Bearing Zones are Expected to be Encountered

Any usable water zones encountered below the surface casing shall be isolated and or protected by cementing across the zone. The minimum requirement is to cement from 50 feet above to 50 feet below each usable water zone encountered.

If gas is found to be present in the Wasatch formation, then the zone will need to be isolated either by the primary cement job or remedial cementing.

2. Pressure Control Equipment

The BOP and related equipment shall meet the minimum requirements of Onshore Oil and Gas Order No. 2 for equipment and testing requirements, procedures, etc., for a 3M system and individual components shall be operable as designed. Chart recorders shall be used for all pressure tests.

3. Casing Program and Auxiliary Equipment

The surface casing **shall** be cemented back to surface either during the primary cement job or by remedial cementing. Leak-off tests of the casing shoe will be performed and recorded for all wells.

4. Mud Program and Circulating Medium

Hazardous substances specifically listed by the EPA as a hazardous waste or demonstrating a characteristic of a hazardous waste will not be used in drilling, testing, or completion operations.

No chromate additives will be used in the mud system on Federal and Indian lands without prior BLM approval to ensure adequate protection of fresh water aquifers.

5. Coring, Logging and Testing Program

Daily drilling and completion progress reports shall be submitted to this office on a weekly basis.

All Drill Stem tests (DST) shall be accomplished during daylight hours, unless specific approval to start during other hours is obtained from the AO. However, DSTs may be allowed to continue at night if the test was initiated during daylight hours and the rate of flow is stabilized and if adequate lighting is available (i.e., lighting which is adequate for visibility and vapor proof for safe operations). Packers can be released, but tripping should not begin before daylight unless prior approval is obtained from the AO.

A cement bond log (CBL) will be run from the production casing shoe to **TOC** and shall be utilized to determine the bond quality for the production casing.

Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) will be submitted not later than 30 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3164. **One** copy of all logs, core descriptions, core analyses, well-test data, geologic summaries, sample description, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. Samples (cuttings, fluids, and/or gases) will be submitted when requested by the AO.

6. Notifications of Operations

No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the AO. If operations are to be suspended, prior approval of the AO will be obtained and notification given before resumption of operations.

The Glenwood Springs Field Office shall be notified, during regular work hours (7:45 a.m.-4:30 p.m., Monday through Friday except holidays), at least 24 hours **prior** to spudding the well.

Operator shall report production data to MMS pursuant to 30 CFR 216.5 using form MMS/3160.

The date on which production is commenced or resumed will be construed for oil wells as the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever first occurs; and, for gas wells as the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which gas is first measured through permanent metering facilities, whichever first occurs.

Should the well be successfully completed for production, the AO will be notified when the well is placed in a producing status. Such notification will be sent by telegram or other written communication, not later than five (5) days following the date on which the well is placed on production.

A schematic facilities diagram as required by 43 CFR 3162.7-5 (b.9. d.), and shall be submitted to the appropriate District Office within sixty (60) days of installation or first production, whichever occurs first. All site security regulations as specified in Onshore Oil & Gas Order No. 3 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 43 CFR 3162.7-5 (b. 4).

No well abandonment operations will be commenced without the prior approval of the AO. In the case of newly drilled dry holes or failures, and in emergency situations, oral approval will be obtained from the AO. A "Subsequent Report of Abandonment" Form 3160-5, will be filed with the AO within thirty (30) days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration. Final abandonment will not be approved until the surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the AO or his representative, or the appropriate Surface Managing Agency.

7. Other Information

All loading lines will be placed inside the berm surrounding the tank battery.

All off-lease storage, off-lease measurement, or commingling on-lease or off-lease will have prior written approval from the AO.

All open-vent exhaust stacks associated with heater-treater, separator, and dehydrator units must be constructed to prevent birds and bats from entering them and to the extent practical to discourage perching and nesting.

The oil and gas measurement facilities will be installed on the well location. The oil and gas meters will be calibrated in place prior to any deliveries. Tests for meter accuracy will be conducted following initial installation and at least quarterly thereafter. The AO will be provided with a date and time for the initial meter calibration and all future meter-proving schedules. A copy of the meter calibration reports will be submitted to the Grand Junction Field Office. All meter measurement facilities will conform to Onshore Oil & Gas Order No. 4 for liquid hydrocarbons and Onshore Oil & Gas Order No. 5 for natural gas measurement.

The use of materials under BLM jurisdiction will conform to 43 CFR 3610.2-3.

There will be no deviation from the proposed drilling and/or workover program without prior approval from the AO. Safe drilling and operating practices must be observed. All wells, whether drilling, producing, suspended, or abandoned will be identified in accordance with 43 CFR 3162.

"Sundry Notice and Report on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3162.3-2.

Section 102(b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(c), requires that "not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed."

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c)(3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3162.4-1(b)(5)(ii).

In the event after-hours approval or notification is necessary, please contact one of the following:

Marty O'Mara Petroleum Engineer	C: 970.319.5837 W: 970.947.5221
Steve Ficklin Petroleum Engineering Technician	W: 970.947.5213 C: 970.319.2509
Jennifer Gallegos Petroleum Engineering Technician	W: 970.947.5220 C: 970.319.2211
Jim Byers Natural Resource Specialist	W: 970.947.5222 C: 970.319.2532
BLM	Fax: 970.947.5267